PLANNING AND DEVELOPMENT OF TOWNS

R.G. GUPTA

Foreword

We are talking these days a lot on the need for environmental improvements, aesthetics in urban form and structure, buildings, street furniture and infrastructure. After working for a few years as Chairman of the Delhi Urban Arts Commission and seeing the visual chaos on the urban scene, I have come to the conclusion that to bring quality in human life, it is necessary to under stand both short-term and long-range planning of urban areas. Such an exercise is bound to produce results within a reasonable span of time.

Mr. R.G. Gupta has done a commendable work in his book: 'Planning and Development of Towns'. There are seven chapters in the third part of the book which deal with short-term and long-range planning: Settlement Policy, Planning of Settlements, Urban Land Policy, Planning of Transport Systems, Shelter Infrastructure and Services, Institutions and Managements, Public Participation Every chapter is important. Only with a proper understanding of these issues would the foundations of urban planning and development in aesthetics in urban form and structure, buildings and other components of urban needs that we seem to tolerate around us every day.

Ex-chairman S.G. BOSE MULLICK

Delhi Urban Arts Commission

RECOMMENDATIONS

NATIONAL INSTITUTE OF URBAN AFFAIR

An area of weakness in urban planning in India is guidelines to which a small town planner could refer, when, as is often the case, he does not have access to a large planning staff. For such a planner meaningful guidelines could be of great assistance in studying planning problems and suggesting solutions.

Shri R.G. Gupta, Director Traffic and Transportation Planner, Delhi Development Authority has prepared precisely such a guideline for planners. He has tried to look at the factors leading to growth. An understanding of these factors would naturally enable a planner to identify individual growth elements and to plan for them. Shri Gupta's work would be useful to the planner in the preparation of plans for each of the growth elements and also in the integration of the process of growth. In particular he would find the normative standards suggested by Shri Gupta most valuable. One hopes that this work would be followed up by a series of monographs dealing with individual aspects of urban planning.

M. N. Buch

Director

INDIAN INSTITUTE OF TECHNOLOGY

The discipline of Civil Engineering is very much concerned with the planning and development of habitats for modern civilization. In this board profession, we deal with, not only areas of micro level such as Structural Design, Building Science, Soil Mechanics, Project Management, Water Resources and Management but also with layout of urban services, namely – water supply, sewerage, drainage, and power. Planning of neighborhoods, sectors, towns, cities and metropolises also form part of this activity. Science of urban planning is indeed a vast field of planning of various aspects of human life.

In the book, written by Shri R.G. Gupta, he has dealt with short term as well as long range aspects of Town and Country Planning In the Chapter of "Shelter, Infrastructure and Services", he has gone into the details of physical and social indicators of urban planning along with space standards for them. In the same chapter, different types of schemes for Low Cost Houses, constructed in 1957 by various State Governments and research institutions have been analysed and compared with relation to cost of development and structures for different types of specifications. I am also dispersed for different types of "Economics of a neighbourhood" wherein this is sought to be achieved without straining the government finances too much.

Other chapters of the book, on the topics on “Settlement Policy, Planning of Settlements, Urban Land Policy, Planning of Transport Systems, Shelter Infrastructure and Services, Institutions and Managements, Public Participation” are commendable.

SUBHASH CHANDER

Head, Deptt. Of Civil Engg.

SCHOOL OF PLANNING AND ARCHITECTURE

Different aspects of planning are being taught by me to the students of Urban and Regional Planning for more than one decade in the school of Planning & Architecture, deemed to be a University, New Delhi. I was heading the department of Planning in Middle East also for about three years. The teaching material available fitting to the local conditions of developing countries is found to be very much limited.

The book written by Mr. R.G. Gupta is an attempt in the direction of covering various aspects of planning at one place which is very much required for planning students in developing countries. The book has three parts – Various Theories, Facts and Integrated Planning and Development. With the introduction of planning theories and analyzing facts at various levels, various steps are suggested for formulation of policies on seven aspects – settlement policy, planning of settlements, urban land policy, planning of transport system, shelter, infrastructure and services, institutions and management, and public participation.

This book is mainly concerned with the policy planning at local, regional and national levels. It is expected to be very useful to the students of Urban and Regional Planning. The book may be even taken as a general textbook.

Prof. N. S. SAINI

Head of Department of

Urban & Regional Planning

TOWN & COUNTRY PLANNING ORGANISATION

Minister of Workers and Housing

Integrated development Planning is primarily a product of seven components viz Settlements Policy; Planning of Settlements; Urban Land Policy; Planning of Transport System; Shelter Infrastructure and Services; Institutions and Management; and Public Participation. It is extremely important that these components are co-ordinate, evaluated and regularly monitored.

Shri R.G. Gupta, who is working in the profession of Urban Planning for the past two decades, has detailed out these components in his book. He has also advocated a new approach to land use planning along with strategies to solutions for the integrated development of city regions.

E. F. N. RIBEIRO

Chief Planner

INDIAN ROADS CONGRESS

Transport system are becoming becoming key elements in the development of urban and rural areas. From a few modes of transport, we are trying to introduce more and more modes like electric trolley buses, street cars, light rails, heavy rails, hovercrafts etc.

In his book"Planning and Development of Town" Shri R. G. Gupta has dealt with its various related problems lucidly with practical approach. It includes and exhaustive Chapter on Planning of Transport System discussing at length, the problems and prospects at the national and regional levels which will be of good interest to transport and city planners.

OM PRAKESH

Director

HOUSING AND URBAN DEVELOPMENT CORPORATION LIMITED

I have had the opportunity to look at the book on "Planning and Development of Towns" written by Mr. R.G. Gupta. The last part of the book on Housing being what I am specifically interested – being involved in Housing and Urban Development on national level for the past many years. In this part two chapters one on the Planning of Settlements at national, regional and local level and the other on planning of Shelter – infrastructure and services – are worth mentioning. Mr. R.G. Gupta has brought out both these chapters very well and has provided details on physical and social indicators of physical planning together with cost aspects in designing of different types of housing settlements.

In the appendix to the chapter on Urban Land Policy, he has suggested that a neighbourhood of 15,000 population can be planned and developed by dividing different types of activities into

subsidized, no profit no loss and profitable sector with the help of private funds without straining the Government resources that are available. Under this I see more emphasis was given on affordable and public participation/self-help component.

The book has several aspects of Town and Country Planning issues, for example a new approach to land use planning; regionalization in India; problems of urbanization is less developed, growth pattern of different settlements in India and economic characteristics of various settlements – besides covering policy issues of seven components in the last part.

The book provides good reading and valuable material.

H. K. Yadav

Chief (Project)

PREFACE

A Town1 is a settlement with a population of less than 1,00,000 with more than 75% of the workers engaged in secondary and tertiary activities. Planning and development of towns which are 3,029 in number 2 is very necessary, as most of the time have been neglected, and there is a continuous migration form these centers to cities (large and metropolitan) creating problems of congestion and other urban ills and diseases.

Development of these centres is far from satisfactory; only in the Sixth Five Year Plan of the country, has attention been paid by allocating Rs. 96 crore for the development of these centres which are 3,029 in number, in the Central Sector and an equivalent amount in the State Sector. Recently, it has been envisaged that from the amount of Rs. 96 crore, 231 towns would be developed in this plan period. The project reports of 113 towns have been approved and Rs. 11.12 crore have been sanctioned in the first installment, from the Central Loan Assistance. There would be three agencies participating in the scheme, with a break up of 40% to the Union Governments 40% to State Governments and 20% to local bodies. The Central assistance will be in the form of a loan bearing an interest of $6^{1/4}$% in 25 years with a five moratorium.

The components eligible for assistance on a matching basis are:

- Land acquisition and development for different uses, including sites and services with or without core housing;

- Traffic and Transportation;

[1] As per Census of India, classification of towns/cities is as under:

- Development of *mandis,* markets and industrial estates;

- Urban renewal, water supply and sanitation, preventive medical facilities, parks and playgrounds.

Total expenditure incurred in the development of four top metropolitan cities, namely, Calcutta (91.6 lakh population in 1981), Bombay (82.3 lakh population in 1981), Delhi (57.1 lakh population in 1981), and Madras (42.7 lakh population in 1981), with a total population of 273.7 lakh is much more than expenditure incurred in 3,029 towns with a total population of 619 lakh. At present, in Delhi alone, works of development/construction to the tune of Rs. 250 crore to Rs. 300 crore are in progress.

There is a continuous migration from rural areas and these and these small centres to the large ones. As per 1971 census, 25.74% males and 10.43% female migrated from rural to urban areas and 13.81% males and 6.67% females from urban areas to urban areas, meaning from small centres to larger ones.

Planning and development of urban settlements involves the following, which have been discussed in the third part of the book.

1. Urban Land Policy
2. Settlement Policy
3. Settlement Planning
4. Planning of Transport System
5. Shelter, Infrastructure and Services
6. Role of Public Participation
7. Institutions and Management

It is a well known adage that ‘God made the country and manmade the city’, and if, it is added that ‘Debvil made the small town’. It may perhaps be appropriate. Wherever man is present some type of development is bound to take place, whether in a planned or unplanned way, scattered or in a compact way.

For human beings, there is no shortage of land. The entire population of the world which is about 4000 million may be accommodated in a small country like UK or West Germany at an overall density of 125 persons per hectare, based on the assumption that the entire land can be developed and urbanized irrespective of its characterization i. e., whether mountainous, rocky, water bodies, marshy land etc.

The main problem is to envisage and developments in a planned, coordinated and integrated way, at international, national, provincial and local levels, so that higher rate of urbanization in metropolitan and large cities, and lower in small and medium towns is reversed and can be brought to a figure acceptable and justifiable to the society, in order to curb migration from these small settlements to metropolitan and large cities.

As things are, life is unliveable in small towns and big cities. It will not be liveable unless we evolve our own theory of settlements and our own lifestyle, keeping in view the constraints of poverty and population.

The things are, life is unliveable is small towns and big cities. It will not be liveable unless we evolve our own theory of settlements and our own lifestyle, keeping in view the constraints of poverty and population.

The small towns have the worst elements of rural life as well as of city life. In spite of repaid urbanizations in India in recent years the small towns have stagnated. In spite of the professed policies of decentralization of industries, decongestion of cities, and the vigorous growth poles

and growth poles and growth centres, small towns have not attracted industries or people and have not served as counter-magnets to the growth of big cities. The few small towns which have flourished to some extent are those which are situated either near the railway lines or the highways or those small town which are within the ambit of large cities. The economic and social infrastructure is awfully inadequate in the small towns, and housing, health and educational facilities are poor. The young and the not so young in these towns constantly yearn for migrating to the big city at the first opportunity. Most of the small towns are devoid of any attraction. If we ask an average small town man about his prospects in 2001, his answer will be dismal.

If we turn to large and metropolitan cities we see that most of these have made rapid strides. There has been growing migration to the cities because the biggest chunk of new employment opportunities were created in these cities, the most ambitious housing projects were executed in these cities, the best and the biggest hospitals, colleges and universities were established, industry, trade and commerce have been continuously increasing.

The largest expansion is in the 'service sector' though a sizeable part of it, is poverty based and 'unorganized'. The big cities, in spite of having high rates of unemployment, have served as reception centres for the rural poor. Much of the cityward migration has only the pavements and it seeks shelter in substandard 'dwelling unit' while looking for work every morning. Those who cannot stand this trial go back to the town or drift to another city.

Even if he finds a stable job in the big city, it takes him years before he can find housing for his family or find money to maintain his family in the city. So, it is tragic to be confronted with rural migrants in cities. If we ask an average city dweller about his prospects in 2000, he would also nod his head and talk about the growing housing shortage, the exorbitant housing rents, the worsening transport system, the increasing problems of water-supply, the worsening problems of garbage disposal, the growing tension of the city and a host to other miseries.

Any settlement has five basic elements; man, nature, structure, networks and society. Man is supreme and other four elements are subordinate to him. He has needs to survive and satisfy himself, whether he is alone, in a family or in a society. Needs can be classified as – biological, Physiological and psychological; as subjective and objective, and also as primary, secondary and tertiary. There are thousands of needs, which go on increasing with the advancement of science and technology, education and talents.

Different needs create conditions and force the man to take some action, may be in the shape of development or constructing e. g., to satisfy the needs of shelter, houses have to be constructed, for the needs of working, industrial sheds, government offices etc. are required. Man has to fulfill many needs, are such he has to move from one place to another by transport. These needs and conditions create different types of texture, density, FAR etc. and different types of shapes and development.

As per 1981 provisional census, there are 3245 towns and cities in India. The subject of "Planning and Development of Towns" is so wide and important that not even a single town can be ignored and each city or town needs equal importance. The preparation of a Second Master Plan for Delhi was started in February, 1977. So far work is still going on and to complete the task, at least one more year is required. Actually, planning has become a continuous process and specially in this period of political dynamism, it the more difficult is its implementation.

The book has been divided into following three parts:

Part I Various theories

Past II Facts

Part III Integrated planning and development.

Each part has been detailed out in different chapters and appendices.

