FACTORS IN A HOUSING POLICY FOR MEXICO

by

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This thesis will explore the relevant elements for developing a sound and adequate housing policy for Mexico, taking into account its population needs, production mechanisms and existing institutional framework.

The analysis encompasses the following major issues: (a) the criteria used for the allocation of resources for housing considering Mexican housing needs and the meager resources available; (b) the system of production of houses, the principal features of the building industry, its importance in the national economy and the possible effectiveness in carrying out a program of production of houses complementary to development; (c) the evaluation of the institutional mechanisms for financing housing and the present governmental housing policies, including an evaluation of achievements and weaknesses.

From the facts of this analysis, the existing building industry has been hampered by the low level of family income which has produced a small share of the building industry in the total housing market.

In the existing private and public housing mechanisms the centralization of mortgage banking activities and the orientation of mortgage credit solely to assist medium income families are the main weaknesses in achieving a sound housing policy suitable for Mexico.

The proposed program takes into account all these shortcomings to formulate a policy in which the basic issue is the role that housing may play to accelerate Mexico's campaign for economic progress and development.
Letter of Transmittal

Massachusetts Institute of Technology,
July 31, 1958.

Prof. John T. Howard
Department of City and Regional Planning
Massachusetts Institute of Technology
Cambridge, Massachusetts.

Dear Professor Howard:

In partial fulfillment of the requirements for the degree of Master in City Planning, I submit this thesis entitled, "Factors in a Housing Policy for Mexico."

Sincerely yours,

[Signature]

Arturo Lamadrid Ibarra
Acknowledgement

I am especially indebted to Professor Lloyd Rodwin, who served as thesis adviser for a number of useful suggestions, and to Professor Bernard Friedem. Also, to the Bank of Mexico, Department of Industrial Research, which sent me valuable information included in this thesis. And most especially to my wife, Maria Teresa, who stood by me through all the trials.
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PREFACE

This thesis will explore the relevant elements for developing a sound and adequate housing policy for Mexico, taking into account its population needs, social attitudes, production mechanisms and existing institutional framework. Chapter I will identify the basic issue of a housing policy, in the light of the national problems and economic development objectives of Mexico. Chapter II will consider what criteria should be used for the allocation of resources for housing considering Mexican housing needs and the meager resources available. Chapter III reviews the system of production of houses, the principal features of the building industry, its importance in the national economy and the possible effectiveness in carrying out a program of production of houses complementary to development. Chapter IV will evaluate the institutional mechanisms for financing housing and the present
governmental housing policies including an evaluation of achievements and weaknesses. Chapter V will review the existing gaps in the Mexican housing policy plus detailed suggestions on approaches. Finally, Chapter VI will suggest measures to improve the existing housing programs and to effectuate the proposed objectives.
CHAPTER I

Mexico has an acute housing problem, complicated by its limited resources for investment, by the lack of clearly formulated housing policies and by the high rate of population growth. The need for a suitable program which would contribute to the general economic, social, physical and perhaps political objectives of the country is becoming every day more urgent.

The economic activity of Mexico has grown at the rate of five per cent a year\(^1\), since the outset of the World War II, maintaining through the last years a continuous rate of development.

The approach to date has been on specific projects needed for development, modified perhaps by political considerations. What has been lacking is a national development plan that integrates all programs to secure the country's principal objectives.

Mexico's main objective is to raise the standards of living of the population. But, this objective has encountered a series of obstacles. First, there are internal maladjustments such as the industrial concentration in the Federal District and in the Central Region of Mexico, where sixty percent of the total industrial workers and establishments are located. Second, there is the isolation of some productive regions that traditionally have been self-contained impairing the high rate of growth of economic development. Third, internal strains have emerged because of the poorly organized financial market. Individual investors show an overwhelming preference for investment in urban real estate as against industrial securities. Hoarding and the holding of funds abroad impair an already inadequate volume of savings. There is a very restricted market for governmental securities, thus curbing public investments. Fourth, there are also external problems. Trade is excessively dependent on a single country, the United States.

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There are great fluctuations in international prices for exported raw materials which are the main sources of dollar revenues.

For understandable reasons, past governments have concentrated their major resources on economic objectives leaving for the future the main task of providing social services. Much therefore remains to be done in the field of education. About fifty per cent of the population are illiterate and every year 500,000 children come of school age. About seven per cent of the population does not speak Spanish, and though this percentage is diminishing still the integration of the Indian groups with the rest of the country requires more than good intentions.

Public welfare and nutrition levels are intimately related. It is impossible to get high standards of health if the nutrition levels are low. Mexico's population is ill clad, ill fed, ill housed and suffers from a high rate of mortality particularly in the infant groups.

Ten years ago, there began an initial governmental effort to cope with the problem. But this interest was conceived and concentrated primarily in the main city, without goals and with negligible considerations of the needs

of the rest of the country. This interest has been increasing, not only because the housing problem has become more acute in the capital city, but also because the government has been persuaded that an adequate economic development may not be achieved if housing does not become a part of it. However, in a country where the major allocation of its limited resources is for Public Works, for highways, irrigation projects, electricity and the like (see Table 1), it requires a drastic change in attitudes to justify investments in consumer durable goods such as housing. In view of the extreme shortage of domestic capital for investment ($22 per annum per person in Mexico in 1951, compared with $330 in the United States)⁴, it is essential that investment be directed toward programs that will promote the development and more productive use of the country's own resources. The need, then is for a well conceived program that helps to achieve economic, social and political objectives.


The basic question for a proper housing policy is the role it can play in assisting, perhaps accelerating Mexico's campaign for economic progress and development.
CHAPTER II

A famous housing expert, when he was analyzing estimates made by some underdeveloped countries about the magnitude of their housing needs, asked, "What does it mean if the water level is 30 or 25 ft. over the heads of people if they are drowning."\(^1\)

Mexico is in this situation. Its needs are enormous and far beyond the country's present resources to satisfy these needs. Mexico in 1950, had 25.5 million of inhabitants living in 5.3 millions of dwelling units, approximately five persons per dwelling. The rate of population growth is approximately three per cent annually.

\(^1\)Bommer, J., Departmental Director, Ministry of Reconstruction of the Netherlands, wrote in July, 1952.
This rate is high compared with United States; indeed it is even higher than India. Family formation is probably increasing at a higher rate. This trend seems to be occurring in other countries also.\textsuperscript{2}

The annual housing demand, only to satisfy population growth in urban areas for the period 1950-60 is between 130 to 160,000 annually (see Appendix A). The total estimated housing production is less than 25,000 dwelling units per year\textsuperscript{3}. Moreover, the existing housing conditions are such that a more effective utilization of the stock of housing except in some limited areas is not possible. Approximately seventy per cent of the total housing is built with materials such as earth and clay which deteriorate quickly. About 85 per cent of the total housing has two rooms or less. There is much overcrowding of dwellings. There is an average of three persons per room, although in some particular locations this figure is so high as to appear incredible. There is also a lack of municipal services. Only seventeen per cent of the

\textsuperscript{2}In Mexico in 1940, 29.3 per cent of the total families have four or more members. In 1950, this percentage has raised to 35.4 per cent.

The increase in the number of U.S. families has been: from 32 million in 1940 to 38 million in 1950. In the same period the number of families with four or more children has increased one third.

\textsuperscript{3}See Chart I.
total dwellings have exclusive water facilities.\(^4\)

The housing conditions, however, are not better even in the large urban centers. A study made in 1952 by the National Mortgage and Public Works Bank to determine the housing conditions in the capital city indicated that approximately seventy per cent of the total population of Mexico City lived in substandard dwellings.\(^5\) Similar studies conducted in other Mexican cities have shown the same trends.\(^6\)

This critical condition in the supply of housing coupled with the continuous rate of growth in demand suggests that the basic question is not to satisfy housing needs, which is almost impossible, but rather one of deciding which housing needs should be satisfied first? If this way of formulating the problem is correct what factors must be taken into account?

There is more than one way of measuring housing needs depending on the purposes. These vary from:

\(^4\)For example, in Canada 74.1 per cent (1951), in U.S. 85.9 per cent (1951), in Britain 94.0 per cent (1951), in Italy 38.8 per cent (1950), in Spain 33.8 per cent (1950).


\(^6\)In Guadalajara in 1956 in a study made by the General Office of Retirement Pensions similar results were found: Gernando Carmona, El Problema de la Vivienda en México, Investigación Económica, Escuela Nacional de Economía, Primer Trimestre de 1958.
1) housing which contributes directly to added production or output, 2) housing as a consumption good as a self-justifying human preference and 3) housing for political purposes.

The first criterion is very much linked with the economic development objectives of the country and with its possibilities of investment.

The gross national product of Mexico in 1950 was approximately five billion dollars, or about 1/70 of the total product of United States. Of the total five billion, Mexico has allocated as an average thirteen percent in the last fifteen years to gross investment purposes. In millions of dollars this comes approximately to $650 annually. Given this very small volume of resources available for total investments, how much of such resources should go to housing?

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7 For the Mexican figure: United Nations Economic Commission for Latin America, *op. cit.*
8 For the U.S. figure: Max Millikan, *op. cit.*
Mexico has directed its investment particularly to those economic overhead projects basic to effective economic development with high yield in the short run. Transportation, irrigation, industries, etc., are therefore top investments priorities in the list of Mexican development investments.¹⁰ Social overhead projects as housing require a considerable period of time before their yield can be realized in financial terms. But nevertheless, these projects are sometimes essential to effective economic growth and must complement and in some cases precede development. To accelerate economic development the role of housing is to serve as a producer's good and as a necessary complement to other kinds of investments. To this degree the problem is not a choice between housing and other kinds of investments. The problem is therefore, how much housing we must have in order to make some other kinds of investment actually pay off.¹¹ Although this criteria is clear enough, it may be quite a difficult one to apply in practice. However, only by detailed examination of what development programs are of high priority and also what the situation is in local and regional housing markets, can one determine whether additional housing will be needed to assist these

¹⁰See Table 1.
¹¹Max Millikan, op. cit.
development programs; and if so, where, how much, and what type.\textsuperscript{12}

At the same type regardless of the deplorable conditions of existing housing in Mexico, it would be unwise to eliminate almost any utilizable housing space until the quantitative requirements are satisfied. "Slum clearance with rare exceptions will be the most myopic and ineffectual remedy for poor housing conditions," one housing expert has said.\textsuperscript{13} A similar emphasis is evident even in a country like Britain. British experts have stated that "Until there is a general relief of the shortage of accommodations for all sections of the community it is unlikely that redevelopment will go much beyond the replacement of war damaged property."\textsuperscript{14}

Charles Abrams has argued for an opposite policy than the popularly accepted fallacy that the best way to get rid of slums is to tear them down.\textsuperscript{15} The reasons he gives are:

\begin{itemize}
\item \textsuperscript{12} Lloyd Rodwin, \textit{op. cit.}
\item \textsuperscript{13}Ibid.
\item \textsuperscript{14}Stephenson, Gordon, United Nations, Department of Social Affairs, \textit{Urban-Land Problem in the United Kingdom, Bulletin 6.}
\item \textsuperscript{15}Abrams, Charles, \textit{The Future of Housing}, Harper and Brothers, New York, 1946.
\end{itemize}
a) Slum dwellings undesirable as they are serve as a temporary useful purpose by providing slum dwellers with a place to live until alternative accommodations are made available.

b) An oversupply of substandard dwellings is more advantageous to the occupants than a shortage, because it tends to hold rents and values down while a shortage boosts rents and values.

c) An oversupply makes it easier to build projects on slum sites.

