CHAPTER 2.

PUBLIC HOUSING: RATIONALE AND METHODS OF INTERVENTION

2.1. Introduction:

Why has housing become a matter of public concern in both the developed and the developing countries? What are the dimensions of public intervention? Why public housing in India? Answers to these questions constitute this particular chapter.

A competitive housing market ensures competitive equilibrium and an efficient allocation of resources only when certain conditions are fulfilled. In particular economics, if the necessary conditions could no longer hold or Adam Smith's invisible hand' fails to operate, there is the need for some kind of collective decision-making designed to produce efficiency.

The General conditions for optimal allocations to housing through market mechanism are unlikely to be met in the real world. Consumer satisfaction from housing are unusually difficult to identify and measure. Rates of return on housing investment are notoriously unstable and hard to
project into the future. Benefits or disbenefits may accrue to third parties. Potential externalities abound, that, is, the benefit to the direct participants may to a large extent depend on actions by others. Financial conditions may at times prevent consumer preferences from expressing themselves in the market. Further the flow of funds into housing can be impeded by general market factors or monetary and fiscal policy or by the regulation of financial institutions. This deviation from optimal allocation conditions necessitates the intervention of states.

Richard Musgrave introduced additional rationale for government intervention into private markets. The rationale is based on the need to satisfy 'merit wants'. Some wants are satisfied in part by the private market but not in socially appropriate amounts. According to Musgrave these include such wants as housing and education. They are merit wants "if considered so meritorious that their satisfaction is provided through the public budget over and above what is provided for through the markets and paid for by private buyers".¹

It is said that merit want could be publicly subsidized because some people will spend 'too little' on them. People will not live in adequate housing because they prefer to spend their income on other items. Consequently it is in the public interest and is a government function to induce people to consume appropriate amounts of merit goods through subsidy. This is very true of low income group.

Government intervention is justified when goods and services are distributed in a way contrary to social objectives. Numerous measures in different countries seek to reallocate income or wealth in order to distribute consumption more equally. On theoretical grounds most analysts prefer direct redistribution of income,¹ on practical and political grounds, most governments prefer indirect redistribution through the provision of goods and services.

Graduated income tax and cash transfers are the most obvious and most common method of redistributing income. Such measures reflect a collective judgment that general welfare will rise if some groups have more goods and services even at the expense of others. On the other hand government may supply those goods and services directly instead of redistributing money. Such 'transfers in kind' include housing, medical care and food.

Economists hold that public provision of commodities below cost to households is less efficient in improving family welfare than transfer of incomes. If the government were to give a family the cash equivalent of its subsidy, in countries like India, there is no guarantee that the recipient would utilise it for what it is intended. In developing countries, redistributing income through commodity subsidies, such as housing subsidies may be more acceptable. Countries like U.S.A. intend to adopt direct housing subsidies along with cash.

Public support may be justified for projects requiring substantial investment in order to generate any return for projects, characterized by substantial internal scale economics. Public intervention under this criterion
appears justified for two important activities related to housing. Firstly, land acquisition and development on large scale may be possible only by government drawing on its broad financial base and exercising its right of eminent domain. Secondly, experimentation in building technology such as pre-fabrication or for demonstration of new types of housing project like the low-cost housing will be possible only with public intervention.

J. Stockes and M. Fisher\(^1\) give five reasons for government intervention in American housing market. In the first place not enough housing is produced, therefore government must either induce an increase in housing production or enter directly into the production of housing. The second is that of utilization of existing housing. High vacancy rates in some places, abandonment and rapid neighbourhood change accompany over crowding and increasingly intense land use patterns. The third is that of equity and it is widely observed that the poor, the minority peoples and a good proportion of the

lower middle class do not receive a 'fair share' of better housing. The fourth area is that housing takes too large a share of family incomes and the fifth is that the quality of housing available for the less advantaged of the population is low and worsening. These five reasons for government intervention in housing market are applicable to all countries, no matter what form the intervention takes.

2.2. **Types of Government Intervention:**

By and large the nature of intervention in housing market depends on

1. the nature and intensity of the housing problem in a particular country

2. basic premises of social, economic and political policies pursued and

3. availability of resources.