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- EKISTICS.
- Five Year Plans of India.
- Delhi Development Authority.
- National Building Organisation.
- Different housing departments and development authorities of the country.

From time to time Mr. M. N. Buch, Director, National Institute of Urban Affairs guided me and encouraged me to write such a guide book. I am thankful to my personal staff Mrs. Gurbaksh Kaur, Mr. R. K. Kapoor and Mr. R.K. Aggrawal. I am also thankful to Mrs. Nalini Manglik Ahuja, who did a lot of computation work time to time.

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R. G. Gupta

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Part One

Various Theories

CHAPTER 1

Theories: Pre- and Post – Industrial Revolution

1. Early Age (about 5th century)

Before the Industrial Revolution there were much less problems of land use planning. In the later part of the 5th century an architect from Miletus, named Hippocampus, advanced some positive theories about the art and science of land use planning. He has been credited with the origination of the idea of the 'grid iron' system, though some form of this system was available in the early towns of Egypt, Mesopotamia and the Indus Valley. He superimposed this grid iron pattern on many cities of Greece even without considering the problems of topography, which made some streets so steep that at many places one had to provide steps.

The agora, or the markedt place, was the centre of business and political life, and around it were lined the shops and market booths. It was generally located in the approximate centre of the town, and was given maximum importance. All the other residential buildings were planned around Agora. On the very same principle, Athens, in the fourth and fifth centuries was planned with a population of 100,000 to 150,000 respectively.

2. Roman Period

The Roman were calculating organizers, skilled engineers, and city builders. They solved technical problems, created by the congregation of a large number of people spaces much more attention was given especially to the size and number of monuments. The scale of those monumental structures, the spaces they enclosed, and the architectural fitments with which they Romans saw emerging, but a series of ever greater monuments to the glory and prestige of their rulers.

The neglect of the living spaces, changed the city into slums. Due to crowdedness, the height of the building reached six, seven or eight floors. The city dweller lived in slums while the affluent enjoyed leisure in the country. Rome gradually merged with a camp of barbarians from the north and civilisation descended into the dark ages.

3. Medieval Age

After this, till the fifth century, civilization declined, trade disintegrated, urban population returned to rural life. Cities shrank in the size and importance. Through centuries of the Dark Age, monasteries and churches served as heavens for the human being and were given maximum importance in planning.

Near about the 10th century, feudalism started and sites of many Roman towns were restored. Then merchants and craftsmen formed Guilds to strengthen their social and economic position and made a new social order to challenge feudalism.

Due to concentration of the business class, a number of towns increased rapidly during the middle-ages, but of small size, usually of a few hundred, except for a few of 50,000. Physical planning was restricted by the girth of the fortifications and services. This was the neo-classic city.

During the 14th century some cities grew due to world travel and trade. For instance Florence grew from 45,000 to 90,000 and Paris from 1,00,000 to 2,40,000b etc.

Growing population forced a congestion within the city, density increased without a change in the system of services. During this period the cities reverted to a condition inferior to the days of Rome a thousand years ago. During the 15th century gunpowder was invented, military engineering become a science, fortifications were extended, and heavy bastions, moats and outposts were built.

4. The Renaissance

A formalism was grafted upon the medieval towns retaining the fortress quality of the middle age. The basic forms of the city did not change, but the structure was decorated with facades of classic elements. Practice of arts become a profession. Monumentalize and planning changed to centre line system, every town and space had its central axis. Out of the cramped medieval town and squares were carved out, and many huge piazzas were built. Transition from the Renaissance to the baroque era came in the 17th century in which huge gardens, having concepts of grandeur, unparalled proportions, scales of incomprehensible size were laid.

5. Being of the Industrial Era

The following factors created the land use problems:

- Changing of handicrafts to machine-made goods.
- Problems of transportation started due to the invention of auto vehicles.
- Problems of communications started due to necessity.
- The subject of public safety and health arose due to location of industries in residential areas.
- Residential settlements changed to factory towns, creating new problems.

These problems created confusion in the life of human being living in the city. During this period, at the end of the 19th and beginning of the 20th century, three theories about land use planning were evolved by three eminent town planners. A summary has been given below:

Patrick Gaddes around 1890 studied the land use problems and suggested the following three main points:

- Comprehensive surveys before the plan.
- Improve the urban environment by clearing the defective parts, rather than demolishing the entire area.
- Proposals for development should be formulated on the basis of a comprehensive approach, i. e., by studying its physical, economical and social aspects.

Ebenezer Howard in 1898, brought in the concept of 'garden city'. He propagated the concept of *marriage* between urban and rural life. He stressed that land use planning should be based on the merits of urban and rural aspects, by creating employment opportunities, provisions of community facilities and services on the one hand, and on the other having an open layout for housing areas for good circulation of air and healthy atmosphere, a green belt between residential areas to protect it against the nuisance of factories should be provided.

Henry Wright and Clearance Stein, in 1920, after taking inspiration from the 'garden city' concept, planned a community of *Redburn in New jersey*. It was based on a new concept of 'neighbourhood free from vehicular traffic'. This planned the neighbourhood completely by providing traffic roads all around the periphery and keeping the internal areas free from vehicles. All the internal circulation was based on pedestrian paths.

6. First World War

An age of urban anarchy, mainly of political disorder, started. The cities became full of congestion, decay, disorder, confusion, speculation and ugliness. Land use was generally created by the people who invested in urban property and improvements mainly to earn profits, without caring for the needs of public facilities, utilities and services. So creation of land use became profit motive rather than public welfare. To control all these objectionable ugly features, the government, in many countries of the world, started introducing land use acts. Likewise in the United States, zoning regulations started appearing. The first zoning regulations came in Boston which was for the segregation of gunpowder storage from the centre of the city. Later zoning regulations were introduced to segregate the location of slaughter houses in California.

CHAPTER 2

Theories of Land Use Planning in the Second Quarter of the Present Century

Discussions on all such theories are difficult and outside the scope of this chapter. Therefore only an outline of some of these have been given in the following paragraphs:

(1) A Communication Theory Approach to[1] Urban Growth

After studying alot about the emergence of human settlements and looking at the human activities in them as an economist, social psychologist, human ecologist and political behaviorist, Mier concluded that one common element in all of these perspectives is 'human communication'.

He developed a set of requirements for the communication process. According to him there must be:[2]

(1) A sender, (2) a message, (3) a channel, (4) a receiver, (5) an attention span on the part of the receiver, (6) a common language, (7) time for the process to take place, and (8) one or more purpose to be served.

He suggested that an 'urban time budget' should be made from the information of communication flows, broken down into 'activity sectors', for example, leisure activity patterns of various forms, wholesale to producer or wholesale to retailer activities. He suggests that his concept of the 'urban time budget', which estimates the proportions of a day's time a person would stand in various forms of public communication (as opposed to private of personal communication) would provide a means of making projections.[3]

He tested his communication system in two projects of small nature – one, speculative activity that swamped the American stock exchange, and the other, of the functioning of a library system. He found that construction of activity patterns take into account behavioral variables of the most complex order.

1. *Richard L. Mier, A communication theory of urban growth, Cambridge; The M.I.T. Press, 1961, taken from F. Stuart, Chapin, "Urban land use planning", p. 76.*
2. *F. Stuart, Chapin, "Urban land use planning', p. 77.*
3. *Ibid., p. 78*

2. A Framework Emphasising Human Interations[4]

Mr. Webber also deals with the concept of 'interaction'. He says, that any interaction between different activities in an urban community, say a metropolitan, can be divided into two categories – one, which is concerned within that metropolitan community itself, and the other, in which it extends to widely scattered places over the earth. He calls the first a 'place community' and the second a 'non-place community', or 'Urban Realm'.

He emphasised that both these types of systems should be viewed as a dynamic interaction, which is traced through 'linkage' and 'dependency' ties, between individuals, groups, firms and other entities. Mr. Webber views the city in three perspectives which are related together. First, is a view of the city, in terms of spatial patterns of 'human interaction' i. e., the flow of information, people, goods and so on; second, is a view of the physical form of the city – the space for human activities, the pattern of networks including channels of transportation; and third, is a view of the city as an economic functions, social roles etc.

Mr. Webber develops a six-way cross classification system for measuring spatial linkages, that is, [5] flows of information, money, people and goods in the above three mentioned perspectives. His system for describing the city is also explanatory rather than of normative type. He emphasizes the importance of the dynamic aspect of a theory, but how this classification system can be used in a behavioural approach is not yet entirely clear.

3. A Conceptual System Focussing on Urban Form[6]

Lynch and Rodwin view the city as being made up of 'adapted spaces' for the accommodation of human activities, and 'flow systems' for handling of flow of people and goods. They divide the whole process into three parts.

In part one: system for analyzing urban forms, they proposed evaluation of urban forms into the following six categories:

(i) Element types – a category for differentiating qualitatively between basic types of spaces and flow systems;

(ii) Quantity – a measure of the size of particular types of adapted spaces and flow systems;

(iii) Density – (of people, facilities, vehicles) per unit of space or capacity of channel;

(iv) Grain or texture – how various elements of urban forms are differentiated and separated;

4. *Melvin M. Webber; "The Urban Place and Non-place Urban Realm" in Webber (ed.), Exploration into urban structure, Philadelphi; University of Pennsylvania Press, 1964, taken from F. Stuart, Chapin, "Urban Land Use Planning", p. 79.*
5. *Ibid., This system in a tabular form has been given on p. 80.*
6. *Ibid., p. 87 by K. Lynch and L. Rodwin, "A theory of human form", Journal of the American Institute of Planners, November, 1958.*

(v) Focal organisation – spatial disposition and interrelations among key points in the city, like density peaks, dominant building types;

(vi) Generalised spatial distribution – patterned organisation of space as it might be seen from the air at a high altitude.

Part two: involves formulation of goals and utilizing the above analytical tools. The goals would be specified in terms of type of adapted spaces and flow systems, quantity, density, grain, focal organistion and the spatial distribution pattern.

Part three: The final aspect is concerned with the application of the goal-form statements. This method helps us to identify the better form of adapted spaces and flow system under different goals.

There are other concepts also, like Guttenberg develops a theoretical approach to urban structure and city growth which utilizes accessibility as an organizing concept – which he calls "a communitys effort to overcome distances'.[7]

4. Concentric Zone Concept[8]

Burgess' in the city twenties conceived the city as a series of five concentric zones as shown in map 1. At the core is *central business district,* followed by the "zone of transition' in a second ring. In this second ring there is variety and changing character of uses, and residential areas commence from this. The second Zone blends into a third zone consisting largely of *working homes* of the city, especially for white-collar workers and middle-class families. The last i. e., the fifth one, is the *commuter's zone* where sub-urban communities are found along the arteries of transportation.

As growth occurs, each zone tends to invade the next one, following the progress of 'invasion and succession'.

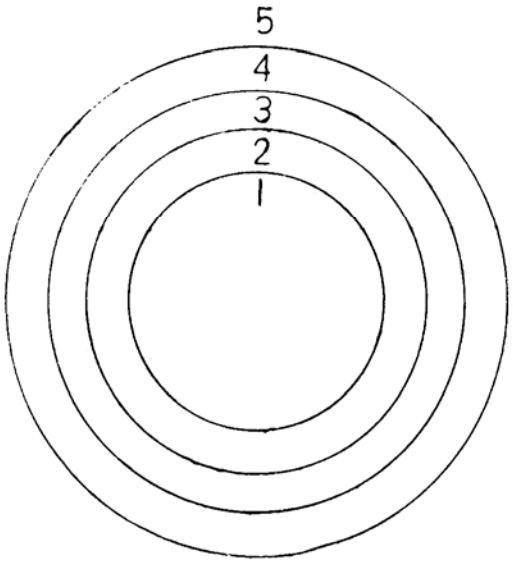
5. Sector Concept[9]

He studied residential areas in the United States and gave a theoretical explanation of land use in terms of wedge-shaped sectors redial to the city's centre along established lings of transportation. This theory holds that the different income group classes of a city tend to be found in distinct areas in

7. *Albert Z. Guttenberg,. "Urban Structure and Urban Growth", Journal of the American Institute of Planners, May, 1960, taken from Chapin, "Land Use Planning", p. 84.*

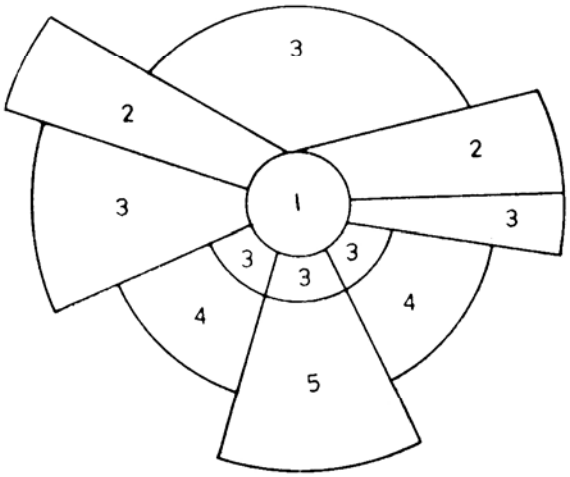
8. *Earnest W. Burgess, "The Growth of the City" in R.E. Park et al. (eds), The city, chicago: University of Chicago Press, 1925, taken from, F. Stuart Chapin, "Urban Land Use Planning", p. 14.*

9. *Homer Hoyt, The Structure and Growth of Residential Neighbourhood in American Cities, Washington: Federal Housing Administration, 1939, p. 76.*



MAP 1: CONCENTRIC ZONE CONCEPT

1—Central Business District.
2—Zone of Transition.
3—Zone of Working Men's Home.
4—Zone of Better Residence.
5—Commuter's Zone.