For these reasons it would seem that until an adequate pool of sound housing is made available for slum occupants, slum elimination should not be required.

Still another economic consideration may be the multiplier effect of investing capital in housing compared to other alternatives. Conceivably in some economies, the combination of the production coefficients involved and the secondary and tertiary effects produced by investments in housing may provide more significant economic stimuli to the economy that some other investment alternatives. Although there are technical difficulties in obtaining accurate or appropriate data, these relationships can be in large measure ascertained using input-output matrices.
In the case of Mexico, the Office of Technical Studies of the Bank of Mexico, has developed first approximations on this subject which suggest that these multiplier effects are of considerable significance for housing investments, yielding higher capital-output ratios than other alternatives.

Unfortunately I did not receive this data on time to include it in this study. However, in the U.S. the capital-output ratio for housing is roughly estimated at seven. Petroleum and natural gas is about 4.3; steam railroads are 3.2; steel mills only 1.8.\textsuperscript{16} If our objective is to obtain the highest multiplier effects, and if these United States ratios are at all representative, investments in housing should be maintained at the upper limit of requirements.

One second criterion was to evaluate housing as a consumption good or as a self-justifying human preference. It may be necessary to build housing to satisfy these preferences, because of the political pressures; but there is going to be a residue of housing needs which cannot be satisfied for a long time and that will be aggravated by population and family growth. Housing built on such a

\textsuperscript{16}Max Millikan, op. cit.

Capital-output ratio is the amount that must be invested in new capital equipment to get one additional dollar's worth per year of added income.
basis must try to serve with meager outlays mass requirements, particularly those in the low-income level. According to 1950 Census figures, 34 per cent of the total Mexican families received less than eighty dollars per month and 62 per cent less than 25 dollars. Even allowing for some over-statement in the figures, there is an obviously grave problem.

Programs then that can channel investments into low-cost housing and self-help programs using the existing human and material resources, are probably the sole means of providing housing assistance for these groups. Very few other programs may be able to mobilize these resources. Housing through these means may contribute thus to advancement of productivity in general and by helping to improve health and increase longevity, may in the long run acquire cumulative importance as an aid and incentive for effort, for savings, perhaps even for education.

Although these criteria are clear enough, some other factors must be taken into account to formulate a housing policy. One of such factors is the interdependence between housing policies and urbanization objectives. Economic development invariably forces population redistribution which in turn means radical changes in the basic pattern and structure of man-made environment. Economic
development creates cities for better or worse.\textsuperscript{17} Ernest Weisman analyzing the problems of urbanism in the less industrialized countries remarked: "As the developing countries with predominantly rural subsistence economies enter into contact with the expanding world market, urbanization becomes more rapid and massive, leaving often in its wake serious diseconomies, social maladjustments and urban slums and blight."\textsuperscript{18} Certainly these problems afflict Mexico. In 1940, for example, 35 per cent of the Mexican population lived in urban areas, 26 per cent of such figure lived in cities up to 100,000 inhabitants. In 1950, the figures were 42 per cent and 35 per cent respectively. Such rapid change in urbanization has by and large resulted in worse housing and living conditions.

Mexico, however, still is a country of only one great and congested city as the primary focus for national development.\textsuperscript{19} The high costs of maintaining this city

\textsuperscript{17} Bauer, Catherine, United Nations Manuscript, Economic Development and Urban Living Conditions, 1955.


\textsuperscript{19} The population of Mexico City was 1.8 million in 1940, approximately nine per cent of the total population of Mexico. In 1956 the figures were 4.5 million and fourteen per cent, respectively. An increase of five per cent in relation with the total population of the country.
may be retarding the process of development. In Mexico, the critical problem is to create a more rational pattern of urbanization for millions of additional people and the new nonfarm jobs required to support them. But, "whenever the dynamic process of industrialization and urban growth is on the upward curve in a country with limited resources, no pattern will be successful unless it is closely related to overall trends and policies with respect to economic development, population distribution and the location of employment." 

Housing policies therefore might be used along to complement other developmental tools to guide urbanization in a national pattern that would favor gradual progress in the social environment with minimum expenditure. As the United Nations Housing Mission to South and Southeast Asia put it: "Housing programs must reflect basic decisions on the distribution of industry, agriculture and mining, new settlement or resettlement and concentration and dispersion of cities." 


21 Catherine Bauer, *op. cit.*

Summary:

We have discussed above the need for deciding which Mexican housing needs should be satisfied first. We have set up a system of criteria to direct housing investments that can serve as a basis for formulating a housing policy for Mexico. To achieve this purpose the Mexican Government must estimate the magnitude and location of national housing needs.

All the housing requirements of those economic activities that can add output to the country must be considered. The type, number and housing location will depend in resources available and in the priorities of development. The private contribution also should be considered in the formulation of the program, not only in the form of capital investments but also as a liaison between the federal government and the people. Some analysis is necessary to estimate the possibilities of this sector to resolve the housing need for low-income families by means of premiums or inducement mechanisms, etc., and the share that self-help housing is going to have in the program.

Through this program or plan, based on local and regional objectives and with the help of some planning tools as capital programming, regional planning, etc., the federal government could allocate gradually in yearly in-
vestments the resources for housing necessary to satisfy the economic and social development purposes. The magnitude of the program would depend on the total resources available. More careful study, by a Presidential Commission will be necessary to fix some of the details of the program such as the administrative obstacles to carry out this program at a national scale. Also the way in which the Federal contribution is going to be established and the share of States and Municipalities.

However, this plan calls for an adequate and efficient use of the existing housing mechanisms. Production, finance and administration of the housing problem must be coordinated and well integrated to assure an optimum utilization of the meager resources. This study is going to explore which are the existing gaps in these housing mechanisms and which are the needed reformulations and approaches that the Mexican government should follow to carry out this program effectively.
CHAPTER III

This chapter will analyze the building industry, including related materials industries, labor and self-help. This analysis is necessary because the nature of the housing policy depends on the characteristics of this industry. To solve the housing problem, a strong and well integrated industry is required. The aim of this chapter is to review the adequacy of this industry as a basis for a policy in this important sector of the economy.

The building industry in Mexico has shown a marked upward trend in volume of production in the last
fifteen years. In 1950, 170 million dollars had been invested in this industry.\(^1\) In relation to the whole economy these investments represented four per cent of the gross national product.\(^2\) The production, however, is still picayune compared with the present demand. It has been estimated that approximately 25,000 d.u. are built annually in Mexico as against 130 to 160,000 d.u. that the country needs to satisfy only population growth (See Appendix A).

What are the factors responsible for this low level of productivity and what measures are necessary to increase the existing production? To answer these questions two aspects of efficiency in the housing production process will be examined: first, efficiency in the process of construction; and second, efficiency in the building materials industry. Subdividing in this way the production process will facilitate analysis and recommendations for each of the components of the building industry.\(^3\)

Construction Industry:

Housing construction is usually held to be a branch of the building industry in general. In its pre-

\(^1\) This is an estimated figure that embraces the building industry and related materials industries. Censo Industrial, 1950.

\(^2\) United Nations Economic Commission for Latin America, op. cit.

\(^3\) Most of the Mexican data that I have analyzed about this industry breaks the given figures in this way, including the 1950 Industrial Census.
The present state of the building industry has not succeeded in satisfying the need for housing complementary to development. Its results are the typical housing of today: inadequately planned, of costly construction, not up to technical standards; built by primitive and unsatisfactory labor because of the absence of a tradition in craftmanship and of well-established and integrated trade unions. In general, the weakness of the construction industry is shown by:

a) The small scale of building operations.

b) The lack of organization of the construction industry itself.

Scale of Building Operations:

Operations in the industry are carried out on a small scale. This situation affects the extent in which repetitive processes and mechanized productions are economical.\(^4\) Two factors are associated with the scale of operations; a) the size of the local market and b) the firm's size.

Size of the Market:

The size of the local market is particularly important since the product (the house) is characterized by its fixity of location. In underdeveloped countries,

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this factor becomes essential because the disproportion in size between the capital city and the other urban centers is enormous. Table 2 shows the population of the ten main cities of Mexico. The volume of construction is therefore affected greatly. If the new construction is assumed to be equal to 2.5 percent per year of the existing housing supply, the entire annual market for the Federal District would be 10,000 d.u., for Guadalajara, the second largest city around 1200 d.u., for Monterrey 1100 d.u., and for a city of 25,000 population the annual market computed on this basis is likely to be in the neighborhood of 60 d.u. The scattered distribution of the Mexican cities also contributes to the low level of mechanization because of increasing transportation costs and the diseconomies of production. However, these figures are only hypothetical. Actually, the Federal District with twelve per cent of the population of the country absorbs 55 per cent of the total investments in residential construction. Concentration of firms in the capital city results in a divided market, and therefore in decreased possibilities for using adequate machinery and

5Approximately the building rate in 1950 in the Federal District.

6Ramírez, Gómez, Ramíón, El Problema de la Habitación y los Niveles de Vida, Niveles de Vida y Desarrollo Económico, Escuela Nacional de Economía, Universidad Nacional Autónoma de México, 1953.
for economies of scale which inhibits the entire production process and increases housing costs. Establishments of regional plans to organize housing construction in particular locations are essential to decentralize activities from the Federal District. These plans may be one of the mechanisms to determine how to maximize the contributions of the available resources.