Intervention is chiefly manifested either by public assistance or by government regulation of the housing market. Public housing units may be constructed either
by the government or by individuals with government loans or by private investors under government encouragement. In communist countries government itself undertakes the responsibility of building houses. "Local Authority housing" is a noted feature in U.K. Urban renewal and slum clearance come under public housing in all countries.

Public housing enables low income people to secure low rent houses and also own flats or houses at low cost.

In 1973, 1.5 per cent of the United States housing stock consisted of public housing, though there was a brief and temporary flurry of activity in the period 1962-72 when federally subsidized starts accounted for 23% of new housing units. In U.S.S.R. 85% of the houses have been built by the state; 7% by the co-operatives and 8% by private agency. In U.K. the public housing share in 1973 was 31 per cent (53% in Scotland).


Government housing agencies such as the Department of Housing and Urban Development of U.S.A., the Housing and Urban Development Corporation of India and the Housing Development Corporation of Singapore make direct loans to assist the development, construction and administration of low rent and low cost housing. Before construction begins these agencies enter into a periodical contribution contract covering interest and amortization on long term bonds issued by the authority after construction is completed. The annual contribution contract through these institutional arrangement is the Government's largest assistance.

The HDB of Singapore gets two types of loans - a 70 year loan for construction of housing for rental at 7% and 10 year loan for financing housing for sale at 6% interest, under a home ownership for the people scheme the purchaser needs only make a down-payment of 20% of the selling price and the balance repaid monthly over 20 years. It is pointed out at the end of each financial year any deficit incurred by the Board in its operation is reimbursed by the Government in the form of housing subsidy.¹

¹ Ho Cheng Choon, "Singapore's Public Housing Experience" from One World Only (1973), Report 8, p.59.
In U.S. the government authorizes loans at low interest rates to non-profit or limited dividend corporations or Boards for the construction of housing for low income households. In a subsidised loan programme such advancement of loans reduced rents. It is estimated that with market interest rates at 6.5% a 3% loan makes possible an estimated 27% reduction in fair market rent. With market interest rate at 9%, a rent reduction of 37% is possible.

In U.K. Local Authority provides housing for tenants at rents below the market level. It acts as a direct supplier of housing services and also operates price subsidisation scheme. To meet the cost of housing management expenses each authority receives certain amount in subsidy from the government. The remainder of the expenditure is covered by rental income. Similarly under Rent Supplements, Government stipulates public housing rents and agrees to appropriate additional funds to reimburse housing authorities for the resulting loss owing to low rent.

The rent of private rented accommodation is regulated in U.K. by the 1965 Rent Act. Unlike other subsidy schemes where the government decides that a particular group merits assistance, in this case the government does not meet the cost of subsidy itself, but requires it be met by the private landlord. Rent control, though it may take many forms, usually involves specifying the maximum rent that a landlord may charge a tenant for a dwelling - rent below the short run market level.

In U.S.A. section 235 and 236 of the National Housing Act lay down that the Home Ownership Assistance Programme requires participants to pay at least one fifth of their adjusted income toward mortgage amortization. If the Home owner's payment is less than amortization the HUD pays the lender the difference.

Production subsidies, as in India, enable public housing agency to get inputs at concessional or controlled rates. Downs¹ favoured production subsidies

¹. Antony Downs, Federal Housing Subsidies; (Lexington, Mass. 1973)
on three grounds (1) to stimulate the economy (2) to expand the total housing stock and to reduce upward pressure on prices and (3) to achieve some economic integration enabling low income households to live in suburbs from which they would otherwise be excluded.

Tax concessions or tax subsidies also manifest government intervention in housing market.

A natural tax system would levy the same tax on the owner and rentier. But in most countries the government collects larger personal income tax from the rentier than from the home owners. In U.S.A. the house owner would be allowed deductions from the gross rent for maintenance, depreciation, mortgage interest and property taxes. The taxable income of a home owner is thus below that of other investors by the sum of net rent, mortgage interest and property taxes.

In U.K. also owner-occupier may deduct the interest payments on mortgage loans from his gross income to determine the taxable income. Another tax subsidy is the exemption from capital gains taxation of property used for owner occupation.
In West Germany, if a housing project is eligible for tax concessions, it may be exempted from real estate tax and qualify for a special depreciation allowance. The tenant of a flat eligible for tax concession can insist that a rent shall not exceed an amount proportionate to the current operating and maintenance cost. Tenants in the low income bracket receive government subsidy towards their rent on application. Tax concessions promoted housing construction on a large scale and helped to revitalise the stagnant construction trade.¹

In India, the low income group does not come under income tax payment. Yet they get a few concessions in the payment of property tax. The annual value of self-occupied house is computed subject to the following permissible deductions: (a) repairs (b) premium paid to insure the property (c) ground rent paid (d) if purchased with borrowed money, interest paid and (e) vacancy allowance. In many LIG houses these deductions amount to the total cancellation of property tax itself.