MAP 2: THE SECTOR THEORY CONCEPT

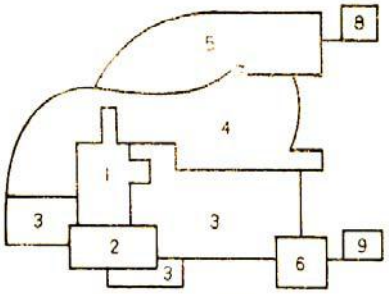
1—Central Business District.
2—Wholesale Light Manufacturing.
3—Low Class Residential.
4—Medium Class Residential.
5—High Class Residential.

6. Multiple Nuclei Concept [10]

First suggested by McKenzie, then expanded by Harris and Ullman, there are a series of unclei in the patterning of the urban land uses rather than the single central core used in the other theories. They mention the following four factors for creating different unclei:

- Interdependency of certain types of activities and need for close physical proximity to one another.
- Natural clustering tendency among certain types of activities, which find it mutually profitable to congregate together.
- Converse to No. 2, activities which have no particular affinity for one other and generate heavy traffic, creating parking problems.
- Finally, related factor of high rents or high land costs, which have the effect of attracting or repelling uses in the process of nucleation.

The concept requires clearer differentiation between factors explaining the structures and dynamics of change. Details are given in map 3.



MAP 3: MULTIPLE NUCLEI CONCEPT

1—Central Business District.
2—Wholesale Light Manufacturing.
3—Low Class Residential.
4—Medium Class Residential.
5—High Class Residential.
6—Heavy Manufacturing.
7—Outlying Business.
8—Residential Suburb.
9—Industrial Suburb.

10. Chauncy D. Harris and Edward L. Ullman, "The Nature of Cities", *The Annals of the American Academy of Political and Social Sciences*, November 1945.

CHAPTER 3

Static Theories About Location of Land Use and Industries

1. Location of a Single Economic Activity

Historically speaking the concept of location theory by three Germans: Launherdt[1,] Von Thunen[2] and Weber.[3]

Launhardt explained the location of industry as the decision resulting from two variables, namely – difference in cost and demand at alternate locations.

Von Thunen's theory, which is mainly concerned with the agricultural location, is based upon the assumption that labour and capital are equal in unit rate and the cost of production at different places (excluding the transportation cost) is the same. The cost of a given crop at different locations is different depending upon the distance from the market where the crop will be sold.

Weber says that the best location of a plant will be where the cost of its location is minimum. He breaks all the factors concerning the location into three categories; cost of transportation, cost of labour, and cost of agglomeration. He says that the location of any plant depends where the total cost of these factors is the least.

The Interdependence Theory of Location

Fetter, Hotelling, Lerner and Singer, Smithies and Chamberlin included the demand element and developed a new location theory which is known as the *interdependence theory of location.* This theory revolves around the following three main characteristics.

- Each seller seeks to control the largest market area, which depends upon the interdependence existing between him and his rivals.
- The effective supply varies at different sites due to different costs and location of rivals.
- Therefore, the tendency to disperse will depend upon the height of the freight cost, the elasticity of demand function and characteristics of marginal costs.

1. *Whilhelm Launhardt, "Mathematische Begrundung der Volkswirt-shcaftslehre", Leipzig, 1885.*
2. *John. H. Von Thunen, " Der Isolierte Staat in Beziehung auf Landwirtshaft and National Ekonomie", Berlin, 1875.*
3. *A. Weber, "Ueber den standart der industerien", Tubingen, 1909.*

In other words, in this theory, cost and demand are treated as variable factors that govern the selection of plant location.

Theory of Maximisation of Profit

There is a third concept of maximum-profit location, which refers to that site from which a given number of buyers (whose purchases are required for the greatest possible profits) can be served at the lowest total cost. While the lowest level of average production cost at this site may be higher than that existing at alternate ones, the monopolistic control gained over large number of buyers (spread over a market area) makes it the maximum-profit location at the optimum output. In this way in this concept both demand and cost factors are variables.

(2) Theories of Relative Location

These theories have been developed by three writers, Walter Christaller (in 1935) the second, August Losch (in 1954) and the third Walter Isard (in 1956).

***Christaller,* in his 'Central place'[4] theory states[5] that:**

(i) An area is best and economically served if the central places are distributed evenly over the entire area.

(ii) Central places from a hierarchic system from the smallest rural centre to the largest urban one. Central places of equal order in the hierarchy are evenly spaced apart, and have the same functions.

Losch also developed a system, but with changes. As settlements of the same size may not have all function of lower order, hierarchy starts form the top to bottom to top.

Isard showed that the hexagonal pattern worked by Losch is unlikely to occur in practice, and he introduced the concepts of more closely packed centres near the centre instead of away from it. He also pointed out that a hexagon loses its importance as a spatial form once the agglomerative forces are allowed to work.

Doxiadis[6] presented a theory on the hexagonal system of settlement pattern, with a superimposition of physical constraints.

Thijsse[7] evolved a new urban rural pattern, as a yardstick for newly reclaimed land (zyderzeepolders), as for any similar area where the economic development is approximately of the same level as that in the Nether-lands, may be today or in future.

He based his pattern on time needed in transportation for carrying out different human activities along with the following two assumptions.

(1) The transportation will be motorized.

(2) Agricultural activities will be performed in a modern way, which will have a very low density, 0.3 to 0.5 persons per HAC.

This system can be demonstrated as a system of hexagon with a town in the centre and six agricultural villages around it at an equal distance from each other and from the town. This pattern is evolved on the criteria that the conveyance time needed from town to village is 20 minutes at speed of 55 km per hour by motorized bicycle. In the end he concluded that the system will never be achieved, in reality due to physical feature like rivers, mountains etc.

All these theories of relative location explain the human settlement patterns of different orders with the limitations of man-made and natural features. Attempts can be made to explain the shopping and community facilities – like education and medical – inside a metropolitan urban area, but here the man-made and natural features are more normal and strong, so that to follow a hexagonal pattern becomes nearly impossible.

CHAPTER 4

A New Approach to Land Use Planning

"Land use originated in relation to agriculture, where the emphasis is on the *use of the land,* i.e., its productive capacity. What happens on the land depends on what is extracted from it.

In an urban context, the emphasis shifts to *use on the land.* Certainly, physical characteristics play a role in determining urban land use, but their importance is secondary to the relation of a piece of land to human activities located on other pieces of land. For urban use, land is a site, rather than a factor of production".[1]

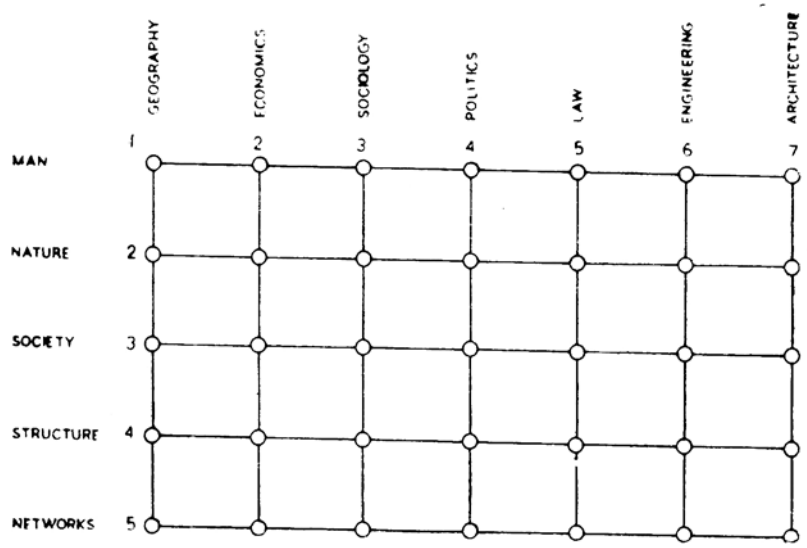
If we see the land use in totality in this dynamic age, we find that it is not only either the *use of the land*[3] but a combination of both. For finding out the land use in totality, we should study all its elements which form it, different needs of these elements, transformation of needs into conditions within the existing constraints and finally formation of land use by these conditions.

There are five basic elements which from land use, man, society, nature, structure and networks. Due to these elements, certain needs are created for a man; the needs can be biological, physiological and psychological. These needs create conditions within the existing or predicted physical, economical, social, administrative and political factors. These created conditions form a land use pattern.

The study of the above system should be done with the help of subject – geography, economic, sociology, politics, law, engineering and architecture. All these disciplines contribute to and help the elements, in terms of quality and quantity for studying them within the existing and predicted constraints – physical, economical, social, administrative and political. As given in the following diagram, 35 nodes are formed, and each node shows the relationship between one discipline and one element.

The resultant spatial pattern obtained by this multi-disciplinary study of these five basic elements – man, nature, society, structures and networks

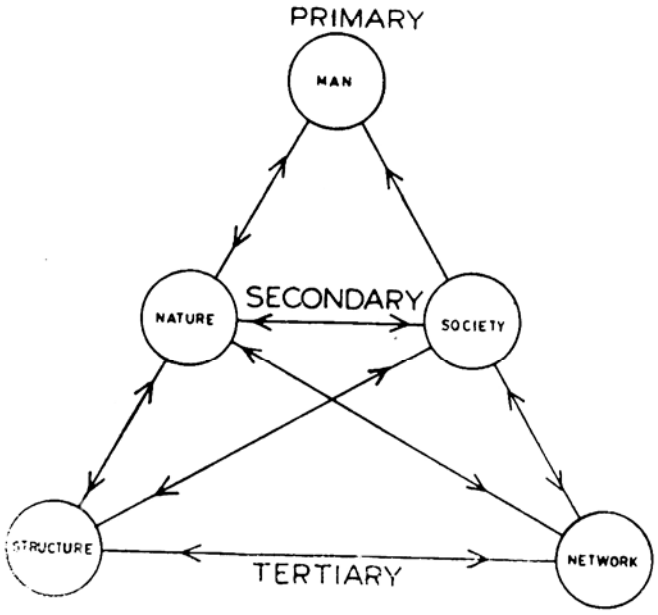
1. *Hans Blumenfeld," the Conceptual Framework of Land Use", Ekistics, Vol. 14, 1962, p. 259.*
2. *"Use of the land" means structure, form and stability of land (soil) which effects buildings, network, etc.*
3. *"use on the land" means spatial pattern visible on the land.*



within the existing and predicted constraints, viz., physical, social, economic, administrative and political, is called *land use*.

Formulation of Theory

(1) As discussed, land use is formed by five basic elements—man, nature, society, structures and networks. Now the aim is to connect these



MAP 4: RELATIONSHIP BETWEEN DIFFERENT ELEMENTS OF LAND USE

Five elements In such a *balanced way*[4] (as given in map 4) quantitatively and qualitatively, within the existing and predicted constraints – physical, social, economic, administrative and political – that the resultant effect gives the maximum satisfaction to man, whether, living, working or enjoying.

(2) Man has certain needs[5] to survive and satisfy himself. These needs create some conditions[6]. The quantity and quality of satisfaction depends upon the capacity of the existing and predicted constraints – physical, economic, social, administrative and political. For example, if there is an increase in population by 100 families, they will each require 100 places of living, working and enjoying and the traffic routes to link all the places. This need of 100 families will create conditions to construct all of these, but the conditions will be shaped by the existing constraints. Only 50 units may be constructed due to physical limitations and lack of funds. Also all the 100 families may not like to live together due to different social groups. Administrative procedures and formalities may hurdle the progress of work, or political constraints may even cancel the scheme.

4. **Balanced way –** if we see hierarchy in elements, we find man is primary element, as our main goal is to give him maximum satisfaction. Since man wants both nature and society to survive, so these two elements are at secondary level. Man and society created for themselves the need for structures and networks, so these two are at tertiary level.

To obtain balance, we should study carefully the importance and needs of different elements. Many times we take man as supreme, while designing the structures, but sometimes he has to adjust himself as per structures, as in case of a multi-storeyed structure in a congested area, man has to adapt himself, whether he likes it or not.

5. Needs can be considered in many ways:

A There are subjective needs and objective needs. Subjective needs differ from person to person. They will differ as per his qualities, status and prestige etc. While objective needs are to make a man survive, as he wants… calories per day.. space in a room… working area in a factory… etc.

B Needs can be classified as per importance also, like primary, secondary, tertiary. For example, for an immigrant who wants to come to an urban area for his settlement will have the primary need may be to find a job, at secondary level a living place and at tertiary level a recreational place. Likewise other needs can also be classified as per importance.