Another important factor that contributes to a low level of production is the limited effective housing demand. 62 per cent of the total families in Mexico have an income of less than thirty dollars per year. Private enterprise has not provided assistance for these people. However, a part of this potential demand can be made effective by means of subsidies or other financial mechanisms that may enlarge the existing housing market served by private mechanisms. These measures would increase the possibilities of standardization of parts and the large scale of operations. However, the low level of the Mexican resources restricts this solution. The other part of this potential demand may satisfy their housing needs only through aided self-help housing techniques. How much of the potential market can be the share of the building industry and how much the share of self-help programs? A rough estimate

based on the income level of the Mexican people and in the cost average of residential construction built by private enterprise (See Appendix B) shows us that approximately 65 per cent (2/3) of the total housing need, should be satisfied by self-help programs and only 35 per cent (1/3) by the traditional construction system.

Even allowing for some margin of error in the figures, it is clear that the building industry will have only a small share of the total market unless and until the income levels are raised significantly. It is therefore essential to give emphasis to these requirements in our housing policy. A dual solution seems to be necessary: first, leaving the existing industry to serve this third of the market with attention to low-cost housing; and secondly, encouraging new types of building materials in the industry to assist self-help techniques.

Firm's Size:

According to 1950 Census figures, 128 firms were engaged that year in housing construction. However, a great majority of temporary builders, either home-owners or professional builders who built one house

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8 The 1950 Industrial Census gave this figure for the whole construction companies operating in that year in Mexico. However, a great number of these companies are operated at other levels besides the residential.
a year. According to the 1950 Industrial Census, seventy per cent of the registered building enterprises were operating with less than 20,000 dollars of capital invested; 25 percent with less than 5,000 dollars. This situation produces a low level of investments in tools and equipment and as a consequence a low level of production. There are no data available on the percentages of houses built by different sizes of firms. But, there are few firms that produce twenty or more houses per year. Few companies are engaged exclusively in housing construction and in low-cost housing almost none.

As a consequence of the small size of operation, the housing construction industry is weak in resources and organization. This in turn results in minimum profits, which of course are no inducement to greater progress and development. There are—on the other hand proportionately high costs per unit. It is evident that very great economies could be made by the use of large-scale construction methods which might well balance some of the diseconomies of scale. There is also an important field of research in this aspect of the construction industry; not only statistical research, since most of the data is incomplete, but also technical research to determine different behaviors between size of firms and efficiency in qualitative as well as quantitative terms and relationships between price and cost by type of structure.
In brief, the small size of the market and the firm's size have had an important effect on the production of houses. A policy to strengthen the building industry must take into consideration the necessary decentralization of some building activities from the capital city and the need to enlarge the market by inducements in cost reduction, increases in scale of operations, or introduction of self-help methods. Self-help programs are all the more essential since 2/3 of the housing need must be satisfied through these means.

Organization of the Industry:

The organization of the housing construction industry has contributed in a high degree to the low level of productivity.

The producing agents of the industry may be divided into two groups: the managers of the industry such as contractors, financial institutions, architects or city planners; the other, labor, skilled and unskilled. The first group provides the management of the industry but the second also has an influence on it, both through union activities and also because it actually influences through the work activities, with some degree of independence.  

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In Mexico, the industry is so organized that there is little opportunity for very careful supervision, and most of the construction details are wholly the responsibility of the skilled workman. Also, in contrast to other industries, the home-purchaser has greater control over the end product and decides not only its character but also its construction process. 10

Where city planning and regulations have not been effective, the work of land developers in most instances has been injurious to the industry. 11 Almost all new subdivisions have imposed extremely rigid and artificial restrictions on building. There are very few architects who have specialized in low-cost housing. Architects in general have preferred to devote their attentions to higher-priced housing. Contractors and subcontractors intervene widely in the building industry. Since the various projects require different kinds and proportions of skills and facilities, the subcontractors are at the base of the building organiza-

10 Colean, Miles, American Housing, The Twentieth Century Fund, New York, 1944.

11 Few cities in Mexico have a Master Plan or planning regulations and controls. Those which do have, do not use them in an appropriate way to fulfill the city planning objective. As a consequence, disorder and confusion characterize land uses in most Mexican cities.
tion, with the general contractor or builder performing managerial functions of a highly variable type. "The widespread use of subcontracting has important effects on the cost structure and price behavior in construction." For the general contractor or homebuilder it has converted the fixed costs involved in machinery and equipment into variable costs and thus has reduced risks. However, the subcontractor operates with lack of capital, with very few tools and equipment creating increases in the housing costs.

The labor situations contributes also greatly to this low level of efficiency. There are a great majority of weak and scattered small unions. In 1953, 578 construction and building materials unions operated in Mexico involving 57,000 workers, approximately sixty per cent of the total labor force engaged in the industry.\textsuperscript{13} The union activities are characterized by small attention to the workers, by emphasis on the fees and by ignoring social benefits. Because of the impermanent nature of the jobs, expenditures on social benefits in the building industry are negligible compared with other industries (See Table 3). Measures to increase management efficiency and labor productivity are therefore of great

\textsuperscript{12}Grebler, Leo, \textit{op. cit.}

\textsuperscript{13}Mexico, Secretario del Trabajo y Previsión Social, \textit{Memoria de Labores}, 1957.
importance. It is also necessary to encourage a better quality of managerial personnel. Actually, they are badly trained and they lack initiative and vision. A well organized study with emphasis on the actual situation of the industry and of its possibilities, may help to foster interest of these groups towards this industry, raising the quality of the managerial personnel.

Possibilities of Self Help:

In highly organized societies, houses are usually constructed by experienced builders using commercial materials erected by skilled labor in accordance with established building codes. After construction families move in and undertake to pay for having the houses built for them by others. In many countries, families except those in the higher income groups, build the houses they occupy. Self-help is the accepted way to build a house using local, readily available materials, and the labor of each family. 14 Time, equipment, materials, space, human labor are important elements to this technique. Perhaps most urgent of all is initiative - the desire of people to raise their own standards

of living. In Mexico, the production of rural houses has been mostly without the aid which is so essential to any good self-help program. Often the self-help house is a small hut, without sanitary facilities and subject to rapid deterioration. Probably two million houses (forty percent of the existing supply) have been built in this way in Mexico. 15

There is a need for a policy in this sector of the building industry. The existing organization of the housing construction has not been oriented to provide material, technical or financial assistance for this technique.

In brief, the present organization of the housing construction industry reflects the low and erratic demand for housing, and in turn this organization contributes to a low level of production. It is necessary to change the level of demand and to modernize the industry. These changes will require higher quality of managerial personnel, large scale housing operations, measures for providing technical training to workers, stimulating more

15I have estimated this figure based on the existing rural condition, and considering that towns below 2500 inhabitants have been built using this technique.
responsible union activity, identification with productivity; and a policy for encouraging self-help methods in both urban and rural areas.

Construction Materials Industry:

One of the most important factors of the building industry is that connected with the production of its basic materials. Housing as an article of use, is in a very special position since it can be characterized by its fixity of location, its durability, its great bulk and weight and its extraordinary complexity. All these characteristics bear on the organization of the industry producing it.

100 million dollars have been invested in this industry in 3000 enterprises until 1950. The number of workers was 70,000 for the same year. The industry ranks third in the number of employees and sixth in the capital investments (see Table 3). So its importance in the economic development of Mexico is enormous and its

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16 Grebler, Leo, op. cit.
17 This figure does not include investment in the building industry only in related materials industries. 1950 Industrial Census, op. cit.
growth will contribute indirectly and directly to the industrialization of Mexico.

Table 4 shows the capital investments in nine building material industries. These investments are high when it is considered that for process requirements the final product needs to be elaborated using very expensive machinery - as in the cement industry. However, in the brick, lime, mosaics and granite industries where it is possible to avoid mechanization, these investments are relatively low: ninety percent of the brick firms, for example, have less than 4000 dollars of capital invested; ninety-five percent of the mosaics firms have less than 500 dollars. Research is needed to determine if mechanization in these industries would reduce material costs.19

There is almost free competition between firms. There are, for example, 1398 brick firms and 277 lime firms without having any one a markedly production that might influence strongly the market. The consequences are reflected in the variable qualities of the products.

The small size of operations in housing construction has affected the size of the related industries

181950, Industrial Census, op. cit.

19Some industries that have been intensively mechanized in Mexico, have greater production costs than before mechanization.
and the level of standardization of building materials. This factor has been complicated by the building trend that is oriented towards building of luxury houses. As a result, many industries produce costly materials, increasing therefore investments in machinery and in capital. For example, ninety percent of the investments in the glazed tile industry are up to 80,000 dollars per industry.\(^\text{20}\)

In recent years demand in luxury housing materials excessively increased as a consequence of investments in related industries. However, this abnormal period endured only for a short time. Because of this situation a great number of these industries now work below capacity.\(^\text{21}\)

This situation is dangerous for a country where investments must be oriented to maximize returns with a wise allocation of scarce resources. A well formulated policy towards low-cost housing and self-help housing, will try to minimize low rates of utilization in related industries, increasing the level of standardization and the economies of mass production.

However, this low level of productivity is related also to the labor situation. The wage structure is low and below the averages of other industries (see

\(^\text{21}\)Excelsior, Mexico, D.F., la pag., 5a column, Febrero de 1958.
Table 3). In relation to social services (social security, medical services, indemnization, retirement, etc.), the situation is worse (see Table 3). With so few investments in social benefits and with a low level of wages and salaries productivity undoubtedly is low.\textsuperscript{22} This situation is reflected in the high costs of materials.

There are also other structural obstacles which count very strongly in the production process and in the low level of productivity. One of these obstacles is the shortage of electric power which directly affects the construction industry. This shortage is common in many regions of Mexico. In addition there are transport difficulties in many places, caused by inadequate equipment or by the poor conditions under which transportation equipment is working. These difficulties affect the supply of raw materials and fuel, increase cost by requiring the maintenance of abnormally high stocks, or cause some industries to be located in less satisfactory areas. Only by effective regional planning can these situations be minimized and the available resources utilized at its maximum.

\textsuperscript{22}These social service, etc., are related exclusively to the building materials industry. Data is different from the construction industry. See footnote no. 3.
Analysis of the Cement and Steel Industries:

In Mexico, the steel and cement industries are intimately related to the production of houses. A great deal of new housing has been built using these materials, and it is expected that this tradition will continue. Furthermore, a policy to increase self-help programs has been proposed in this chapter; weaknesses in these industries weaken the production process and may handicap the proposed policies. What are the possibilities of these industries in confronting the housing problem and what should be their contribution in a national housing policy?