2.3. **Indias' Housing Situation and Public Housing**

Public Housing in India could be assessed in the context of India's housing situation in different periods. As per the census of India, in 1901, there were 558 lakh census houses for 540 lakh households. This implies that there were about 18 lakh surplus houses. This surplus situation continued till 1941. Therefore, the housing policy of the Government of India till the launching of plans was based on the concept that only marginal assistance could be given by the Government in the social housing sector and that the private sector had to play a greater role in accelerating house construction. But whatever private investment is made in housing is drawn in to meet the needs of more affluent section of the community. It is only these people who have the capacity to pay high rents to yield an adequate return to the investor. Co-operatives have also not made any impact as such in the field of housing in India. Only a small fraction of the housing demand was met by the co-operatives.

From 1941 onwards, population in India has grown at an amazing pace; it increased from 338.66 million in 1941 to 361.10 million in 1951. Thereby the previously
existing surplus housing situation turned into a deficit. To make up this deficit it was felt that a provision of suitable housing accommodation in adequate quantity could be provided only by increased Government housing. Accordingly with the dawn of planning, we witness an intensified role of Government in the field of housing. The First Five Year Plan was ambitious, the percentage of housing investment to total investment was 34\(^1\). (including private investment) The total housing demand\(^2\) in 1951 was 72,220 million but the total supply was 64,360 million. The housing deficit that occurred in the First Plan persisted because the allocation made to states under Social Housing Scheme was diverted to other heads of development. Nevertheless a beginning for public housing was initiated. As the Housing Ministry Report points out "housing could not be given high priority in the First Plan. Nevertheless, a beginning was made in the First Plan and the State took on itself to a limited extent, the responsibility of providing housing facilities for the

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2. Housing demand is computed as: One housing unit for every five persons.
people which till then was almost entirely a private enterprise".

During 1956, the estimated housing demand was 79.720 million but the supply was only 66.76 million. The back-log of housing shortage could not be readily accounted for owing to the nonavailability of data regarding the number of housing units constructed every year. The magnitude of housing shortage still increased in the Second Plan period. The proportion of housing investment to total investment fell from 34% to 19% in the Second Plan. Though the allocation was not large enough for housing, the Government was conscious of its responsibility. The Plan viewed the housing problem in the context of growing urbanization and widening unemployment problem. The Plan suggested for setting up of National Boards and State Housing Boards which would be instrumental in carrying out Government housing programmes.

In 1961, the total population was 439.20 million and the rate of growth of population from 1951 to 1961 was 1.7%. A perusal of census data shows housing supply in relation to population growth is hopelessly poor. The Indian rate of housing supply does not come anywhere near the rate of other countries. An Expert body of the United Nations has recommended construction of 10 houses per year per 1000 people.\(^1\) The over all rate of housing supply for the nation as a whole thus works out to be 2 houses per 1000 people per year.\(^2\) According to the working Group we should aim at an annual construction rate of atleast 5 houses per 1000 people in the Fourth Plan and the tempo should be stepped upto 10 houses per 1000 in the Fifth Plan. This would be possible only through public housing.

In the Third Plan, the total housing investment was Rs.1,550 crores. The estimated housing demand was 87.84 million units. This level of financial allocation

would satisfy only a fraction of housing demand. Therefore arrangements were made for institutional finance. The underlying principle in the Third Plan was, even though under the constitution the subject of housing falls under the States' competence, that the task of providing adequate housing should be shouldered jointly by the central and the state Governments. To this end the State Housing Boards were formed and with the setting up of Housing Boards, public housing is said to have emerged in genuine form in India. These State Housing Boards were entrusted with the responsibility of carrying out all housing and allied programmes. Even after the inauguration of these public agencies there was no sizeable increase in the percentage of housing investment.