C Man has certain needs, as an individual and as a member of society. Individual needs can be … (i) biological, (ii) physiological, (iii) psychological. Social needs will arise when he is in a family, for living, health, education, social security, food

consumption and proper nutrition, employment and better condition of work, clothing recreation and human freedom.

6. Conditions: All these different needs mentioned above create different conditions, e.g. – for living places, houses, hostels, boarding houses are needed; for health, dispensaries, clinics and hospitals of different types: for education, nursery primary, secondary school, colleges, universities and research institutions, etc., are necessary.

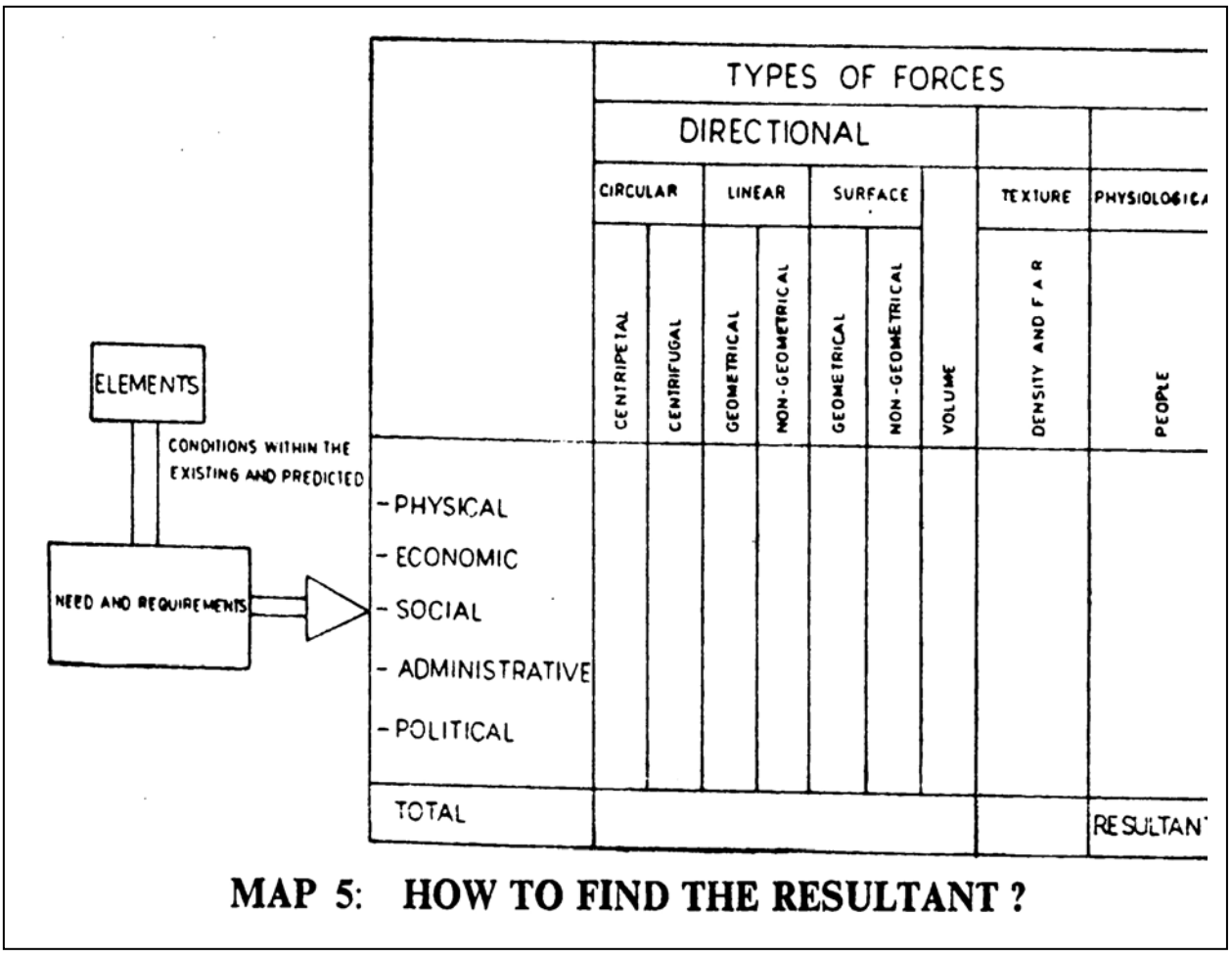
3. These needs and conditions create the following three types of forces[7] within the existing and predicted constraints:

(i). Physiological forces

(ii). Texture forces

(iii) Directional forces.

4. Now the problem is to synthesise these, to get a resultant, in terms of intensity and quality, as shown is map 5.



MAP 5: HOW TO FIND THE RESULTANT ?

7. ***Characteristics of different types of forces:***

(i) Physiological forces. These are non-directional forces, necessary around a man to take breath, around a building to maintain light and ventilation plans around an urban area provision in terms of at least one mile of green belt to protect it against the nuisance of forces of agglomeration, from the surrounding areas.

(ii) Texture forces are also non-directional, and they keep all the elements or parts of elements in a certain pattern. Elements are arranged in different patterns due to physicological and density forces. When men will assemble on a ground, they will assemble in different patterns and buildings are also arranged in different patterns.

(iii) Directional forces. People do not need only physiological space and a proper relationship between them, but they also need to be as close as possible to the points of their interest which attract them with directional forces; e.g. , as a city centre. These forces perform the functions of concentration, deconcentration, centralisation and decentralisation.

Directional forces are of following types:

(a) Central forces. These are of two types:

-a centripetal forces (forces of concentration or centralisation)

-centrifugal forces (forces of deconcentration or decentralization

(b) Linear forces: geometric – (i) Lini-petal (towards a line)

(ii) Lini-fugal (away from a line)

Non-geometric- (i) Lini-petal (towards an irregular line)

(ii) Lini-fugal (away from an irregular line)

By the directional forces we get the intensity of goods and passengers; by texture forces we get densities if different parts, and by the combination of texture and physiological forces we get the floor area ratio of different buildings.

Quality of forces can be positive or negative, attractive or repulsive, regular or irregular, and seasonal, periodical etc.

5. These resultant forces explain all the different laws of land use (creation, development, declination, internal balance between elements, physical characteristics) like location, foundation, form and structure, and unite them into a common product. Due to this resultant all the different forces are created, like concentration, deconcentration, centralisation, decentralisation, invasion and succession. This resultant decides where a particular land use of particular intensity and quality should be located.

6. *How this phenomena is visile in different forms in practice.* These resultant forces create different forms and structure of land use. The forms and structures can be basic[8], - like circular, linear (geometric and non-geometric), composite[9], or a combination of the two.

   There are different combinations of forms and structures should in practice.

- Regular structure and irregular form;
- Regular structure and regular form;
- Irregular structure and irregular form.

This phenomenon is also visible in two different types of shapes, natural and planned.

Natural shapes. Form thousands of years land use has been developed in a natural way under the influence of very few and limited forces. Land use in the beginning was being implemented in a hexagonal pattern, but when these natural solutions ceased to answer all the needs of human beings, it was switched to the pattern of irregular ways.

Natural shapes grow without a plan, often tend to be a radial since all the people are interested to reach a common place. They do not have any straight road, rectangular squares, and plots of similar size. Today also

(C) Surface forces:- geometric – non-geometric

(d) Volume forces. Certain volume of air space is necessary to make the environment safe, between residential and non-residential areas.

8. *Basic forms and structure are found in very small settlements of older times, of limited size, having less investment on roads, where people live in the form of a circle due to defence reasons.*

   Basic geometric linear or non-liner forms and structures are found when development is along existing roads, having no problems of defence. Networks and man-made factors do not impose determined patterns, only configuration of the area and physical factors may play an important role.

9. *Composite structure and forms are also derived from basic ones in the formal and informal ways through different combination of forces.*

   These can be of two types viz., natural and planned. Natural form and structures are found generally in old settlements and the planned ones in the new settlements.

They are found in old parts of cities and villages.

Planned shapes (formality in design). These are formed by geometric forms of private and public open spaces. These are of the following four types:

- Radial shapes
- Grid iron pattern

- Geometric shape, may be linear or curvilinear
- Composite shape, by combining one or two.

Radial shapes are generally formal. The scope for flexibility is less, as the radial road pattern is fixed and is not changed without a bold step.

Grid iron pattern is derived from the principles of repetition of similar and equal elements (houses, building, pilot etc). here the flexibility is also limited, but more than in radial shapes.

Geometric shape, linear or curvilinear are the most common shapes and are different for different circumstances.

Composite shapes can be made by combining any of the two or more.

CHAPTER 5

Regional Aspect

Regional aspects will be dealt with the following three parts:

1. Extent of area, local area and its surroundings.
2. Different strategies to solve the problem.
3. Structural change needed.

(1) Extent of Area

If we study the different relations – economic, political and cultural – at international, national and regional levels, then we find that in all the levels there is one part which always dominates over the rest, in decision makings. We observe that decisions even at international level concerning political and economic conditions are made only in two or three countries. Likewise, at the national level too, most of the decisions are taken in the capital city. The same relation exists at the regional level. The main city having the decision making power for political, economical and cultural affairs, is called the *centre,* and the rest of the surrounding area as *periphery.* The intensity of relationship at the three different levels, viz., international, national and regional described above depend upon the communication system, movement of goods, passengers and political relations.

The metropolitan city or core region, which is our concern, has always one main city, the *centre* and other parts, containing settlements of lower order and non-urban land use, the *periphery.* The extent of area to which the main city has command depends upon the decision making powers it has, about economic, political and cultural affairs for the periphery. Friedmann defines the core region as:

"core regions are acharacterised by their high promise for economic growth. Structurally, they will consist of one or more clustered cities, together with an encompassing area that may be conveniently delimited by the extent of daily commuting, or, alternatively, by the distribution of agricultural activities that furnish sustenance to central urban populations. Their problems will be manifold: how to sustain growth, how to absorb newcomers into local labour force and provide for their needs, how to organize a livable physical environment that is also efficient, and how to manage the increasingly complex affairs of metropolitan [1] society, voracious in its hunger for space."

1. *Johan friedmann, Regional Development policy: A Case Study of Venezuela, the M.I.T. Press, 1966, p. 41.*

The reasons of decision making for the periphery by the *centre* are further clarified in the following seven points given by Friedmann:

(i) The failure of diminishing return to set in at the centre.
(ii) The failure to perceive peripheral investment opportunities.
(iii) Export demand for goods produced at the centre.
(iv) Coincidence of centre with the national market.
(v) Location of quaternary services at the centre.
(vi) Heterogeneity of populations.
(vii) Inability of the periphery to make adjustments appropriate to constant socio-economic change at the centre due to:

- High replacement rates on the periphery;
- Disruptive effects of rapid outmigration;
- Lack of capital; and
- Inability and unwillingness to see the regional problem from a national perspective.[2]

The above discussion proves that a city has its influence over its surrounding depending upon decision making capacity and communicating system. Therefore, the calculation of needs and existing and predicted constraints – (physical, social, economic, administrative and political) require the consideration of not only the local area, but of the whole region.

2. Different Strategies to Solve the Core or City Region

Knowing the fact that there exists a relationship between a city and its periphery, the next step is to know its type and magnitude and the solution to it. There can be the following types of combination between a city and its periphery.

(i) *City* at the centre, and upward-transitional area[3] surrounding it;
(ii) *City* at the centre, with downward-transitional area[4] surrounding it;
(iii) *City* at the centre, with resource frontier area[5] surrounding it;

2. Ibid, p. 14.
3. 'upward-transitional areas have a favourable location relative to core regions and this asset, plus their natural resources suggest the possible of greatly intensified use of resources. Normally this kind encompasses several cities and receives a net inflow of population. It "will show a strong admixture forestry, agricultural and cattle raising activities" and therefore have a lower population density than core regions.
4. 'Downward-transitional' area are old, established settlements, whose economies are stagnant or in decline and whose peculiar resources combinations suggest an optimal but less intensive development than in the past. It may have an aging industrial structure or an exhausted natural resource.
5. 'Resource frontier' are zones of new settlement in which virgin territory is occupied and made productive. Resource frontiers normally are related to agricultural activities and may be contiguous with already settled areas. It can be non-contiguous also, when generally, associated with large scale investments in a mineral or forest development scheme and involves substantial urbanization. Here in our problem of 'city region' we are only concerned with the contiguous one.

(4) *City* at the centre, with combination of either, upward-transitional, downward-transitional or source frontier area.

These different combinations will have different solutions, and the description of each is outside the scope of this chapter, so a general approach has been adopted here.

All the above different combinations have a common problem. It is of social costs which are in execs of social benefits, inhabitants being exposed to financial and other burdens of congestion, which they would otherwise not need to suffer.

The solution to this problem can be, either renewal of the conurbation which is most difficult due to financial, technical and political limitations, or accommodation of some of its existing or future expected population and economic activities are accommodated outside the existing area.