There are two guiding, general principles:

(a) In a fast developing country, such as Mexico, economy is always essential, even where some materials seem to be in ample supply. What is not used for housing, will be needed elsewhere to help build up the national economy. Waste is harmful and should not be tolerated either in public works or in private enterprise.

(b) Materials manufactured in Mexico are preferable to imported materials which are a burden on the foreign exchange account.
Cement:

The Mexican cement industry has made great strides in the past fifteen years; production is now above national requirements.\(^{23}\) The growth in the industry's capacity was achieved both by the building of new factories and by enlarging the capacity of existing ones. But in its best years, the cement industry has never operated at more than 83 percent capacity and 1950 production was only 70 percent of capacity.\(^{24}\) (See Table 5).

By the introduction of self-help programs, however, the demand for cement is going to increase steadily. Some measures are necessary to reduce cement consumption in connection with self-help housing projects.\(^{25}\) For example, lime mortar might be used in place of cement concrete in foundations and in other places where reinforcement is not needed. Many Mexican soils can be used for the manufacture of stabilized earth blocks which require a few amounts of cement.\(^{26}\) Research is essential to provide economies in the use of cement for this kind of program.

\(^{23}\) Installed capacity in 1957 amounted to 2.3 million. Consumption in turn was 2.2 million. Banco Nacional de México, S.A., Review of the Economic Situation of Mexico, December, 1957, Vol. XXXIII, No. 385.

\(^{24}\) International Bank for Reconstruction and Develop., op.cit.

\(^{25}\) A self-help housing program of 30,000 d.u. per year will need approximately 250,000 tons of cement per year considering an average of 8 tons of cement per dwelling.

\(^{26}\) Housing & Home Finance Agency, Earth for Homes, Ideas & Methods Exchange, No. 22, Washington, D.C.
Steel:

The steel shortage is the most serious of the problems affecting the building industry. Of the estimated 600,000 tons of iron and steel consumed in Mexico in 1950, sixty percent was provided by domestic production and forty percent by imports.27 (See Table 6).

The considerable increase in domestic consumption of iron and steel since 1939 and wartime difficulties in importing them, stimulated an expansion, which increased the capacity of the iron industry nearly four-fold and more than doubled the capacity to produce steel.28 In 1957, steel production rose to almost 900,000 metric tons. Early in 1958, two plants will increase their output to 710,000 tons a year and at a little longer range the other one is engaged in a program to increase capacity to 450,000 tons yearly.29 Economies can be made in the use of steel by adequate construction methods and by the use of new materials, both of which may be feasible in self-

27International Bank for Reconstruction and Development, op. cit.

28Ibid.

29Banco Nacional de Mexico, op. cit.
help housing. Research is essential for further savings in connection with these programs.

In brief, the need for cement and steel can be adjusted by a well formulated housing policy to other needs, existing supply and exchange requirements. Similarly, if regional planning should go hand in hand with the future location of these industries and new housing, it will help to achieve substantial economies that will benefit the whole building industry. Research is essential to test new materials and new techniques that will help to reduce low-cost housing costs.

**Summary:**

In the light of all these facts, there are some necessary reformulations to make in the building industry, considering the three criterias established for the allocation of the Mexican scarce resources and the existing low level of productivity:

1) The establishment of regional planning organs as a tool to help decentralize some building activities from the capital city and to coordinate housing policies with development objectives.

2) Possibilities of reducing costs and enlarging the market by means of subsidies or other induce-
ment mechanisms that may contribute to the development of medium and big firms and to the use of large scale construction methods.

3) Standardization of building parts and dwelling units to avoid waste of materials and time.

4) Measures to provide technical training to workers to increase their efficiency.

5) Consolidation of scattered and weak unions to provide better social services to the workers and greater association with increases in productivity.

6) Encouragement of self-help and mutual aid systems in both urban and rural areas and to provide them with technical and financial assistance.

7) Encouragement of the production of low-cost materials in the building industry to help in the development of self-help and mutual help programs.

8) Adjustment in the emphasis on cement and steel industries and supply factors, to assist future expansion of housing programs and exchange requirements.

9) Research to develop new materials to assist the low-cost housing building industry and to improve the actual system of construction.
CHAPTER IV

This chapter will explore present financial mechanisms through which housing is now made available to the Mexican people. The principal mechanism is private enterprise which supplies approximately 92 percent of the total volume of production.¹ However, the government is now intervening more actively, particularly in shaping the level of capital investments. Therefore, the present government policies will also be studied.

¹See Chart I.
Private Mechanisms:

The private financial mechanisms that are engaged in housing activities are: Insurance and Guarantee Companies, Industrial Entrepreneurs, Mortgage Banks and Housing Savings and Loan Banks.

Insurance Companies:

Since 1956 when Congress approved an amendment to the Insurance and Guarantees Companies Law with the purpose of channeling ten percent of the technical reserves into housing, these companies have become an important potential influence in attacking the housing problem. The ten percent of the technical reserves must be invested in two forms: five percent in the constructing of either a) low-rent housing below thirty dollars per month, or low-cost housing for sale purposes with long amortization payments; or b) in mortgage loans with low interest rates (seven percent) for low-cost housing construction and only in these cases when the borrower will occupy the property; the other five percent in mortgage bonds issued by the National Mortgage and Public Works Bank. All these investments do not

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interfere with the additional 25 percent of total capital reserves that these companies must invest in Government securities. The Ministry of the Treasury with the advice of the National Housing Institute controls the allocation of these resources into housing.

In 1940, the Insurance Companies had 17.3 million dollars in technical reserves and 24.5 million dollars in total capital; for 1956, technical reserves amounted to 101.8 million dollars and total capital to 160.0 million dollars. This rapid increase will help to channel a significant level of investments into housing.

Industrial Entrepreneurs:

Industrial entrepreneurs with more than 100 employees under section XII, Art. 123 of the Mexican Constitution are obligated "To provide housing to their workers charging no more than \( \frac{1}{6} \) percent of the total value of the house." \(^4\)

\(^3\) Nacional Financiero, S.A., El Mercado de Valores, Año XVII, No. 43., Octubre de 1957, Pag. 518.

Few industries have obeyed the law. A metallic furniture company has built a model worker neighborhood in the vicinity of Mexico City. Three other industries are building Sahagun City, an industrial new town 100 miles away from Mexico City. Other enterprises are engaged in providing low-cost housing in Tlalnepantla, an industrial town in the state of Mexico; and still others are providing workers housing in Monterey and Monclova. But these are only a few efforts in comparison to the total number of large and medium industries that exist in the country and that are doing nothing. Such a solution is difficult, however, for those industries which have a lack of capital. Sometimes the required housing investments for these industries are higher than the expenditures in machinery and industrial buildings.

Unions, too, have been asking for workers housing and some strikes have produced grants and "stimuli" to continue their efforts, as in the electric and sugar unions. The grants have been mostly in rent payments. But in some cases, as the Telephone Unions, grants have been given for the entire construction of neighborhoods. Each of these unions has strong influence in the Labor

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5 Secretario del Trabajo y Prevision Social, op. cit.

6 Ibid.
movement of Mexico and the consolidation of their efforts will represent a large benefit for the working class of the country.

Mortgage Banks:

The Mortgage Banks numbering two in 1930 and twenty in 1950, have devoted themselves almost exclusively to urban real estate activities which in 1948 accounted for over 95 percent of their loans.\(^7\) They function by issuing securities of their own secured by mortgage loans which they themselves have made, and also by guaranteeing mortgage certificates issued by individuals and firms. In 1939, five million dollars were granted in mortgage credit and forty million dollars in 1950.\(^8\) Credit is usually granted at a ten year basis with interests rates of eight percent and nine percent annually. Their activities are exclusively concentrated in medium income families with little attention to low-income groups.

\(^7\) México, Secretario de Económico, Dirección General de Estadística, Instituciones de Credito Privadas, México en Cifras, 1952.

\(^8\) Ibid. See also Simon Hanson, Economic Development in Latin America, Inter-American Affairs Free, Washington, D.C., 1951.
Housing Savings and Loan Banks:

It is not possible to say much about these Banks. Their capital is limited (0.7 million dollars in 1956 for only three institutions that are operating in Mexico\(^9\)), and their operations are concentrated in the Federal District. Housing credit is granted at ten or fifteen year basis. The borrower must save at least fifty percent of the total value of the house. This financial requisite restricts the intervention of low-income families in the system.

We have to call attention to the fact that there is not national system of mortgage banking credit or a reserve national insurance policy to encourage housing construction in a specific direction. This situation has produced first, an overwhelming concentration of all the mortgage activities in one or two locations with a restricted market to mortgage securities, and second, little or no system of incentives to low-cost housing construction particularly in such housing complementary to development.

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\(^9\)Savings Banks, however, increased from four in 1936 to 250 in 1948. Savings deposits have had an increase of 173 percent from 1944 to 1950, but there is no data available to know how much of these deposits have gone into housing.
A more efficient mortgage banking system linked with a mortgage insurance policy, will assure a fast assistance to those regions where development programs are in effect and where housing is needed to assist in productivity.

Volume of Housing Construction in the Private Sector:

Private investments in residential and industrial construction as percentages of gross investments have varied between seventeen percent in 1939 to fourteen percent in 1950. However, in millions of pesos have raised from $110 in 1939 to $360 in 1950 (see Chart I). These figures embrace residential as well as industrial construction. However, Antonio Carrillo Flores, Finance Minister of Mexico, has estimated that approximately 3/4 of the private construction investments were directed to residential construction.\(^{10}\) If so, Mexico is allocating ten percent annually of its total gross investments to residential construction. It is a small percentage considering, for example, the United States were approximately between 22 to 25 percent of total gross investments are allocated in residential construction.\(^{11}\)

\(^{10}\) Simon Hanson, *op. cit.*

\(^{11}\) Max Millikan, *op. cit.*
There are not enough data to know exactly the number of dwelling units built annually by the private sector. However, some estimates have been made based on figures for the Federal District and in the consumption of building materials. These estimates set approximately in 23,000 d.u. per year the volume of private residential construction. In 1950, 58 percent of these total private residential investments were concentrated in the Federal District. The average cost of a dwelling was 4000 dollars in 1950 as indicated in Chart I.