The rate of growth of population from 1961 to 1971 was 2.2%. Unless and until the Housing Boards put up a modest show by increasing its output to cope with the increasing population, there would no salvation for the housing problem of India. During the Fourth Plan period, to galvanize the working of the Housing Boards, the Housing and Urban Development Corporation (HUDCO) was formed. It is a central agency which supplied large quantum of finance to the Housing Boards. The same trend
continued in the Fifth Plan also. One of the limited objectives of the Fifth Plan in the housing sector was the "extension of support to institutional agencies such as HUDCO and Housing Board under the State Government to enable them to provide assistance to schemes for the benefit of low income and middle income group".

The housing shortage in 1971 was 24.390 million, despite a decade of working of the Housing Boards. This shortage was estimated to rise up to 44.978 million in 1981.


### TABLE NO.2.1

**A Summary of Estimated Housing Shortage from 1951 to 1971 (in Million)**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Demand: (One unit per five persons)</td>
<td>72.22</td>
<td>79.22</td>
<td>87.84</td>
<td>98.22</td>
<td>109.58</td>
<td></td>
</tr>
<tr>
<td>B. Existing Stock (inclusive of age old structure)</td>
<td>64.36</td>
<td>70.12</td>
<td>79.22</td>
<td>85.17</td>
<td>92.45</td>
<td></td>
</tr>
<tr>
<td>C. Replacement requirement due to age</td>
<td>2.30</td>
<td>3.36</td>
<td>4.67</td>
<td>5.81</td>
<td>7.26</td>
<td></td>
</tr>
<tr>
<td>D. Available stock (exclusive of age old structure)</td>
<td>62.05</td>
<td>66.76</td>
<td>74.54</td>
<td>79.36</td>
<td>85.10</td>
<td></td>
</tr>
<tr>
<td>E. Housing Shortage (A-D)</td>
<td>10.16</td>
<td>12.95</td>
<td>13.29</td>
<td>18.85</td>
<td>24.39</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
1. 1956 and 1966 figures were estimated on the basis of the census data.
2. Replacement requirement has been estimated on the basis of the NSS Data - 19th Round Report No.195.
Not only the quantitative housing deficit but also the qualitative housing gap warrants a higher degree of Government intervention in housing. The qualitative housing gap refers to several aspects and hence may be gauged from different angles. It may be the age of the dwellings, the poor quality of the surroundings, the quality of the material of construction and the absence or inadequacy of essential housing facilities.

National sample survey of India has revealed that a little over 46 per cent of the rural and 41 per cent of the urban households live in houses aging more than 20 years.\(^1\) No evidence is necessary except the 90 lakh\(^2\) of Slum Dwellers of India to testify the poor quality of residential surroundings in India.

1. NSS 18th Round, Tables with Notes on Housing conditions, Feb 1964 p.3.

2. Jag Mohan, Slums in India: Illustrated weekly of India (Oct 22, 1972) p.34
Further more, India is conspicuous by its tiny and Kutcha houses. Such tiny and Kutcha houses are substandard both by health and socially acceptable standards. Table 45 of 1961 census showed 81% of the rural houses and 55% of the urban houses as Kutcha. The corresponding percentages according to 1971 census are 88 in rural India and 52 in urban India. Even among the Kutcha houses most of them are classified as unserviceable when they have thatched roof and thatched walls. Census figures show that out of 789 lakh houses in 1961, 109 lakh houses are unserviceable Kutcha and in 1971 out of 907 lakh census houses 118 lakh houses were unserviceable Kutcha houses. These Kutcha houses, no doubt lack essential basic facilities. Because the bulk of the housing stock is Kutcha the replacement rate is also high which also aggravates housing shortage.

Space available per person in the house is inadequate which manifests overcrowding. More than 50% of the multi-member households have to be satisfied

1. By the term 'Kutcha' it is meant housemade of mud, bamboo and straws.
with 30 sq. ft. or less per person. The extent of congestion in dwellings could be gleaned from table No. 2.2.