There can be two methods of limiting the problems in conurbation, either by spreading the overspill population in large number of small towns (that is by using the instrument of dispersion of economic activities) or by concentrating in a few large centres (by the instrument of concentration of economic activities). The former holds good, when the overspill population is not large, and the receiving towns have spare infrastructure and are short of labour, otherwise the latter is preferable.

There are two basic advantage of concentration in few large centres. Firstly, that a large concentration away from the main conurbation is likely to take proportionally more pressure from it and secondly, a large concentration may allow economies of scale in the provision of infrastructure and work as a real *counter magnet.* Beside this, there are other advantages, e. g. , it is easier to plan overspill to a few centres rather than to a series of smaller ones. They are likely to be more stable due to prospects of greater industrial diversification, and lastly, they can absorb large industrial, groups, which have to shift as a whole at one time in order to preserve their established inter-relationship between different firms, and maintain external economies.

(3) Importance of 'Structural Change Needed'

Land use elements, along with the existing (socio-economic and political) constraints are projected for a planning period of 20 years. The method is not perfect and consistent, as it does not take into account the element of structural change, which will be in the planning period in such a dynamic age. As such the importance of *structural change* has been described below.

In the development process, structural change is the most important element, and would involve a process of expansion in quantity and quality in physical, socio-economic and political system.

If these changes are to be authentic and fully consolidated, then the process must operate under certain conditions. *Firstly*, the changes must be dynamic, *secondly*, consistent in the whole range of economic, political and social factors, and *thirdly*, self-generating. This dynamic, consistent and self-generated process simultaneously affects all key aspects of society – the economy, the social stratification, the culture, the political institutions – and also all the images, attitudes, motivations and institutions deriving from such structures.

Changes in the economy. The process changes structure of production, types of goods and services in quantity and quality. It changes the system of market management and sectoral composition of production, as the agricultural system is replaced by the semi-industrial or industrial. It changes structure of employment, that is, the ratio of skilled and unskilled labour, structure of income by the help of taxes.

Change in social structure and stratification. This dynamic, consistent, and self-generation process starts the mobility in people and institutions of both types, horizontal as well as vertical. Due to this mobility urbanization starts and brings a social change in the rural life. It brings improvements in the level of living, health, food, housing, education, social security and recreation. All these changes are reflected by social roles, status and value patterns in individuals and institutions.

Change in culture. The process brings innovations into methods of productions, which are the result of the emergence and assimilation of new cultural values. Due to these, changes occur in consumption habits, transport facilities, clothing, forms of expression, customs, procedures, languages and system of communication. This procedure brings changes in rural and urban life.

Changes in political structure. Social mobility, progress in education and the presence of new social groups, new attitudes, relating to the handling of public problems. The progressive weakening of the traditional leaders and parties and their replacement by new groups brings on actual alternation in the power structure and an important change in the rules of the political games.

The ‘structural change’ brings the changes in man and society, in their economic, cultural and political settings. Thus prediction of land use needs first the study of changes which are going to happen due to structural change, not only in local areas but in its region also.

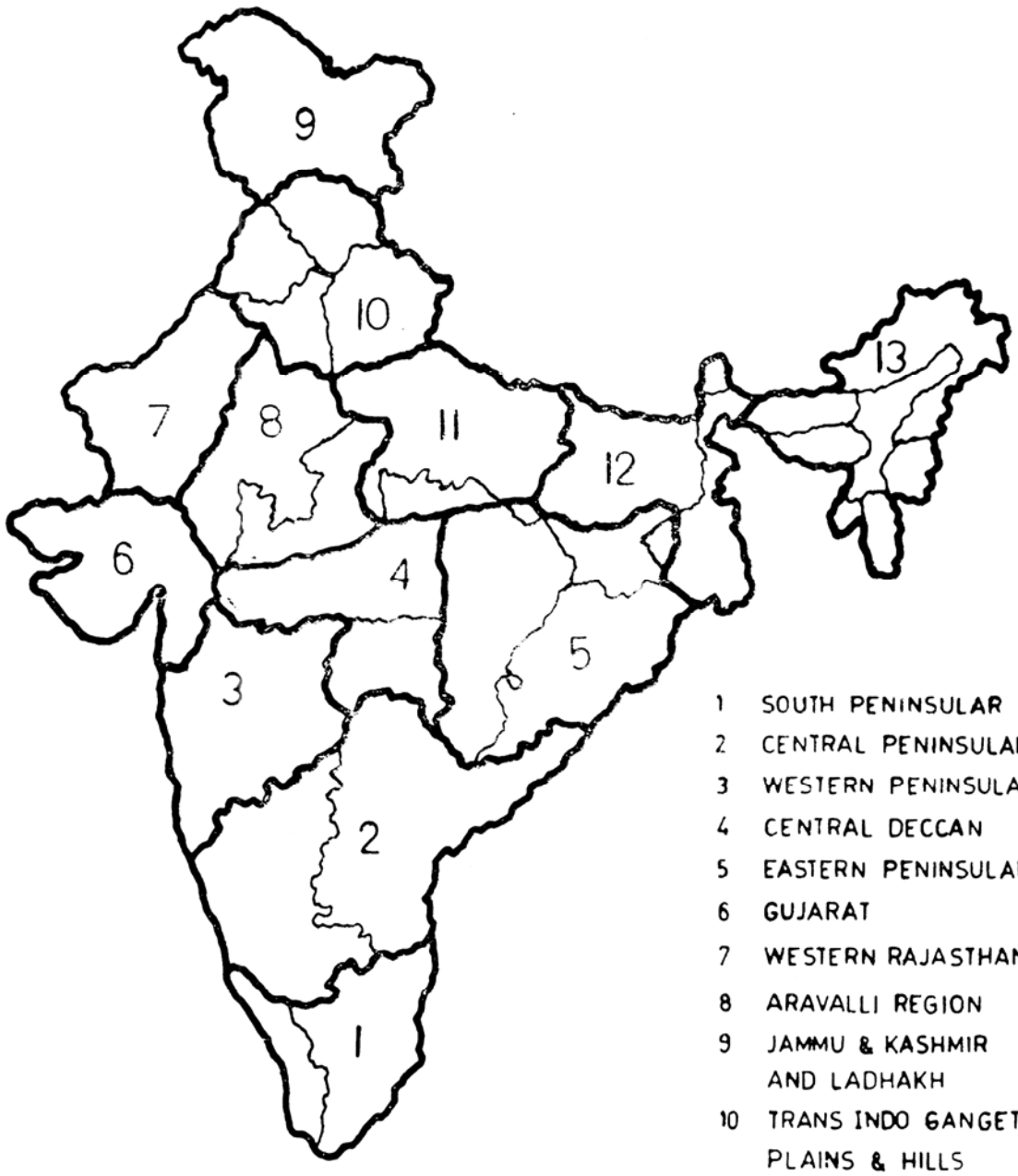
Probable Divisions of Regions and Sub-regions in India

India can be divided into 13 regions and 35 sub-regions, based on physical characteristics and resources available. Details are as given in Table 1 and shown in map 6 on page 26.

Table 1. Probable Regions and Sub-regions in India

Sl. No.	*Name of the Region*	*Name of the Sub-region*	*Prominent Settlements*
1.	South Peninsular	1. Kerala	Calicut Ernakulam Trivandrum Cochin
		2. Madras Coimbatore Industrial Region	Madras Coimbatore Salem Tiruchirapally
		3. Tamil Nadu Coastal Plains Region	Madurai Tirunelvelly
2.	Central Peninsular	4. Karnatak Coastal Interior Industrial Region	Bangalore Mysore Mangalore
		5. Rayalaseema and Coastal Plains Region	
		6. Ballery-Hospet Mining Industrial Region	Goa Belgaon Dharwar
		7. Telangana and Coastal Plains	Hyderabad Guntur Vijayawada Warangal
3.	Western Peninsular	8. Konkan and Trap Agro-industrial Region	Poona Bombay Nasik
		9. Bombay Daccan (Marathwada) Agro-industrial Region	Sholapur
4.	Central Daccan	10. Narmada Valley Region	Ujjain Indore Jabalpur Bhopal
		11. Khandesh Berar Region	Nagpur
5.	Eastern Peninsular	12. North-east Daccan Coastal Plain	Cuttack Visakhapatnam Jamshedpur
		13. Dandakaranya	Asansol Durgapur
		14. Mahanadi Basin	Bhilai Sambalpur

		15. Son Industrial Region	
		16. Chotanagpur Industrial Region	Dhanbad
		17. Beahwani Industrial Region	Rourkela
6.	Gujarat	18. Gujarat Hill and Plains Region	Ahmedabad Baroda Surat
		19. Kathiawar Kutch Region	Porbandar Jamnagar Rajkot Bhavnagar
7.	Western Rajasthan	20. Desert Region	Bikaner
		21. Semi Desert U.P.	Jodhpur
8.	Aravalli Region	22. Kotah Industrial and Chambal Valley Region	Kotah
		23. Jaipur-Udaipur Mixed Farming Region	Jaipur Ajmer
9.	Jammu and Kashmir and Ladakh	24. Jammu and Kashmir	Srinagar
		25. Ladakh	Ladakh
10.	Trans-Indo-Gangetic Plains and Hills	26. Bhakra-Nangal Agro-industrial Region	Ludhiana Chandigarh
		27. Delhi-Western U.P. Plains and Hills Region	Delhi Meerut
11.	Ganga Yamuna Plains	28. Kanpur Agro-industrial Region	Kanpur Lucknow Agra
		29. Eastern U.P. Bagel Khand Region	Allahabad Varanasi
12.	Lower Ganges Plains	30. N. Bihar Agro-industrial Region	Patna Barauni Darbhunga
		31. Calcutta Hoogly Industrial Region	Calcutta
		32. North Bengal Plains	Bhagalpur Asansol Burdwan
13.	North-east Region	33. Lower Brahmaputra Shillong Plateau Region	Shillong Gauhati
		34. Upper Brahmaputra and Hills Region	Dibrugarh
		35. Eastern Hills and Plains Region	Imphal
	Total:	35. Sub-regions	



MAP 6: PROBABLE REGIONS IN INDIA

APPENDIX

DECLARATION OF PRINCIPLES ABOUT HUMAN SETTLEMENT

Source: Vancouver Declaration on Human Settlements, 1976,

Habitat: United Nation Conference on Human Settlements

Aware that the Conference was convened following recommendation of the United Conference on the Human Environment and subsequent resolutions of the General Assembly, particularly resolution 3128 (XXVIII) by which the nations of the world expressed this concern over the extremely serious conditions of human settlements, particularly that which prevails in developing countries.

Recognizing that international cooperation, based on the principles of the united Nations Chapter, has to be developed and strengthened in order to provide solutions for world problems and to create an international community based on equity, justice and solidarity.

Recalling the decisions of the united Nation Conference on the Human Environment, as well as the recommendations of the world Population Conference, the United Nations Industrial Development Organisation, the world Conference of the International Women's Year; the Declaration and Programme of Action adopted by the sixth special session of the General Assembly of the United Nations and the Charter of Economic Right and Duties of States that establish the basis of the new International Economic Order.

Nation that the condition of human settlements largely determines the quality of life, the improvement of which is a pre-requisite for the full satisfaction of basic needs, such as employment, housing, health services, education and recreation,

Recognizing that the problems of human settlements are not isolated from the social and economic development of countries and that they can-not be set apart from existing unjust international economic relations,

Being deeply concerned with the increasing difficulties facing the world in satisfying the basic needs and aspirations of people consistent with principles of human dignity,

Recognizing that the circumstances of life for vast number of people in human settlements are unacceptable, particularly in developing countries, and that, unless positive and concrete action is taken at national and international levels to find and implement solutions these conditions are likely to be further aggravated, as a result of:

Inequitable economic growth which reflected in the wide disparities in wealth which now exist between countries and between human beings and which condemn millions of people to a life of

poverty, without satisfying the basic requirements for food, education, health services, shelter, environmental hygiene, water and energy:

Social, economic, ecological and environmental deterioration which are exemplified at the national and international levels by inequalities in living conditions, social, regregation, racial discrimination, acute unemployment, illiteracy, disease and poverty, the breakdown of social relationship and traditional cultural values and the increasing degradation of life-supporting resources of air, water and land;

World population growth trends which indicate the numbers of mankind in the next 25 years would double, thereby more than doubling the need for food, shelter and all other requirements for life and human dignity which are at the present inadequately met;

Uncontrolled urbanization and consequent conditions of overcrowding, pollution, deterioration and psychological tensions in uncontrolled urban growth;

Rural dispersion exemplified by small exemplified by small scattered settlements and isolated homesteads which inhibit the provisions of infrastructure and services, particularly these relating to water, health and education; and

Involuntary migration politically, racially, and economically motivated, relocation and expulsion of people from their national homeland.

Recognizing also that the establishment of a just and equitable world economic order through necessary changes in the areas of the international trade, monetary system, industrialization, transfer of resources, transfer of technology and the consumption of world resources, is essential for socio-economic development and improvement of human settlement, particularly in developing countries.