Role of the Public Sector:

Government intervention is the housing field has been approached by means of two different policies; (1) channeling private investments into low-cost housing, and (2) intervening with the production of low-cost housing in the housing market. Since 1917, the Mexican government has shown interest in doing something about the housing problem. In Sec. XII, Art. 123 of the Mexican Constitution

12 Nacional Financiera a Government agency has made these estimates. See Ramón Ramírez, op. cit.

13 This figure is for the whole country including the Federal District.
promulgated in that year it was decreed that "industrial entrepreneurs must provide their workers with comfortable and sanitary houses." However, this law has only been followed in exceptional cases and only recently has the National Mortgage and Public Works Bank provided support with financial aid.

The beginning of a national policy on housing started during the 1934-40 period.\textsuperscript{14} In 1936 the Federal District Government created the "Promotion Council of the Low-Cost Housing Construction" as advisor organization and the "Housing Promotion Bank" as a financial organization to concern itself with the housing situation.\textsuperscript{15} However, the Bank's life was short. In 1939 it was consolidated in a new organism - the National Mortgage and Public Works Bank.

In 1940-46 the Social Security Law was passed with an important chapter for the placing of the technical reserves of the Mexican Social Security Institute into low-cost housing. Twenty percent of such reserves must be invested: (a) in low-cost housing for workers, (b) in mortgage loans or bonds. It was, however, until 1954 that these reserves were used to satisfy the

\textsuperscript{14}I have used six year periods because that is the usual Presidential term.

\textsuperscript{15}Agustín Acosta, op.cit.
purpose intended.

During 1947-52 important measures were adopted, in particular the amendments to the Retirement Pension Law and the Organic Law of the National Mortgage and Public Works Bank. These amendments made it possible for the General Office for Civil Retirement Pensions and the National Mortgage and Public Works Bank to engage in housing production for low-income families. Most of these programs have been concentrated in the capital city.

During the period 1952-57 the National Housing Institute was created. This agency has as its first responsibility to "coordinate the housing efforts of all the public organisms." Other of its duties are to serve as advisor to the President "for the creation of stimulus that can encourage private investments into housing." However, this Institute is working badly. It really does not have power and has few achievements to its record. Its work has been concentrated exclusively in research. Most of its studies, however, have duplicated data already known. Until this Institute gets some power, few important achievements can be expected.

16 Agustín Acosta, op. cit.
In 1956, the Property Tax Exemption Law for low-cost Housing was just put into effect for the Federal District and Federal Territories. The purpose of this law is to grant property tax exemptions for fifteen, twenty, or thirty years to all the property owners that in a five year term build single or multi-family dwellings charging rents below thirty dollars per month. This measure, however, is not so attractive if we consider the inflationary pressures of the Mexican economy and the already low levels of property assessments in Mexico.

In the same year, Congress approved a reform to the Insurance Companies Law with the purpose of channelizing ten percent of its technical reserves into housing and a similar percentage was approved for the Guarantee Companies to cover the same purpose. Finally, in January, 1958, a decree was approved establishing that all the Autonomous Public Agencies and State Enterprises must make investments in bonds issued by the National Mortgage and Public Works Bank, considering "that it is of community interest to support the realization of works that will promote and develop low-cost housing and municipal services."

17 Banco Nacional de Comercio Exterior, op. cit.
18 However, there are no provisions in the Law related with housing standards, that must certainly complement such a decree.
Besides these undertakings, other agencies have promoted housing such as the National Army and Navy Bank which provides credit for servicemen and veterans. The National Indian Institute helps in housing construction for the Indian groups. Mexican Petroleum has built low-cost housing for its workers. Also, the Regional Commission at Paploapan and Tepalcatepee have built some houses. However, the programs of all of these Agencies do not have the importance of the Institutions mentioned earlier. 20

Volume of Housing Construction in the Public Sector:

In regard to public housing investments, they started in 1947 (see Table 7), the year that the National Mortgage and Public Works Bank and the Office of Retirement Pensions started to operate intensively in housing construction. In 1950, public investments in residential construction represented one percent of the total gross domestic investments. In millions of dollars around $7.00. 21 The number of dwelling units built in that year

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20 See Appendix C for a more complete information about the work done by each of the principal Agencies.

21 International Bank of Reconstruction and Development, op. cit.
by the public sector were less than 2000.22 And the average cost was around 3500 dollars per dwelling. Government policies have been oriented towards medium cost housing and favouring particular groups with emphasis on the medium income families. A self-help housing policy favouring low income families could have produced better results with the same expenditures. For example, an average cost of a self-help dwelling is around 350 dollars.23 With similar governmental expenditures that in 1950, ten times more dwellings might have been built in that year. This is of course, would imply a more efficient building and materials industry and a clearly formulated self-help policy.

22 See Table 7

Evaluation and Summary:

There have been in the last years many decrees dealing with the housing situation. But few have had federal character. Indeed, most of them have been issued at a local level (i.e. Mexico City). Until now, Mexico has not had a national housing policy and a national housing legislation or mechanisms to implement such policies and legislations. There have been no clear formulations of goals; there have been movements up and down, left and right; but no coordination, no clear direction.

The existing governmental policies mentioned at the outset of this chapter: (a) channelize private investments into low-cost housing, and (b) intervene with the production of low-cost housing in the housing market have had no continuity, no explicit criteria to measure progress. The legislation exists, but little has been accomplished.

Activity in the field of low-rent housing has been discouraged because of high production costs, and no system of incentive to overcome this obstacle. The reforms to the Insurance and Guarantees Companies Law were made only one year ago, and it is still too early to estimate its achievements. These are the only two significant prospects in the private sector. Both were not voluntary
efforts. The government forced their activities. As for the other private mechanisms (unions, industrial entrepreneurs, etc.), which could serve specific groups they have not been effectively encouraged to produce results.

There is a housing cost, below which private efforts can not obtain reasonable profits. Below this cost it is necessary for the public action, either to stimulate low-income housing projects perhaps with subsidies to public agencies or directly to families. To date, the Mexican government policies have followed the first alternative, without subsidy. And they have failed to produce any significant amount of low-cost housing. Greater sums have been expended in huge housing projects, but low-income groups have not been benefited. The benefited groups are the medium-income families. Low income groups have been ignored. However, the present approach seems to be competitive with the private mechanisms, since both of them are constructing for the same type of families at approximately the same costs. The National Mortgage and Public Works Bank merits some of the blame in this situation. As a semi-public agency with a large amount of capital in private hands, it wants projects producing rapid benefits with low risks. The program that best fits these purposes is housing for medium income groups, since the financial risk in serving such groups is reduced.
No states until now, have undertaken measures to resolve their particular problem. Mortgage Banks and Home Loan and Savings Banks are unknown in many of them and their operations are very limited. The same is true for Insurance and Guarantee Companies. This situation is related to the heavy concentration of the economic and political activity in the Federal District. Instead of governmental measures oriented towards a decentralization policy and towards solving a problem that appears to be choking the economic development of Mexico, the major emphasis and the most ambitious housing projects are located in the most centralized zone. This approach might perhaps be justified if it were consciously sought. But without both a national housing policy and effective regional planning it is unlikely that this approach or other ones would be accomplished.

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24The states of Baja California, Jalisco and Nuevo Leon are trying to resolve the housing problem in their capital cities. But more until now have attacked the problem at a broader basis.
CHAPTER V

This chapter will summarize all of the most crucial problems in the Mexican housing situation, and the way in which they must be considered in formulating a housing policy for Mexico, according to the proposed criteria for the allocation of the Mexican housing investments.

The first need for a Mexican housing policy is to get housing, where it is most needed, in production. Has this been done? Probably not, as we have seen, because nobody has asked where is such housing necessary. Most of the new housing construction has been built to assist a social objective. Even government resources have been solely oriented to satisfy this need. Some reformulation is therefore necessary to fix the actual deficiencies and to guide policy.

- 1 -
1. To provide housing complementary to productivity, Mexico has to scale the importance of its productive activities and make a rough first approximation of the amount of housing that may be justified in relation to these activities. A more adequate allocation may be slowly approximated, as experience with development programs and further research discloses the nature of the need.

Analysis of local and regional housing markets are required in this first stage to determine whether additional housing will be needed for development programs; whether temporary, mobile or permanent, for ownership of for rent, the price and rent range, the related community facilities and standards, etc. Failure in the determination of these relationships can upset all the housing programs.

2. A great deal of this housing must be provided with government resources. It is undesirable that private mechanisms deviate their investments into housing complementary to development, even if this housing would raise productivity. Private investments are needed in more productive activities to help raise the national economy. However, if private investors want to build housing to satisfy this criteria, they can be encouraged. Public investments therefore, can be allocated into housing either
in the form of direct loans at a very long-term maturity or by direct housing construction through local housing agencies. Public investments, therefore, can be allocated and prove beneficial.

3. However, the building industry and the related material industries are not in their present state, in a position to achieve fully the goals of a housing policy complementing the development. The low level of productivity in the industry, the lack of adequate credit facilities to impel its development, and the centralization of building activities in certain regions are some of the factors that are actually choking and making difficult the appropriate development of this industry.

Measures to improve productivity in the building industry, as these suggested in the final chapter, do not guarantee - at least in the first years of the housing program - an immediate success in assisting this criterion.

There are some planning mechanisms that can minimize these shortcomings and that may contribute to foster an adequate development. Adaptation of traditional land usage measures, such as zoning and industrial location controls would probably have to be employed to effectively link the building industry with the development programs. A planning organization at a regional scale may
prove desirable, if not indispensable, to assure this perfect liaison. This agency would direct the location of housing according to the requirements of the development programs. Assisted by regional capital budgeting procedures, the agency can make possible a more refined control of public investment, modifying the scale, direction and timing of development. This would assure a more secure growth in the building industry as well as continuity in the housing programs.

The second need in the Mexican housing policy is to get housing to satisfy a social objective. The following are the factors that may guide this policy:

1. We have seen that approximately one third of the total housing market is the share of the existing building industry. Actually the building industry is only serving sixty-five percent of this share. To assist the remainder (thirty five percent; mostly formed by families which have incomes that indicate they can carry liberal term mortgages, but are restricted because they cannot accumulate the large down payments required under conventional

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loans), the building industry must build at least between 8,000 to 15,000 more dwelling units yearly. (See Appendix B).