**TABLE 2.2**

Percentage Distribution of Households by Number of Rooms in Selected Indian Cities 1971.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Cities</th>
<th>One Room</th>
<th>Two Rooms</th>
<th>Three Rooms</th>
<th>Four Rooms</th>
<th>Five Rooms</th>
<th>Unspecified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Greater Bombay</td>
<td>77.4</td>
<td>14.2</td>
<td>5.2</td>
<td>1.9</td>
<td>3.3</td>
<td>0.1</td>
</tr>
<tr>
<td>2.</td>
<td>Calcutta</td>
<td>67.6</td>
<td>17.3</td>
<td>8.1</td>
<td>3.8</td>
<td>3.1</td>
<td>0.02</td>
</tr>
<tr>
<td>3.</td>
<td>Poona</td>
<td>65.1</td>
<td>20.9</td>
<td>7.3</td>
<td>3.6</td>
<td>3.0</td>
<td>0.2</td>
</tr>
<tr>
<td>4.</td>
<td>Kanpur</td>
<td>59.6</td>
<td>27.0</td>
<td>7.1</td>
<td>3.3</td>
<td>3.2</td>
<td>0.01</td>
</tr>
<tr>
<td>5.</td>
<td>Allahabad</td>
<td>57.5</td>
<td>27.5</td>
<td>7.8</td>
<td>3.9</td>
<td>3.1</td>
<td>0.1</td>
</tr>
<tr>
<td>6.</td>
<td>Delhi</td>
<td>57.4</td>
<td>25.4</td>
<td>9.4</td>
<td>4.3</td>
<td>5.4</td>
<td>0.5</td>
</tr>
<tr>
<td>7.</td>
<td>Madras</td>
<td>53.6</td>
<td>24.4</td>
<td>11.0</td>
<td>5.2</td>
<td>5.6</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>TOTAL URBAN</strong></td>
<td></td>
<td>50.1</td>
<td>26.9</td>
<td>11.4</td>
<td>5.7</td>
<td>5.6</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>TOTAL RURAL</strong></td>
<td></td>
<td>47.3</td>
<td>28.5</td>
<td>12.1</td>
<td>6.0</td>
<td>6.0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Source: The Population of India, CICRER, New Delhi, Office of the Registrar General of India, 1974 p.86.
Gupta points out that in Delhi 55% of the one room rentals have the family size of 3 to 5 and 22% of the rentals have the family size of 6 to 8. Similarly 52% of the two room rentals have the family size of 3 to 4 and 29% of the rentals have the family size of 6 to 8.¹

The crux of the housing problem in India is finding a roof over every head especially for the EWS and LIG people whose paying capacity for house purchase is low.

The rising cost of living and the high cost of construction and exorbitant rents keep the bulk of this population off the housing market. The World Bank's Sector Policy Paper on housing in 1975 estimated the monthly household income required to purchase the existing cheapest complete housing units and the percentage of households unable to afford it in selected cities.

1. D.B. Gupta, Housing Delhi's Millions: A study of the rent structure, 1958-73 for Government of India by NBO and UN-Regional Housing Centre, ESCAP.
TABLE NO.2.3

The Cost of House and Monthly Income Required and the Percentage of Households unable to Afford Houses in Madras City.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Price of Houses</th>
<th>Monthly Payment</th>
<th>Monthly Income Required</th>
<th>% of Households unable to afford</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9913</td>
<td>91.56</td>
<td>616.42</td>
<td>77</td>
</tr>
<tr>
<td>2</td>
<td>11106</td>
<td>102.18</td>
<td>676.77</td>
<td>81</td>
</tr>
<tr>
<td>3</td>
<td>14597</td>
<td>134.03</td>
<td>889.09</td>
<td>88</td>
</tr>
<tr>
<td>4</td>
<td>8890</td>
<td>82.27</td>
<td>544.07</td>
<td>73</td>
</tr>
<tr>
<td>5</td>
<td>10085</td>
<td>92.89</td>
<td>623.69</td>
<td>78</td>
</tr>
<tr>
<td>6</td>
<td>13575</td>
<td>124.74</td>
<td>836.01</td>
<td>87</td>
</tr>
<tr>
<td>7</td>
<td>7855</td>
<td>71.66</td>
<td>477.72</td>
<td>68</td>
</tr>
<tr>
<td>8</td>
<td>9050</td>
<td>82.27</td>
<td>544.07</td>
<td>73</td>
</tr>
<tr>
<td>9</td>
<td>12540</td>
<td>112.80</td>
<td>756.39</td>
<td>82</td>
</tr>
</tbody>
</table>

NOTE: Assumptions
1. 25 years period of payment
2. 10% rate of interest
3. 15% of the households' income is spent on housing.
The LIG house seeker caught up in the cross currents of increasing shelter cost and low income seeks relief in the form of public housing. Production subsidies are expected to bring down the cost of housing. Rent controls and increased number of Government rentals will bring down the sky-rocketing rents in metropolitan cities.