Recognizing further that these problems pose a formidable challenge to human understanding, imagination, ingenuity and resolve, and that new priorities to promote the qualitative dimensions to economic development, as well as a new political commitment to find solutions resulting in the practical implementation of the New International Economic Order, become imperative.

I. Opportunities and Solutions

(1) Mankind must not be daunted by the scale of the task ahead. There is need for awareness of and responsibility for increased activity of the national government and international community, aimed at mobilization of economic resources, institutional changes and international solidarity by:

(a) Adopting bold, meaningful and effective human settlement which recognize human settlement policies and spatial planning strategies realistically adapted to local conditions;

(b) Creating more livable, attractive and efficient settlement which recognize human scale, the heritage and culture of people and the special needs of disadvantaged groups especially children, women and the infirm in order to ensure the provision of health, services, education, food and employment within frame work of social justice;

(c) Creating possibilities for effective participation by all people in the planning, building and management of their human settlements;

(d) Developing innovative approaches in formulating and implementing settlement programmes through more appropriate use of science and technology and adequate national and international financing;

(e) Utilizing the most effective means of communications for the exchange of knowledge and experience in the field of human settlements;

(f) Strengthening bonds of international cooperation both regionally and globally;

(g) Creating economic opportunities conducive to full employment where, under health, safe conditions, women and men will be fairly compensated for their labour in monetary, health and other personal benefits.

(2) In meeting this challenge, human settlements must be seen as an instrument and object of development. The goals of settlement policies are inseparable from the goals of very sector of social and economic life. The solutions to the problems of human settlements must therefore be conceived as an integral part of the development process of individual nations and the world community.

(3) With these opportunities and considerations in mind and being agreed on the necessity of finding common principles that will guide governments and the world community, in solving the problems of human settlements, the conference proclaims the following general principles and guidelines for action.

(II) General Principles

(1) The improvement of the quality of life of human beings is the first and most important objective of every human settlement policy. These policies must facilitate the rapid and continuous improvement in the quality of life of all people beginning with the satisfaction of the basic needs of food, shelter, clean water, employment, health, education, training social security without any discrimination as to race, colour, sex, language, religion, ideology, national or social origin or other cause, in a frame of freedom, dignity and social justice.

(2) In striving to achieve this objective, priority must be given to the needs of the most disadvantaged people.

(3) Economic development should lead to the satisfaction of human needs and is a necessary means towards achieving a better quality of life, provided that it contributes to a more equitable distribution of its benefits among people and nations. In this context particular attention should be paid to the accelerated transition in developing countries from primary development to secondary development activities, and particularly to industrial development.

(4) Human dignity and the exercise of free choice consistent with overall public welfare are basis right which must be assured in every society. It is therefore the duty of all people and government to join the struggle against any forms of colonialism, foreign aggression and occupation, domination, apartheid and all forms of racism and racial discrimination referred to in the resolutions as adopted by the General Assembly of the United Nations.

(5) The establishment of settlements in territories occupied by force is illegal. It is condemned by the international community. However, action still remains to be taken against the establishment of such settlements.

(6) The right of free movement and the right of each individual to choose the place of settlement within the domain of his own country should be recognized and safeguarded.

(7) Every state has the sovereign and inalienable right to choose its economic system, as well as its political, social and cultural system, in accordance with the will of its people, without interference, coercion or external threat of any kind.

(8) Every state has the right to exercise full and permanent sovereignty over its wealth, natural resources and economic activities, adopting the necessary measures for the planning and management of its resources, providing for the protection, preservation and enhancement of the environment.

(9) Every country should have the right to be sovereign inheritor of its own cultural values created throughout its history, and hast he duty to preserve them as an integral part of the environment.

(10) Land is one if the fundamental elements in human settlements. Every state has the right to take the necessary steps to maintain under public control the use, possession, disposal and reservation of land. Every state has the right to plan and regulate use of land, which is one of its most important resources, in such a way that the growth of population centres both urban and rural are based on a comprehensive land use plan. Such measures must assure the attainment of basic goals of social and economic reform for every country, in conformity with its national and land tenure system and legislation.

(11) The nations must avoid the pollution of the biosphere and the oceans and should join in the effort to end irrational exploitation of all environmental resources, whether non-renewable or renewable in the long term. The environment is the common heritage of mankind and its

protection is the responsibility of the whole international community. All acts by nations and people should therefore be inspired by a deep respect for the protection of the environmental resources upon which life itself depends.

(12) The waste and misuse of resources in war and armaments should be prevented. All countries should make a firm commitment to promote general and complete disarmament under strict and effective international control, in particular in the field of nuclear disarmament. Part of the resources thus released should be utilized so as to achieve a better quality of life for humanity and particularly the peoples of developing countries.

(13) All persons have the right and the duty to participate, individually and collectively in the elaboration and implementation of policies and programmes of human settlements.

(14) To achieve universal progress in the quality of life, a fair and balanced structure of the economic relations between states has to be promoted. It is therefore essential to implement urgently the New International Economic Order, based on the Declaration and Programme of Action approved by the General Assembly in its sixth special session, and on the Charter of Economic Rights and Duties of States.

(15) The highest priority should be placed on the rehabilitation of expelled and homeless people who have been displaced by natural or manmade catastrophes, and especially by the act of foreign aggression. In the latter case, all countries have the duty to fully cooperate in order to guarantee that the parties involved allow the return of displaced persons to their homes and to give them the right to possess and enjoy their properties and belongings without interference.

(16) Historical settlements, monuments and other items of national heritage, including religious heritage, should be safeguarded against any act of aggression or abuse by the occupying power.

(17) Every state has the sovereign right to rule and exercise effective control over foreign investments, including the transnational corporations – within its national jurisdictions, which affect directly or indirectly the human settlements programmes.

(18) All countries, particularly developing countries, must create conditions to make possible the full integration of women and youth in political, economic, and social activities, particularly in the planning and implementation of human settlement proposals and in all the associated activities, on the basis of equal rights, in order to achieve an efficient and full utilization of available human resources, bearing in mind that women constitute half of the world population.

(19) International cooperation is an objective and a common duty of all states, and necessary efforts must therefore be made to accelerate the social and economic development of developing countries, within the framework of favourable external conditions, which are compatible with their needs and aspirations and which contains the due respect for the sovereign equality of all states.

II. Guidelines for Action

1. It is recommended that governments and international organizations should make every effort to take urgent action as set out in the following guidelines:

2. It is the responsibility of governments to prepare spatial strategy plan and adopt human settlement police must be an essential component of an overall development strategy, linking and harmonizing them with polices on industrialization, agriculture, social welfare, and environmental and cultural preservation so that each supports the other in a progressive improvement In well-being to all mankind.

3. A human settlement policy must seek harmonious integration or co-ordination of a wide variety of components including, for example, population growth and distribution, employment, shelter, land use, infrastructure and services. Governments must create mechanisms and institutions to develop and implement such a policy.

4. It is of paramount importance that national and international efforts give priority to improving the rural habitat. In this context, efforts should be made towards the reduction of disparities between rural and urban areas, as needed between regions and within urban areas themselves, for a harmonious development of human settlements.

5. The demographic, natural and economic characteristics of many countries, require polices on growth and distribution of population, land tenure and localization of productive activities to ensure orderly processes urbanizations and arrange for rational occupation of rural space.

6. Human settlement policies and programmes should define and strive for progressive minimum standards for an acceptable quality of life. These standards will vary within and between countries, as well as over periods of time, and therefore must be subject to change in accordance with conditions and possibilities. Some standards are most appropriately defined in quantitative terms, thus providing precisely defined targets at the local and national levels. Others must be qualitative, with their achievement subject to felt need. At the same time, social justice and a fair sharing of resources demand the discouragement of excessive consumption.

7. Attention must also be drawn to the detrimental effects of transposing standards and criteria that can only be adopted by minorities and could heighten inequalities, the misuse of resources and the social, cultural and ecological deterioration of the developing countries.

8. Adequate shelter and services are a basic human right which places an obligation on governments to ensure their attainment by all people, beginning with direct assistance to the least advantaged through guided programmes of self-help and community action. Governments should Endeavour to remove all impediments hindering attainments of these goals. Of special importance is the elimination of social and racial segregation, *inter alia,* through the creation of

better balanced communities, which blend different social groups, occupation, housing and amenities.

9. Health is an essential element in the development of the individual and one of the goals of human settlement policies should be to improve environmental health conditions and basic health services.

10. Basic human diginity is the right of people, individually and collectively, to participate directly in shaping the policies and programmes affecting their lives. The process of choosing and carrying out a given course of action for human settlement improvement should be designed expressly to fulfil that right. Effective human settlement polices require a continuous co-operative relationship between a government and its people at all levels. It is recommended that national government promote programmes that will encourage and assist local authorities to participate to a greater extent in national development.

11. Since a genuine human settlement policy requires the effective participation of the entire population, resource must therefore be made at all times to technical arrangements permitting the use of all human resources, both skilled and unskilled. The equal participation of women must be guaranteed. These goals must be associated with a global training programme to facilitate the introduction and use of technologies that maximize productive employment.

12. International and national institutions should promote and institute education programmes and courses in the subject of ‘human settlements.

13. Land is an essential element in development of both urban and rural settlements. The use and tenure of land should be subject to public control because of its limited supply through appropriate measures and legislation including agrarian reform polices – as an essential basis for integrated rural development – that will facilitate the transfer of economic resources to the agricultural sector and the promotion of the agro-industrial effort, so as to improve the integration and organistation of human settlements, in accordance with national development plans and programmes. The increase in the value of land as a result of public decision and investment should be recaptured for the benefit of society as a whole. Governments should also ensure that prime agricultural land is destined to its most vital use.

14. Human settlements are characterized by significant disparities in living standards and opportunities. Harmonious of disparities between rural and urban areas, between regions themselves. Governments should adopt policies which aim at decreasing the differences between living standards and opportunities in urban and non-urban areas. Such policies at the national level should be supplemented by policies designed to reduce disparities between countries within the framework of the New International Economic Order.

15. In achieving the socio-economic and environment objectives of the development of human settlements, high priority should be given to the actual design and physical planning processes

which have as their main tasks the synthesis of various planning approaches and the transformation of board and general goals into specific design solutions. The sensitive and comprehensive design methodologies related to the particular circumstances of time and space, and based on consideration of the human scale should be pursued and encouraged.

16. The design of human settlements should aim at providing a living environment in which identities of individuals, families and societies are preserved and adequate means for maintaining privacy, the possibilities of face-to-face interactions and public participation in the decision-making process are provided.

17. A human settlement is more than a grouping of people, shelter and work places. Diversity in the characteristics of human settlements reflecting cultural and aesthetic values must be respected and encouraged and areas of special interest preserved for posterity. Places of worship, especially in areas of expanding human settlements, should be provided and recognized in order to satisfy the spiritual and religious needs of different groups in accordance with freedom of religious expression.

18. Government and the international community should facilitate the transfer of relevant technology and experience and should encourage and assist the creation of indigenous technology better suited to socio-cultural characteristics and patterns of population by means of bilateral or multilateral agreements having regard to the sovereignty and interest of the participating states. The knowledge and experience accumulated on the subject of human settlements should be available to all countries. Research and academic institutions should contribute more fully to this effort by giving greater attention to human settlements problems.

19. Access should be granted, on more favourable terms, to modern technology, which should be adapted, as necessary, to the specific economic, social and ecological conditions and to the different stage of development of the developing countries. Effort must be made to ensure that the commercial practices governing the transfer of technology ate adapted to the needs of the developing countries and to ensure that buyers' right are not abused.

20. International, technical and financial cooperation by the developed countries with the developing countries must be conducted on the basis of respect for national sovereignty and national development plans and programmes and designed to solve problems relating to projects, under human settlement programmes, aimed at enhancing the quality of life of the inhabitants.

21. Due attention should be given to implementation of conservation and recycling technologies.

22. In the planning and management of human settlements, governments should take into consideration all pertinent recommendations on human settlements planning which have emerged from earlier conferences dealing with the quality of life and development problems which affect it, starting with the high global priority represented by the transformation of the

economic order at the national and international levels (sixth and seventh special sessions), the environmental impact of human settlements (Stockholm conference on the Human Environment), the housing and sanitary ramifications of population growth (World Population Conference, Bucharest), rural development and the need to increase food supply (world Food Conference, Rome) and the effect on women of housing and urban development (International Women's Conference, Mexico City).

23. While planning new human settlements or restructuring existing ones, a high priority should be given to the promotion of optimal and creative conditions of human co-existence. This implies the creation of a well-structured urban space on a human scale, the close interconnection of the different urban functions, the relief of urban man from intolerable psychological tensions due to overcrowding and chaos, the creation of chances of human encounters and the elimination of urban concepts leading to human isolation.

24. Guided by the foregoing principles, the international community must exercise its responsibility to support national effort to meet the human settlement challenges facing them. Since resources of governments are inadequate to meet all needs, the international community should provide the necessary financial and technical assistance, evolve appropriate institutional arrangements and seek new effective ways to promote them. In the meantime, assistance to developing countries must at least reach the percentage targets set in the International Development Strategy for the Second United Nations Development Decade.