2. The existing financial housing mechanisms which can allocate a continued level of investments into this housing criterion are the Insurance and Guarantee Companies, the Mortgage Banks and the Housing Savings and Loan Banks. To serve effectively the housing market, these investments must be directed into low-cost housing and be nationally distributed. However, the present scale of their operations is very restricted. They have concentrated their activities in few states, without attention to the housing needs of the rest of the country.

To satisfy this housing market, it is necessary to have an efficient national mortgage banking system to assist housing where it is needed, and to assure an effective decentralization of mortgage activities, and an insurance system to stimulate housing.

\[2\] In the U.S., for example, the Federal Home Loan Bank Board supervises a system constituted by Regional Banks. These banks are authorized to make loans to member institutions which might be any Savings and Loan Association, Savings Bank, or Insurance Company engaged in placing mortgages on houses or small buildings.
built at the right level and price category. This system can be used not only for financing new housing but also for refinancing existing property and for repairs.

Reformulations in the building industry to assist the new level of demand are suggested in the conclusions.

There are some city planning controls, however, as building codes and subdivision regulations that can indirectly help and assist the building industry. These controls, badly used, may harm its activities. For example, very strict building codes may damage the volume of production and the use of large scale operation.

In the case of the building material industries, a great deal of them may easily adjust to an increase in housing demand. Particularly such industries where expenditures in machinery are limited. A continued public policy of housing investments may be the answer to a steady growth in these industries.

This program can assure the building material industries continuity in the housing operations

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3 As in the mosaics, gypsum, brick, lime, etc., industries.
therefore a better utilization of the existing and future capacity. However, measures to increase labor productivity are needed to obtain a better volume of production.

In regard to the basic building material industries such as cement and steel, plans for its development are already underway. New systems of housing production would help to reduce consumption of these materials, particularly steel. These materials are essential to development programs and their use must be reduced, at least in the first year of the housing program to avoid a burden in the foreign exchange account.

Housing for low-income groups according to our criteria should be satisfied by self-help. Probably with the needs of a subsidy. So we need a program to get people to help themselves and complement a subsidy program.

Seventy-five percent of the families in this market have incomes of twenty five dollars per month or less. The subsidy needed to impel these groups to a higher housing market served by private mechanisms is enormous and not a present possibility in Mexico.

In 1970, the Mexican national income would probably have doubled the 1950 figures. (See Chart II). This increase will reduce, by one-third, the share of
the self-help programs. A review of this policy is necessary in that year to know whether it is possible and convenient to extend the mortgage reserve insurance system to assist these low income groups. Meanwhile, construction of public housing for these groups would deviate resources that are needed to accelerate the economic development of the country.

The self-help system has both advantages and disadvantages. The former are:

(a) It makes housing possible when no other alternative is open. It opposes the philosophy of waiting. Instead it offers a system that can immediately begin showing results.

(b) It increases actual wealth without encouraging inflation. The self-help system can convert spare time into wealth without competing very much with labor or materials used for industrialization.

(c) It may encourage small local industries to produce building materials.

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4National Housing Agency, Ideas and Exchanges, No. 22, op. cit.
And as for disadvantages:

(a) The system requires a "mortgage" on the participant's free time which otherwise would be devoted to more pleasurable pursuits than unfamiliar construction activities.

(b) It requires cheap land that is not often found in big cities.\(^5\)

(c) The quality of construction might be lower than that done by more skilled workers.

However, the advantages are often more apparent than the disadvantages. For Mexico this system is perhaps, in the meantime, the more effective way to assist low-income families. Financial, technical and building site aid must be provided to complement this program and to encourage the development of low-cost building material industries. It should therefore be a government agency which would organize this aid.

\(^5\)This disadvantage is not so relevant to Mexico, because there are only three cities which have over half a million population.
Summary:

We have set the basis in which a housing policy for Mexico must be established in accordance with the criterias for the allocation of housing investments.

(1) Investments in housing complementary to productivity should come from the public sector. To allocate these investments either direct loans to unions or individuals at a very long-term maturity or direct housing construction through local housing agencies are necessary.

(2) Investments in housing of social interest should be done by private mechanisms, assisted by a federal mortgage reserve insurance, to stimulate low-cost housing. These measures will help to stabilize employment in the building industry and to ensure a high and stable level of activity.

(3) Housing for low-income families should be satisfied by a self-help program. A public agency is needed to complement this program with financial aid.
CHAPTER VI

Conclusions and Recommendations

Mexican housing investments may be formulated by three criteria:

(1) Housing complementary to productivity
(2) Housing as a consumption good
(3) Housing for special purposes

In Mexico the first criterion should have investment priority. The meager resources available for investment and the importance of maintaining a high rate of economic growth are the essential factors that decide the role of the Mexican housing investments. Housing investments in this criterion may help to accelerate the process of industrialization in Mexico.
Housing as a consumption good should be encouraged only in the low-cost housing level. This kind of program may help to reduce over-capacity in some building material industries and to ensure stability in employment in the building industry. However, consumption of cement and steel must be reduced at a lower limit of requirements.

Housing for social purposes should be satisfied by self-help. This system would set free many untapped resources and would help to alleviate the discontent with housing.

Administrative Recommendations:

(1) A material housing policy in a developing country like Mexico has to be along the lines of the machinery which directs the level and location of the national development programs. It is impossible to link effectively the building industry with the development programs if we do not know the scale, direction, and timing of this development.

A national Housing Agency should be established to coordinate and direct housing investments in relation to development programs. This Agency should decide whether investments in housing should be made by
direct loans to unions or individual investors, or by direct loans to housing construction through local housing agencies. This Agency may be the National Housing Institute.

(2) Encouragement of local and regional masterplans and implementation tools complementary to them, to link the housing policies with local needs and desires.

(3) Establishment of a National Mortgage Banking System to help decentralize mortgage activities and to assist housing where it is needed. The National Mortgage and Public Works Bank should be the agency that directs the operations of this system. The main features of it would be:

(a) It should be formed by private home finance institutions.
(b) It should operate on a regional level.
(c) It should assist mortgage institutions rediscounting foreclosures mortgages.

(4) Establishment of a Mortgage Reserve Insurance System to stimulate low-cost housing construction. The chief feature of this system would be to in-
sure home mortgages issued by private institutions. With government backing, these loans would be written with less risk to the lender and consequently would be more favourable to the mortgager.

(5) The National Housing Institute may be the agency that would provide financial, technical, and building site aid to self-help programs.

Récémendations for the building industry:

(1) Credit Facilities to large and medium sized builders for the development of large-scale housing operations. This measure is now possible due to the enlargement of the market by means of the re-serve mortgage insurance system.

(2) Measures to increase labour productivity through social security, social services, training schools and strong unions identified with productivity.

(3) Standardization of building parts and dwelling units to avoid waste of materials and time.
This appendix attempts to answer the question: How much additional urban and rural housing will be needed in Mexico for the next twenty years to provide for population and family increases?

To determine housing needs it would be helpful to have information in the number of existing doubled and potential households, and of new households which will be established during a defined period. This data should be available for varying family types, sizesm and sex and age groups, etc. If obtainable, expectancy tables and information on fertility rates and family dissolution would also be helpful. Data on the existing stock of housing and in the level and trend of real income are also required. Some of the more important variables are the types and age of structures, and the number, size, tenure and location of existing houses and vacancies; also the quality of this housing; the facilities available, if
any; rents and sale prices; and the probable loss in supply during a defined period. However, estimates for Mexico's housing needs are subject to wide assumptions considering the low quality of the Mexican Census figures, where most of the data needed is lacking.

Based on this brief explanation two criteria will determine the sequence of this analysis:

(a) The actual housing needs of the population avoiding nondoubling families and with the assumption of one family per dwelling.

(b) The housing need for 1970, based on population projection and family composition (no existing data on employment and income level).

I. Actual Housing Needs:

The 1950 Housing Census estimated 5,260,000 dwelling units and 5,100,000 households for the entire country. At a first glance there would exist an over-demand of houses, but it is necessary to consider 600,000 persons that the Census estimated lived without forming a family. The Census failed to determine how many dwellings they occupied at that time. I am dividing by three, the number of persons living alone to estimate the probable number of occupied dwellings. Based on these assumptions
the following figures are obtained:

<table>
<thead>
<tr>
<th>A. Number of dwelling units</th>
<th>5,260,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of vacant dwellings</td>
<td>150,000</td>
</tr>
<tr>
<td>Total</td>
<td>5,110,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Number of households</th>
<th>5,100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons not forming a family</td>
<td>220,000</td>
</tr>
<tr>
<td>Total</td>
<td>5,320,000</td>
</tr>
</tbody>
</table>

Existing deficit: B-A = 210,000 dwelling units

The housing needs for urban and rural areas are now considered, based on the above national figures.

**Urban Areas:**

<table>
<thead>
<tr>
<th>A. Number of dwelling units</th>
<th>2,260,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of vacant dwellings</td>
<td>100,000</td>
</tr>
<tr>
<td>Total</td>
<td>2,160,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Number of Households</th>
<th>2,200,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons not forming a family</td>
<td>200,000</td>
</tr>
<tr>
<td>Total</td>
<td>2,400,000</td>
</tr>
</tbody>
</table>

Existing deficit: B-A = 240,000 dwelling units

**Rural Areas:**

<table>
<thead>
<tr>
<th>A. Number of dwelling units</th>
<th>3,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of vacant dwellings</td>
<td>50,000</td>
</tr>
<tr>
<td>Total</td>
<td>2,950,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Number of Households</th>
<th>2,900,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons not forming a family</td>
<td>20,000</td>
</tr>
<tr>
<td>Total</td>
<td>2,920,000</td>
</tr>
</tbody>
</table>

Existing surplus: B-A = 30,000 dwelling units

---

1 Estimated figure

2 This is an estimated figure. The Census does not break the housing figures in urban and rural. I have analyzed the Census figures for particular states and found that there is a tendency of the persons living alone to concentrate in urban areas. This tendency has been noted also in (cont. on following page).
The above figures show that the first national estimate of 210,000 dwelling units was misleading. If we subdivide the national housing needs in urban and rural as previously, we have to increase our housing requirements by 30,000 d.u. This series of assumptions shows the needs for a better quality in the housing data of Mexico.

II. Housing Needs for 1970:

The problem of estimating housing needs for 1970 is much simpler for nations which have shown marked stability in the size of their population for several decades. On the other hand, it may be extremely difficult and complex for nations which have had sharp fluctuations in the direction or rate of population change in the past and owing to economic and social conditions may continue to have them.