The Indian Constitution in its Directive Principles lays down the importance of ironing out the social and economic inequality through different means and public housing could be considered as an effective weapon to achieve that end. Public housing could manifest its increased amount of housing operation either through proper level of housing investment or through other policy measures.

When we look at the housing allocation in the Five Year Plans we find housing has not been given the priority which it deserves even after the genesis of Public Housing in India. This can be seen by taking into account the percentages of housing investment to total investment.
## TABLE NO. 2.4

Investment in Housing and Total Investment in Five Year Plans by Public and Private Sector (Rupees in Crores)

<table>
<thead>
<tr>
<th></th>
<th>FIRST PLAN</th>
<th>SECOND PLAN</th>
<th>THIRD PLAN</th>
<th>FOURTH PLAN</th>
<th>FIFTH PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>T</td>
<td>P</td>
<td>H</td>
<td>T</td>
<td>P</td>
</tr>
<tr>
<td>O</td>
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<tr>
<td>G</td>
<td>T</td>
<td>G</td>
<td>T</td>
<td>G</td>
<td>T</td>
</tr>
</tbody>
</table>

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)

| Public | 250 | 1560 | 16 | 300 | 3659 | 8 | 425 | 6100 | 7 | 625 | 13655 | 5 | 1044 | 31400 |
| Private | 900 | 1800 | 50 | 1000 | 3100 | 32 | 1125 | 4300 | 26 | 2175 | 8380 | 24 | 3636 | 1616 |
| Total | 1150 | 3360 | 34 | 1300 | 6759 | 19 | 1550 | 10400 | 15 | 2800 | 22635 | 12 | 4680 | 4756 |

**NOTE:** Percentage in columns 4, 7, 10, 13 and 16 relate to investment in housing as percent to total investment.

**Source:** Compiled from respective Five Year Plan Reports.
State Government expenditure on housing is also not very impressive.

**TABLE NO.2.5**

Tamil Nadu State Government Expenditure on Housing  
(₹. in crores)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Expenditure</th>
<th>On Housing</th>
<th>% of Housing to Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-75</td>
<td>688.86</td>
<td>11.35</td>
<td>1.65</td>
</tr>
<tr>
<td>1975-76</td>
<td>579.03</td>
<td>14.73</td>
<td>2.54</td>
</tr>
<tr>
<td>1976-77</td>
<td>810.29</td>
<td>11.69</td>
<td>1.44</td>
</tr>
</tbody>
</table>


In India taking into account the increase in population and also the growth of real income together with the capacity of the people to spend on housing, we can estimate at what rate the housing services should grow annually. This type of exercise is attempted here
by using the formula

\[ G_D = G_H + c \ G_Y \]

Where \( G_D \) is the annual rate of growth of housing services, \( G_H \), the annual rate of household formation, \( c \), the income elasticity of housing demand and \( G_Y \), the annual rate of growth of real income.

We estimated the parameters as follows:

Income elasticity was estimated from the equation

\[ \log X = A + E \log Y \]

where \( X \) is the housing expenditure and \( Y \) is household income. For computation we used cross section data (1970-71) of the NSS (twenty fifth round).

The computation of income elasticity of housing demand is given in Table No. 2.6.