PART - TWO

FACTS

FACTS

INTERNAL LEVEL	**-TOURISM** **-AIRWAYS** **-EXPORT AND IMPORT**
NATIONAL LEVEL	**-POLICY ABOUT URBANISATION** **-LAND POLICY** **-LINKAGES WITH NATIONAL AND STATE CAPITALS** **-IMPORT AND SERVICES WITHIN THE COUNTRY**
REGIONAL LEVEL	**-GROWTH** **-DYNAMICS OF SETTLEMENTS** **-ECONOMY** **-CENTRE-PERIPHERY RELATIONS IN TERMS OF PHYSICAL AND FISCAL TARGETS** **-TRANSFORMATION OF NATIONAL POLICIES**
LOCAL LEVEL	**-PLANNING** **-DEVELOPMENT/IMPLEMENTATION OF VARIOUS SUBJECTS** **WATER SUPPLY AND SEWERAGE** **DRAINAGE** **POWER** **COMMUNICATION** **TRAFFIC AND TRANSPORTATION** **LOCATION AND DECENTRALISATION OF ECONOMIC ACTIVITIES** **-DIFFERENT TYPES OF PHYSICAL, SOCIO-ECONOMIC AND TRAFFIC SURVEYS**

Introduction

Planning of any urban of rural settlement would depend very mu8uch upon the data available in the country at national, regional (provincial) and local level. In India, neighter adequate data is available, nor, so far has any urban policy has been laid down by the government. In this part of the book, some data has been given at the international and national level on the following aspects.

-Comparison between rate of growth of urban, rural, and the total population in different size of urban settlements, in the less developed and the more developed regions of the world.

-Amount of infrastructure and houses available in the less developed and the more developed regions of the world.

-Location of the cities with reference to main physical features i.e., sea, lake, rivers, altitudes and latitudes.

-Number of settlements of different orders in different states along with the rate of growth during the last two decades.

-Dynamics of settlements and economic characteristics of each.

-Number of rural settlements along with their rate of growth.

-Provisions made in different Five Year Plans of the country.

CHAPTER 6

Trends at International Level

The entire world can be divided into the following two parts:

(1) More developed regions.
(2) Less developed regions.

The distinction is very clear with reference to the following points:

(1) Rates and amount of increase in total population;
(2) Rates and amount of increase in urban population;
(3) Rates and amount of increase in rural population;
(4) Percentage of urban population to total population;
(5) Percentage of million city population in comparison to urban population;
(6) Percentage of million city population with reference to total population;
(7) Annual growth rates in groups of identical agglomerations according to the size;
(8) Percentage of population between age groups viz., 0 to 15;15 to 44; 45 and over;
(9) Urban population, in 1950 and 2000, in seven major regions;
(10) Population of agglomerations exceeding one million inhabitants, in 1950 and 2000, in seven major regions;
(11) Dwelling stock per one thousand inhabitants in 1970;
(12) Persons per room in selected cities of the world in 1970;
(13) Annual rate of dwellings constructed per one thousand inhabitants, in 1970, in major regions of the world;
(14) Growth of slums and squatter population in selected cities of the world;
(15) Per capita solid waste generation rates in some principal cities of developing and developed countries in 1970;
(16) Percentage of inhabitants served by sewerage facilities in developing countries.
(17) Number of hospital beds per 10,000 inhabitants in selected countries in 1970;
(18) Number of settlements in different size groups in the world in 1960;
(19) Location of large settlements with reference to equator, sea, lake, river and altitude.

There are 215 countries in the world with a break-up of 169 in less developed regions, and 46 in more developed regions. Further break-up of the former category is: 57 countries in Africa, 33 countries in North America. 14 countries in South America; 46 countries in Asia and 19 countries in Oceania; while in the latter category, 3 countries in North America, 36 countries in Europe and other 7 countries are USSR, Australia, New Zeland, China, Japan and Singapore.

Data From United Nations Population Division

(1) Rates and amount of increase in total population, urban population and rural population during 1970-1975 in more developed and less developed regions of the world.

Region	*Annual growth rate per cent per year*			*Amount of growth per year in million*		
	Total Pop.	*Urban Pop.*	*Rural Pop.*	*Total Pop.*	*Urban Pop.*	*Rural Pop.*
1	*2*	*3*	*4*	*5*	*6*	*7*
More developed regions	0.86	1.73	0.97	47.7	65.0	-17.3
Western Europe	0.58	1.21	1.40	4.4	6.9	2.5
North America	0.90	1.53	1.03	10.5	13.4	2.9
Soviet Union	0.99	2.33	0.92	12.3	17.0	4.7
Japan	1.26	2.32	1.64	6.8	9.1	2.3
Less developed regions	2.31	4.07	1.69	309.7	142.7	167.0

Source : United Nations Population Division.

(2) Percentage of urban population to total population; percentage of million city population to urban population; percentage of million city population to total population; in 1975; in eight major regions.

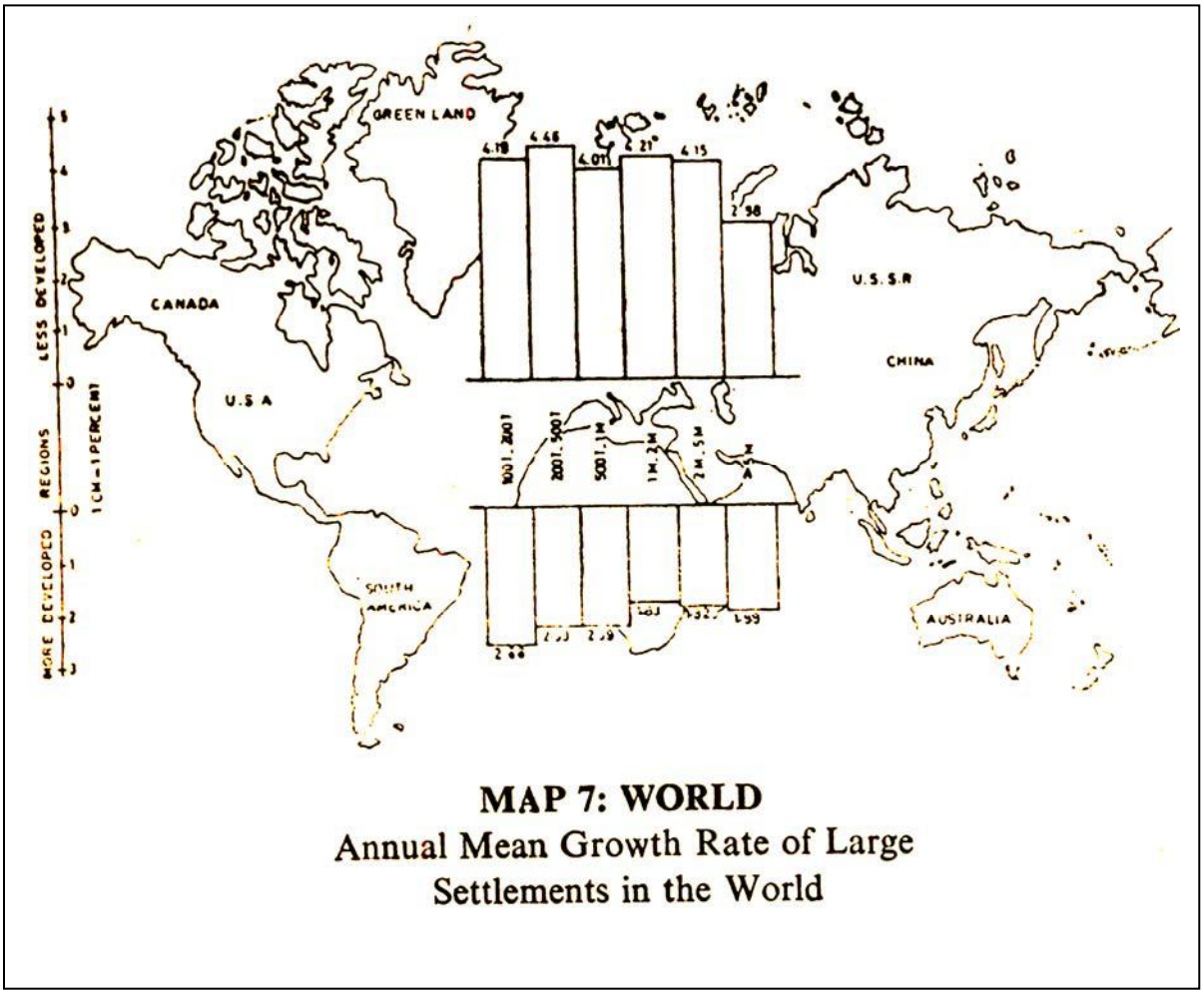
Area of region	Percentage of urban population to total population	Percentage of million city population	
		To urban population	To total population
1	*2*	*3*	*4*
North America	76.5	47.5	36.3
Oceania	71.6	37.	26.5
Europe	67.2	31.2	20.9
Soviet Union	60.5	16.4	9.9
Latin America	60.4	36.9	22.3
East Asia	30.7	36.0	11.0
Africa	24.4	22.0	5.4
South Asia	23.0	29.7	6.8
More developed regions	69.2	33.5	23.2
Less developed regions	27.3	31.4	8.6

Source : United Nations Population Division.

(3) Annual Mean Growth Rates in groups of identical agglomerations according to the size, during 1950-70 (per cent per year). Sec Map 7.

Mean. 1950-70						
Size of the population	World total	More developed regions	Less developed regions	China	India	Other less developed regions
More than 5 m	2.24	1.99	2.98	2.89	2.28	5.32
2 to 5 m	3.0	1.92	4.15	3.08	3.50	5.04
1 to 2 m	2.77	1.83	4.21	3.17	3.41	5.13
500.000 to I m	3.05	2.39	4.01	3.25	3.25	4.66
200,000 to 500,000	3.26	2.39	4.46	5.01	3.05	4.73
100,000 to 200,000	3.34	2.66	4.19	4.26	3.12	4.56

Source : United Nations Population Division (ESA/P/W P-58).



MAP 7: WORLD
Annual Mean Growth Rate of Large Settlements in the World

(4) Percentage of population in different age groups namely, under-15; 15-44; and 45 years and over, in urban settlements in eight major regions in 1960.

	Age group (years)		
Area/Region	*0-14*	*15-44*	*45 and over*
Oceania	29.4	41.3	29.3
North America	30.3	40.4	29.3
Latin America	38.4	44.4	17.2
Europe	23.6	42.3	34.1
Soviet Union	27.8	48.8	23.4
Japan	26.4	53.3	20.3
South Asia	39.9	46.6	13.5
Africa	40.0	47.5	12.5

Source: United Nations Population Division.

(5) Urban population in 1950 and 2000 in seven major regions.

Region	*population in Million*	
	1950	*2000*
Africa	28	305
Soviet Union	72	245
North America	106	265
Latin America	68	460
South Asia	108	800
East Asia	112	590
Europe	220	415

Source: Statistical Annexure (A/Conf./70/A/I/Annex.) Table 1.

(6) Population of agglomerations exceeding one million inhabitants in 1950 and 2000 in seven major regions:

Region	*population in Million*	
	1950	*2000*
Africa	3	160
Soviet Union	8	74
Latin America	16	220
South Asia	18	340
North America	42	165
East Asia	32	225
Europe	65	150

Source: United Nations Population Division.

(7) Dwelling stock per 1000 inhabitants in 1970, in countries for which data was available:
1. Australia and New Zealand only.
2. Urban population taken as that of densely inhabited districts,

Region	Dwelling stock
47 countries in more developed regions 21 countries in less developed regions	315 dwellings per 1000 inhabitants 183 dwellings per 1000 inhabitants

Source: Statistical Annex. Tables 1, 24 and 26, United Nations Annual Bulletin of Housing and Building Statistics for Europe, 1974 Volume XVIII.

(8) Average number of persons per room in selected cities of the world in 1970.

Country	City	Persons per room
Japan	Nagoya	1.1
Cuba	La-Havana	1.2
Mexico	Mexico	1.5
Brazil	Sao-Paulo	1.0
GDR	East Berlin	1.0
Poland	Warsaw	1.2
Austria	Vienna	0.7
Belgium	Antwerp	0.6
Ireland	Dublin	0.9
Sweden	Stockholm	0.7
UK	Greater London	0.6

Source: International Statistical Institute, International Statistical Year Book of Large Town. Volume 6 (advance copy).

(9) Annual rate of dwelling units constructed per 1000 inhabitants in 1970.

	Region	Dwelling units
1.	World	7.8 DUs (based on a survey of 56 countries)
2.	More developed regions	8.5 DUs (based on a survey of 32 countries)
3.	Less developed regions	1.8 DUs (based on a survey of 24 countries)
4.	Africa	1.3 DUs (based on a survey of 5 countries)
5.	North America	7.3 DUs (based on a survey of 2 countries)
6.	Latin America	1.8 DUs (based on a survey of 8 countries)
7.	Europe	7.0 DUs (based on a survey of 26 countries)
8.	USSR	9.3 DUs (based on a survey of 1 country)

Source: Compendium of Housing Statistics 1972-74 (advance copy).