This study is going to be subdivided into two facets; the first one will assume a constant rate of increase similar to the period 1940-1950, the second one will assume several changes in the natality and mortality rate.
ratios. Both projections will be compared and a medium estimate will be considered. The following assumptions will guide our analysis.

First Case:

(a) The ratio of increase will be the same that in the 1940-50 decade (approximately three percent annually).

(b) The economic development of Mexico, measured by its national income at constant prices will continue to grow at the same rate that it did in the 1940-50 decade.

(c) The form of government and the political and social organization and institutions of Mexico will remain substantially unchanged.

Second Case:

(a) The natality ratio will vary in the following proportion:

<table>
<thead>
<tr>
<th>Period</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-60</td>
<td>45/1000</td>
</tr>
<tr>
<td>1961-65</td>
<td>43/1000</td>
</tr>
<tr>
<td>1966-70</td>
<td>40/1000</td>
</tr>
</tbody>
</table>

(b) Consistent with the above variations the mortality ratio will change as follows:

<table>
<thead>
<tr>
<th>Period</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-55</td>
<td>15/1000</td>
</tr>
<tr>
<td>1956-60</td>
<td>14/1000</td>
</tr>
<tr>
<td>1961-65</td>
<td>12/1000</td>
</tr>
<tr>
<td>1966-70</td>
<td>10/1000</td>
</tr>
</tbody>
</table>

(c) and (d) as in the first case.
The results of these estimates are shown in Charts II, III, and IV. Both estimates have been compared with a population study made by the Bank of Mexico. The Mexican population figure for 1970, based on these criteria, has been estimated at 46.0 million.

From the analysis of Charts II and III we can conclude: the population between 0 - 19 years of age remains in percentage almost constant for both years. For 1950 it is 51.9 percent and for 1970 51.2 percent. On the other hand, the population between 19 and 39 years of age, show a decrease in percentage, from 28.3 percent in 1950, to 28.3 percent in 1970. Housing demands will be strongly acute for 1970. 11.0 million persons will be between 20 and 39 years old. In these years the nuptiality ratio prevails. Even when 75 percent of the total males are in the ages of 20 to 39, there exists however a high percentage that marry under 20. This figure influences in a different way the housing problem. These young couples live, in the majority of cases, with their own parents, making worse the already bad housing condition and creating social maladjust-

3 Banco de México, Departamento de Investigaciones Industriales, an unpublished information.

4 The percentages of marriages by age computation are for Mexico: 20 yrs. or less, 15%; 20 to 24 yrs., 41%; 25 to 29 yrs., 20%; 30 to 34, 10%; 35 to 39, 4%; 40 or more, 9%.
ments. In regard to family composition, it is probable that in 1970, the conditions will be similar to that of today. The number of persons per family for 1950 was five; for 1970 it will probably be no less than 4.5. A better income distribution, better living conditions and lack of birth control will tend to raise this figure. Based on all these assumptions the housing needs for 1970 will vary in the following way:

<table>
<thead>
<tr>
<th>Condition</th>
<th>1950</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per family</td>
<td>5</td>
<td>4.5</td>
</tr>
<tr>
<td>Families</td>
<td>8,900,000</td>
<td></td>
</tr>
<tr>
<td>Persons not forming families</td>
<td>460,000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9,360,000</td>
<td></td>
</tr>
<tr>
<td>Per family</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Families</td>
<td>9,900,000</td>
<td></td>
</tr>
<tr>
<td>Persons not forming families</td>
<td>460,000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10,360,000</td>
<td></td>
</tr>
</tbody>
</table>

In other words, between 9.4 to 10.4 million dwelling units will be needed for 1970, if we want to achieve a social goal of one family per dwelling unit. This means that between 1950-60 period, it will be necessary to have an annual housing production between 150 to 210,000 dwellings. And for the period 1960-70, between 300 to 370,000 dwellings, only to absorb the demographic growth. The quantification of the problem for urban and rural areas is as follows:

5Estimated figure.
Urban:

Existing deficit in 1950 240,000 d.u.
Demographic increase 1950-60 between 115 - 145,000 annually
Demographic increase 1960-70 between 190 - 230,000 annually

Rural:

Existing surplus in 1950 30,000 d.u.
Demographic increase 1950-60 between 35 - 65,000 annually
Demographic increase 1960-70 between 105 - 140,000 annually
APPENDIX B

This appendix roughly explores the question "What should be the share of the building industry and of the self-help programs in resolving the Mexican housing situation?" Its analysis is essential to a basis for a policy in these important housing mechanisms.

The criteria employed consists of first, to determine the highest housing cost that the Mexican families can afford, based on the income level of the population, on the percentage of total family income spent on housing, on the existing amortization periods of the housing financial institutions and on the average cost of private residential construction. Second, with these figures a rough estimate can be made of the share of the building industry and self-help mechanisms in the demand for housing.

The income level of the Mexican families given by the 1950 Population Census are:
Income: 

<table>
<thead>
<tr>
<th>Income</th>
<th>Percentage of Total Families:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 300 Pesos</td>
<td>62.4%</td>
</tr>
<tr>
<td>Between 300 and 500 Pesos</td>
<td>13.8</td>
</tr>
<tr>
<td>Between 500 and 1000 Pesos</td>
<td>8.4</td>
</tr>
<tr>
<td>More than 1000 Pesos</td>
<td>15.4</td>
</tr>
</tbody>
</table>

Approximately between one-fifth and one-seventh of this total family income is spent on housing, according to Mexican estimates.¹ If this is so, the following figures can be obtained:

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monthly Income Spent in Housing</td>
<td>Monthly Income in Pesos</td>
<td>Annual Amortization in Pesos 15 yr.</td>
<td>Amortization 20 yr. without interest</td>
<td>Amortization 20 yr. without interest</td>
</tr>
<tr>
<td></td>
<td>in Pesos</td>
<td>in Pesos</td>
<td>15 yr.</td>
<td>15 yr.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>II/./I</td>
<td>IIIx12</td>
<td>IVx15</td>
<td>IVx20</td>
<td></td>
</tr>
<tr>
<td>1/7</td>
<td>300</td>
<td>43</td>
<td>516</td>
<td>7740</td>
<td>10320</td>
</tr>
<tr>
<td>1/7</td>
<td>500</td>
<td>71</td>
<td>852</td>
<td>12780</td>
<td>17040</td>
</tr>
<tr>
<td>1/7</td>
<td>1000</td>
<td>143</td>
<td>1716</td>
<td>25740</td>
<td>35320</td>
</tr>
</tbody>
</table>

The average cost of private residential construction was, in 1950, approximately 50,000 pesos.² Therefore, only families designated by the last line of the table can afford housing done by the existing private enter-

¹ Banco Nacional Hipotecario Urbano y de Obras Publicas, S.A., Estudio 6, Mexico, Noviembre de 1952.

² See Table.
prise mechanisms. Roughly, these families represent twenty-five percent (8.4% / 15.4%; See Table on page 2 of this Appendix), of the total families in Mexico. The remaining seventy-five percent can have housing solely by self-help techniques. According to Appendix A, between 190 to 230,000 dwelling units will be needed in Mexico in 1970 only to satisfy demographic growth. Of this figure, 150,000 need to be provided by self-help and 50,000 by the actual building industry. More precise measures however, will be needed to assist our objectives and to direct accordingly our policies. These measures must be based on convenient and accurate data. Meanwhile, this estimate can well fulfill its purposes.
APPENDIX C

This appendix will explain in more detail the duties and achievements of the existing public housing mechanisms. Although some of this material has been discussed widely in the text, there are some interesting facts that the reader must know for a better understanding of the Mexican housing policies.

National Mortgage and Public Works Bank

The N.M.P.W.B. was established by a document issued in 1939, and after some reforms it has been given the following purposes:

(1) To promote and direct capital investments into public works, public services and low-cost housing, financing and investing in them its own resources.

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1 Mexico, Secretaría de Economía, Dirección General de Estadística, Obras del Banco Nacional Hipotecario y de Obras Públicas, Mexico en Cifras, 1952.
(2) To give technical advice for the planning and execution of works and public services including low-cost housing, when for the fulfillment of such works and services the public or the national bank credit is engaged.

(3) To give technical advice to the Treasury and to the National Banking Commission in all matters referred to the organization and operation of the Housing Savings and Loan Banks.

To follow these proposals, the Bank increased its capital from 4.5 million dollars in 1940 to 10.5 million in 1949.\(^2\) The Bank has also other duties: to collect the federal participation in gasoline revenues, retain monthly amounts to form the ordinary reserve that will guarantee the amortization and interest payments of the Road Bonds, and also to form the reserve that will stabilize the bond value in the market.\(^3\) Besides this, the Bank finance public works contractors, spending in this matter annually an average of ten million

\(^2\)Ibid.
\(^3\)Ibid.
dollars. Expenditures in low-cost housing, however, did not start until 1947 when 1.7 million dollars was dedicated to this important aspect. Between 1947-50 the Bank expenditures in mortgage and dwelling construction amounted to 6.7 million dollars of which 4.1 million was for low-cost housing projects in Mexico City.  

The Bank works in regard to housing in two ways, directly and indirectly: in the first case channeling capital for housing construction and secondly, supporting other Banks (Saving and Loan Banks) in all these matters. The N.M.P.W.B. is really the Central Housing Bank in Mexico.  

The system of operation of the existing Private Mortgage Banks consists of the Grant of Mortgages for the fifty percent of the total value of the house, including land. This situation has fostered the development of second mortgages at high interests, and impaired the housing mechanism and created social problems. Since 1950 the N.M.P.W.B. issued a new type of bond-certificate of participación inmobiliaria trying

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5 Obras del Banco Nacional Hipotecario de Obras Públicas, op. cit.
to resolve this problem by means of a cooperation system with advantages either for the borrower or owner of the house. In 1956, the Bank established a new plan mainly oriented to low-cost housing. This new plan consists of the creation of a ten million dollar fund. The purpose of this fund is to grant loans until sixty percent of the cost of the house, if the dwelling cost does not exceed 400 dollars. The loan will have an interest rate of 9.5 percent annually, without any charges for the opening of credit.