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TABLE 2.6

Income Elasticity of Housing Demand at All India Level

<table>
<thead>
<tr>
<th>Income Y</th>
<th>Housing Expenditure X</th>
<th>Log Y</th>
<th>Log X</th>
<th>(log x)(logy)</th>
<th>(Logy)^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 6.5</td>
<td>10</td>
<td>1.871</td>
<td>2.302</td>
<td>4.3070</td>
<td>3.500</td>
</tr>
<tr>
<td>2) 14</td>
<td>26</td>
<td>2.639</td>
<td>3.258</td>
<td>8.5998</td>
<td>6.964</td>
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<tr>
<td>3) 16.5</td>
<td>22</td>
<td>2.803</td>
<td>3.091</td>
<td>8.6640</td>
<td>7.856</td>
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<td>4) 19.5</td>
<td>26</td>
<td>2.970</td>
<td>3.258</td>
<td>9.6762</td>
<td>8.820</td>
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<td>5) 22.5</td>
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<td>3.113</td>
<td>3.332</td>
<td>10.3725</td>
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<td>6) 26</td>
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<td>3.258</td>
<td>3.663</td>
<td>11.9340</td>
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<td>7) 31</td>
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<td>3.433</td>
<td>4.043</td>
<td>13.8796</td>
<td>11.785</td>
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<tr>
<td>8) 38.5</td>
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<td>3.650</td>
<td>4.418</td>
<td>16.1257</td>
<td>13.322</td>
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<tr>
<td>9) 49</td>
<td>136</td>
<td>3.891</td>
<td>4.912</td>
<td>19.1125</td>
<td>15.139</td>
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<tr>
<td>10) 65</td>
<td>218</td>
<td>4.174</td>
<td>5.384</td>
<td>32.4728</td>
<td>17.422</td>
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<tr>
<td>11) 87.5</td>
<td>349</td>
<td>4.471</td>
<td>5.856</td>
<td>24.0718</td>
<td>19.989</td>
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<td>12) 125</td>
<td>608</td>
<td>4.828</td>
<td>6.410</td>
<td>30.9474</td>
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<td>13) 175</td>
<td>1068</td>
<td>5.164</td>
<td>6.973</td>
<td>36.0085</td>
<td>26.666</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
46.265 & \quad 56.329 & \quad 216.1718 & \quad 177.976
\end{align*}
\]
Functional Form: \( \log X = A + E \log Y \)

\[
= c = \frac{13 \times 216.1718 - 2633.820}{13 \times 177.076 - 2140.450}
\]

\[
= \frac{2810.2334 - 2633.820}{2301.988 - 2140.450}
\]

\[c = 1.0920\]

\(G_H\) was estimated from census data by following a formula

\[H_{71} = H_{61} (1 + G_H)^{10}\]

The number of households seeking housing units was estimated by dividing the actual population by the size of households.

**TABLE NO.2.7**

**Computation of Annual Rate of Growth of Household Formation:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population in Million</th>
<th>Size of Households</th>
<th>No. of Households in Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>439.20</td>
<td>5</td>
<td>87.8</td>
</tr>
<tr>
<td>1971</td>
<td>547.90</td>
<td>5</td>
<td>109.6</td>
</tr>
</tbody>
</table>
\[ (1 + G_H) = \frac{\ln 109.6 - \ln 87.8}{10} \]
\[ (1 + G_H) = \frac{4.6968 - 4.4750}{10} \]
\[ = 0.0221 \]
\[ (1 + G_H) = 1.0224 \]
\[ G_H = 0.0224 \]

Therefore the annual rate of growth of Households is 2.24%.

\( G_y \) is calculated from Central Statistical Organization data on per capita income. In the absence of data on family income, the per capita real income increase is taken for computation because the size of the households between 1961-71 remains to be the same.

At constant price the per capita income in 1961 was Rs.305.6 and in 1971 it was Rs.353.0. Applying the previous equation the annual rate of growth of real income is calculated.
\[ Y_{71} = Y_{61} (1+G_Y)^{10} \]

\[
(1+G_Y) = \frac{\text{Ln} 353.0 - \text{Ln} 305.6}{10}
\]

\[ = 0.0144 \]

\[ G_Y = 0.0145 \]

Therefore the annual rate of growth of real income in India is 1.4%.

Now substituting the estimated values the formula \[ G_D = G_H + c \cdot G_Y \]

\[ G_D = 2.24 + 1.092 \times 1.5 \]

\[ = 2.24 + 1.638 \]

\[ = 3.87 \]

This exercise leads us to say that in India to cope with the growing population and increase in real income the required annual rate of growth of housing services is 3.87%.
Growth of housing services implies increase in the number of housing units. Therefore the rate of growth of housing services can be compared with the annual rate of growth of housing units.

Table No.2.1 shows that the housing units increased from 74.54 million to 85.10 million between 1961-71 which means the annual rate of growth of housing unit is only 1.2% whereas the estimated desired growth is nearly 4%. This accounts for 24.39 million housing units shortage in 1971. This shortage could be rectified by revitalising the construction activities of the public agency, namely, the State Housing Board. To what extent and in what capacity the Board is able to perform this anticipated task would be seen in the next chapter when we attempt a review of the TNHB.