General Office for Civil Retirement Pensions

This office was created in 1925 with the purpose of giving retirement pensions and housing finance to the civil servants. Between 1925 and 1952 the General Office for Civil Retirement Pensions granted mortgage loans for the construction of 17,000 single family dwellings and constructed by itself 4500 multi-family dwellings mostly in the Federal District. At

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6 Banco Nacional Hipotecario Urbano y Obras Publicas, Estudios 2, Marzo de 1952.
7 Agustín Acosta, op. cit.
8 Ibid.
the end of 1958 this agency will add to the above figures 8000 single family dwellings and 3200 multi-family dwellings that will have been in construction between 1952 - 1958.9

The system of operation works in two ways: first, if the civil servants want to own homes, they must save monthly amounts to complete half of the housing cost (usually during ten years or more). The other half is granted by the agency, taking the house mortgage as security. Second, if the civil servant wants to rent a dwelling, the General Office provides low-cost housing in his multi-family projects. However, the problem is that many persons without being civil servants live in those buildings, occupying a place that should be reserved for needy families.

Mexican Social Security Institute

The Social Security Law published in 1943, in one of its important chapters, established the way in which its reserves must be channelized into low-cost housing. Section II, Article 128 of this law10

9 Ibid.
10 Ibid.
marked the method in which such reserves (until 20 per cent) must be invested:

(a) in low-cost housing for workers
(b) in mortgage loans or bonds.

However, it was not until the beginning of 1954, that the present Government undertook the proposals established in that law. Between 1954-57, 5370 dwellings were built around Mexico City with very few projects in other cities. Recently the policy has been to encourage cheap low-cost housing (400 dollars per dwelling unit), with low rents (four dollars per month), but few have been built by this system to date.\textsuperscript{11}

\textsuperscript{11}Novedades, Mexico, D.F., Septiembre 13, 1957.
<table>
<thead>
<tr>
<th></th>
<th>Years</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1945</td>
<td>1955</td>
<td></td>
</tr>
<tr>
<td><strong>In Productive Activities:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>16</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td>49</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>14</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td><strong>Social Investments:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13.7</td>
<td>14.3</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>1.3</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>12.4</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>--</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td><strong>Others:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7.3</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Urban Dwellings, etc.</td>
<td>5.5</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>Defense</td>
<td>1.8</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>

**Sources:**


### TABLE II

MEXICAN CITIES OVER 100,000 POPULATION * 1940, 1950

<table>
<thead>
<tr>
<th>Cities:</th>
<th></th>
<th>Years</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1940</td>
<td></td>
<td>1950</td>
</tr>
<tr>
<td>Mexico City, D.F.</td>
<td>1,757,530</td>
<td></td>
<td>3,050,442</td>
</tr>
<tr>
<td>Guadalajara, Jal.</td>
<td>229,235</td>
<td></td>
<td>377,016</td>
</tr>
<tr>
<td>Monterey, N.L.</td>
<td>186,092</td>
<td></td>
<td>333,422</td>
</tr>
<tr>
<td>Puebla, Pue</td>
<td>138,491</td>
<td></td>
<td>211,331</td>
</tr>
<tr>
<td>Torreon, Coah. 2</td>
<td>116,354</td>
<td></td>
<td>200,813</td>
</tr>
<tr>
<td>Merida, Yuc.</td>
<td>98,852</td>
<td></td>
<td>142,358</td>
</tr>
<tr>
<td>San Luis Potosi, S.L.P.</td>
<td>77,161</td>
<td></td>
<td>125,662</td>
</tr>
<tr>
<td>Leon, Gto.</td>
<td>74,155</td>
<td></td>
<td>122,726</td>
</tr>
<tr>
<td>Ciudad Juarez, Chih.</td>
<td>48,881</td>
<td></td>
<td>122,566</td>
</tr>
<tr>
<td>Veracruz, Ver.</td>
<td>71,720</td>
<td></td>
<td>101,221</td>
</tr>
</tbody>
</table>

Source: 1940 and 1950 Population Census, Mexico

---

1Metropolitan area

2Metropolitan areas including Gomez Palacio and Ciudad Lerdo.
<table>
<thead>
<tr>
<th>Industries</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile</td>
<td>149,000</td>
<td>$460</td>
<td>$30</td>
<td>100</td>
</tr>
<tr>
<td>Chemistry</td>
<td>89,000</td>
<td>280</td>
<td>17</td>
<td>--</td>
</tr>
<tr>
<td>Building Industry</td>
<td>101,550</td>
<td>390</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>Iron Products</td>
<td>65,770</td>
<td>530</td>
<td>33</td>
<td>100</td>
</tr>
<tr>
<td>Electricity</td>
<td>16,000</td>
<td>730</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Petroleum</td>
<td>35,000</td>
<td>840</td>
<td>250</td>
<td>100</td>
</tr>
</tbody>
</table>

Key:  
I: Number of Workers  
II: Average Annual Wages and Salaries  
III: Average Annual Social Services  
IV: Variation Index of Wages and Salaries

Sources:  
I; II; III: Censo Industrial de 1950
### TABLE IV
CAPITAL INVESTMENTS IN SELECTED BUILDING MATERIALS INDUSTRIES * 1950

<table>
<thead>
<tr>
<th>Materials Industries</th>
<th>Number of Enterprises</th>
<th>Average Investment in Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick</td>
<td>1398</td>
<td>$5,300</td>
</tr>
<tr>
<td>Lime</td>
<td>277</td>
<td>10,600</td>
</tr>
<tr>
<td>Gypsum</td>
<td>26</td>
<td>27,700</td>
</tr>
<tr>
<td>Granite</td>
<td>123</td>
<td>1,300</td>
</tr>
<tr>
<td>Marble</td>
<td>72</td>
<td>6,500</td>
</tr>
<tr>
<td>Glass</td>
<td>71</td>
<td>250,000</td>
</tr>
<tr>
<td>Glazed Tile</td>
<td>7</td>
<td>263,900</td>
</tr>
<tr>
<td>Mosaics</td>
<td>301</td>
<td>6,000</td>
</tr>
<tr>
<td>Concrete Blocks</td>
<td>50</td>
<td>13,000</td>
</tr>
<tr>
<td>Water Proof Materials</td>
<td>16</td>
<td>21,500</td>
</tr>
</tbody>
</table>

Source: 1950 Mexican Industrial Census
TABLE V
CEMENT INDUSTRY: CAPACITY, PRODUCTION, AND APPARENT DOMESTIC CONSUMPTION OF CEMENT, MEXICO, 1940; 1950

<table>
<thead>
<tr>
<th></th>
<th>1940</th>
<th>1950</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity:</strong> (thousands metric ton per year)</td>
<td>678.9</td>
<td>1,973.7</td>
</tr>
<tr>
<td><strong>Index (1940 = 100)</strong></td>
<td>100.0</td>
<td>290.7</td>
</tr>
<tr>
<td><strong>Production:</strong></td>
<td>485.0</td>
<td>1,388.0</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>100.0</td>
<td>286.2</td>
</tr>
<tr>
<td><strong>Ratio of Production to Capacity Percent:</strong></td>
<td>71.4</td>
<td>70.3</td>
</tr>
<tr>
<td><strong>Apparent Domestic Consumption:</strong> (thousands metric tons)</td>
<td>488.4</td>
<td>1,369.7</td>
</tr>
<tr>
<td></td>
<td>Production</td>
<td>485.0</td>
</tr>
<tr>
<td></td>
<td>Imports</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>-Exports</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Apparent Domestic Consumption:</strong> (Index 1940 = 100)</td>
<td>100.0</td>
<td>280.4</td>
</tr>
<tr>
<td><strong>Number of Plants:</strong></td>
<td>8</td>
<td>19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Apparent Domestic Consumption</th>
<th>Production</th>
<th>Imports</th>
<th>Index (1940 = 100)</th>
<th>Origin of Domestic Consumption</th>
<th>Production</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1940</td>
<td>1945</td>
<td>1950</td>
<td></td>
<td>1940</td>
<td>1950</td>
</tr>
<tr>
<td></td>
<td></td>
<td>218.4</td>
<td>422.7</td>
<td>618.2</td>
<td></td>
<td>59.6</td>
<td>40.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>130.1</td>
<td>203.9</td>
<td>367.6</td>
<td></td>
<td>40.4</td>
<td>51.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>88.3</td>
<td>218.8</td>
<td>250.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1940</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1945</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1950</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE VII
MEXICAN PUBLIC HOUSING INVESTMENTS (In millions of Pesos)
1947 to 51

<table>
<thead>
<tr>
<th>Years</th>
<th>1947</th>
<th>1948</th>
<th>1949</th>
<th>1950</th>
<th>1951</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Office for Civil and Retirement Pension Dwellings:</td>
<td>3.6</td>
<td>13.9</td>
<td>6.7</td>
<td>13.9</td>
<td>21.1</td>
</tr>
<tr>
<td>Social Security Institute Dwellings:</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>**</td>
<td>17</td>
</tr>
<tr>
<td>National Mortgage and Public Works Banks Dwellings:</td>
<td>5.2</td>
<td>6.6</td>
<td>10.0</td>
<td>19.5</td>
<td>10.3</td>
</tr>
</tbody>
</table>

TABLE VIII
NUMBER OF ROOMS AS PERCENTAGES OF TOTAL DWELLINGS
MEXICO * 1950

<table>
<thead>
<tr>
<th>Number of Rooms</th>
<th>Percentages of Total Dwellings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60%</td>
</tr>
<tr>
<td>2</td>
<td>25%</td>
</tr>
<tr>
<td>3</td>
<td>8%</td>
</tr>
<tr>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>5</td>
<td>1%</td>
</tr>
<tr>
<td>6</td>
<td>1%</td>
</tr>
<tr>
<td>&gt;6</td>
<td>2%</td>
</tr>
</tbody>
</table>

TABLE IX
QUALITY OF EXISTING HOUSING BY TYPE OF MATERIAL
MEXICO*1950

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Percentage of Total Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe</td>
<td>42%</td>
</tr>
<tr>
<td>Mud</td>
<td>7</td>
</tr>
<tr>
<td>Sticks</td>
<td>1</td>
</tr>
<tr>
<td>Brick</td>
<td>13</td>
</tr>
<tr>
<td>Wood</td>
<td>20</td>
</tr>
<tr>
<td>Masonry</td>
<td>5</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: 1950 Mexican Population Census.
PRIVATE AND PUBLIC DOMESTIC INVESTMENTS IN RESIDENTIAL CONSTRUCTION 1939 - 1950

PYRAMID OF AGES
1950

males

females

millions
NATIONAL INCOME AND POPULATION GROWTH 1900–1970

constant prices 1930

SOURCE: Depto. Estudios Economicos del Banco de Mexico.
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