(10) The growth of slums and squatters settlements in selected cities of the world.

Country and city	Year	City Pop. (in millions)	Population living in slum and squatter settlements in million	Percentage of population living in slum/squatters to total population
Brazil/(Raio-de-Janeiro)	1970	4.3	1.3	30
Peru/(Lima	1970	2.9	1.1	40
Mexico/(Mexico City)	1966	3.3	1.5	46
Pakistan /(Karachi)	1971	3.5	0.8	23
Venezuela/(Caracas)	1970	2.2	0.9	40

Source: Statistical Annex. (A/Conf.-70/A/1) Table 18.

(11) Percentage of inhabitants served by sewerage facilities in developing countries.

Region	Coverage % Inhabitants of each region	Urban		
		Connected to public sewerage system	Household system	Total
Total 58 developing countries. Of which:	59	28.1	44.2	72.3
22 in Africa	43	18.2	32.2	50.5
17 in Latin America	94	34.5	28.4	62.9
17 in Asia	51	25.8	55.5	81.3
2 in Oceania	3	13.7	56.1	69.8

Source: World Health Organization, World Health Statistical Report, 1973, Volume II, Table 5.

1. The countries for which information was available are:

Africa: Algeria, Benin, Burundi, Central African Republic, Chad, Ethiopia, Ivory Coast, Kenya, Liberia, Libyan Arab Republic, Madagascar, Mauritania, Mauritius, Morocco, Niger, Tunisia, Uganda, Upper Volambia.

Latin America: Bolivia, Brazil, Colombia, Costa Rica, Dominican Republic, EI Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Venezuela.

Asia: Afghanistan, Bangladesh, Burma, India, Indonesia, Iran, Iraq, Malaysia, Nepal, Philippines, Republic of Korea, Saudi Arabia, Sri Lanka, Thailand, Republic of South Vietnam.

Oceania: Fiji and Western Samoa.

(12) Per capita waste generation rates in some important cities of developing and developed countries of the world in 1970.

	Country and city	*per capita solid waste kg/cap/day*	*Population served (percentage)*
Argentina	Buenos Aires	0.48	10
Bolivia	Santa Cruz	0.44	11
Brazil	Rio de Janeiro	0.70	80
	Sao Paulo	0.57	-
Chile	Santiago	0.47	-
France	Paris	0.77	100
Guatemala	Guatemala City	0.86	74
Indonesia	Djakarta	0.38	-
Japan	Tokyo	0.93	-
Mexico	Mexico City	0.40	-
Nigeria	Ibadan	0.46	-
Panama	Santiago	0.80	80
Peru	Lima	0.60	-
Singapore	Singapore	0.67	-
United Kingdom	London	0.83	100
United States	New York,	1.82	100
	Washington, DC	2.1	100
Germany, Fed. Rep. of	Hamburg	1.3	100

Source: George E. Daniel, "An Approach to Infrastructure Standards", discussion paper paper prepared for United Nations Centre for Housing, Building and Planning, 15 August, 1975 unpublished.

(13) Number of hospital beds per 10,000 inhabitants in selected countries in 1970. Following 14 countries have the highest number of beds per 10,000 inhabitants.

1.	Sweden	149	8.	Australia	120
2.	Iceland	146	9.	Luxembourg	116
3.	Monaco	135	10.	Switzerland	112
4.	Greenland	135	11.	G.D.R.	111

5.	Finland	128	12.	U.S.S.R.	110
6.	Japan	127	13.	Norway	109
7.	Ireland	126	14.	Austria	109

Following 15 countries have the lowest number of beds per 1,000 inhabitants.

1.	Haiti	7.3	9.	Oman	3.7
2.	Mali	7.2	10.	Moritania	3.6
3.	Pakistan	6.0	11.	China	3.4
4.	Upper Valta	6.0	12.	Maldives	1.5
5.	Indonesia	5.8	13.	Nepal	1.5
6.	Nigeria	5.4	14.	Afghanistan	1.5
7.	Republic of Korea	5.2	15.	Bangladesh	1.2
8.	Niger	4.5			

Source: Habitat United Nations Conference on Human Settlements, "Health and Environmental Health in Human Settlements" by A.C. Martin in Colaboration with W.H.O. (A/Conf.-70/B/2) October, 1975, Page 93.

(14) Distribution of Urban Settlements, with their numbers, area and population in 1960 in the entire world (Map 8).

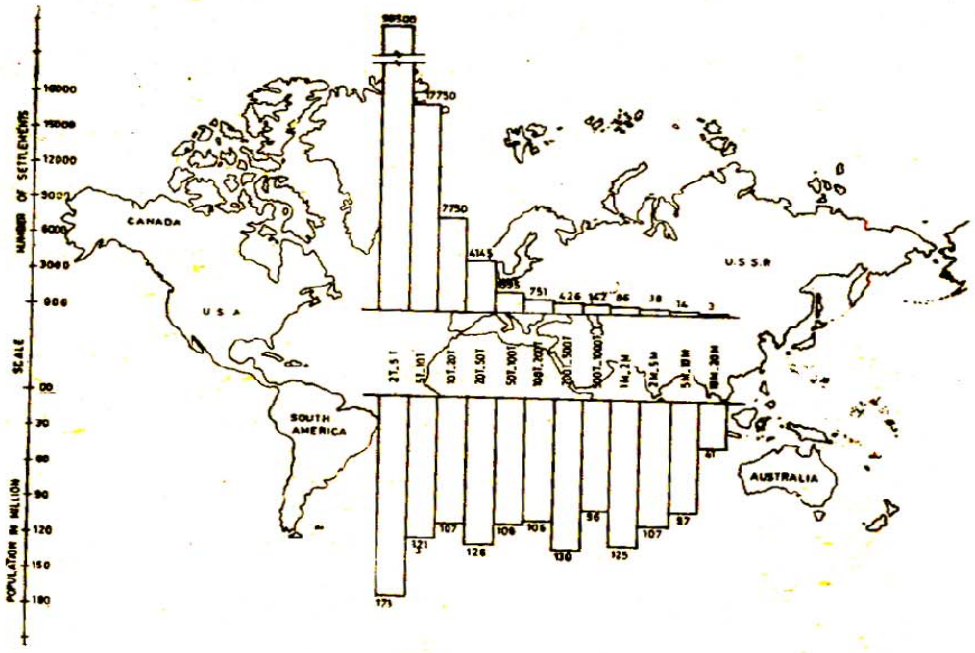
Status	*Size of settlements*	*Areas in 000 km^2*	*Nos.*	*Population in million*
Very small towns	2000 - 5000	29.7	59500	171
Small towns	5000 - 10000	17.7	17750	121
	10000 - 20000	15.5	7750	107
Medium towns	20000 - 50000	16.5	4145	126
Large towns	50000 -1 lac	12.7	1595	108
Small cities	1 lac - 2 lac	15.0	751	106
Medium cities	5 lac - 1 m	17.0	426	130
Large cities	5 lac - 1 m	17.0	142	96
Metropolitan	1 m – 2 m	18.9	86	125
Cities	2 m-5m	34.2	38	107
	5m-10m	42.0	14	97
	10m-20m	15.0	3	41
	Total	**251.4**	**92200**	**1335**

Source: Ekistics-Science of Human Settlements.

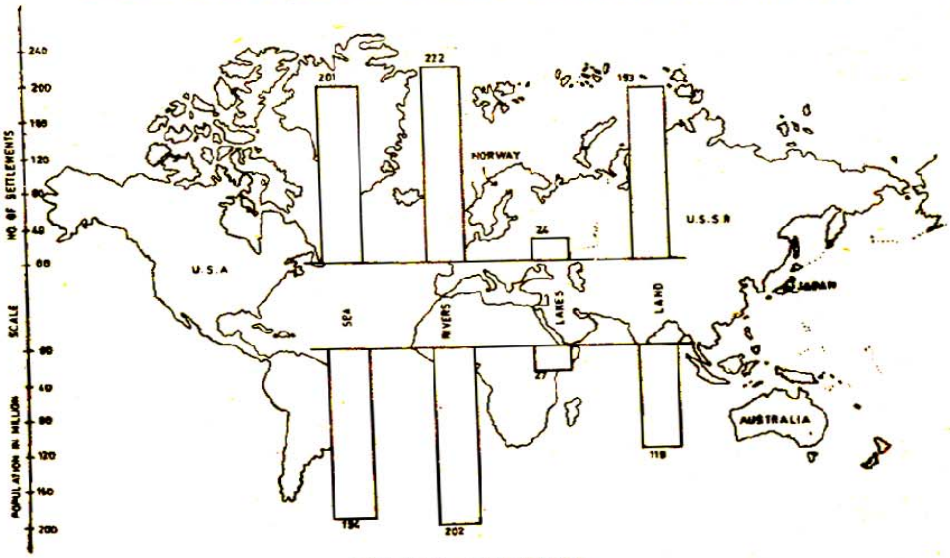
(15) Location of Large Settlements (each with population of 200,000 and more) with Reference to Equator.

Latitude	North of equator	On equator	South of equator
0		17	
10	24		5
20	30		12

30 40 50 60 70	88 169 158 116 2		17 2
Total	587	17	36=640



MAP 8: WORLD
Number and Population of Settlements in the World in 1960.



MAP 9: WORLD
Distribution of Settlements with Reference to Rivers, Sea, Lakes and Land.

(16) Distribution of Large Settlements, each with a population of 200,000 and above; with reference to sea, rivers and lake (Map 9).

With reference to sea, lake, river and land:

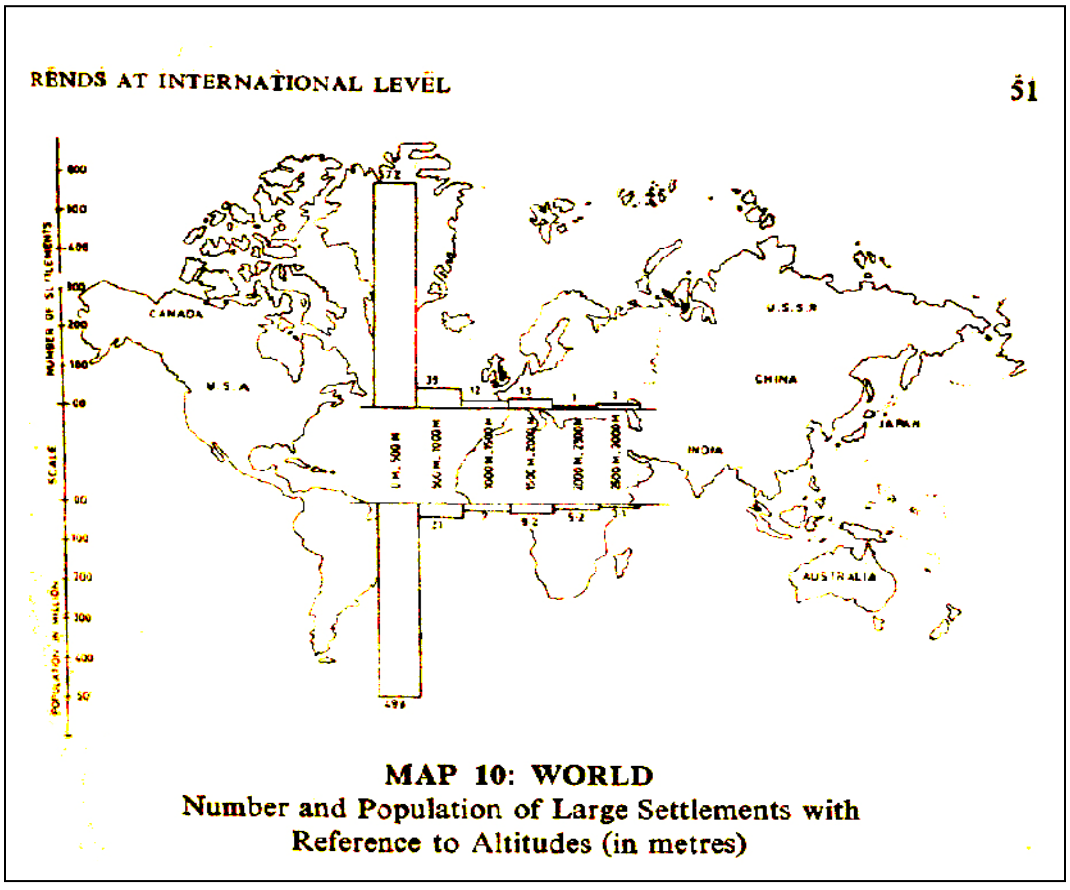
-201 settlements with a total population of 194 million are by the side of sea.
-222 settlements with a total population of 202 million are along the rivers.
-24 settlements with a total population of 27 million are by the side of lakes.
-193 settlements with a total population of 119 million are on the land.

Source: Ekistics- Science of Human Settlements.

(17) Distribution of Large Settlements each with a population of 200,000 and above with reference to altitudes (Map 10).

-572 settlements with 499 million population are between 0 and 500 mt. height.
-39 settlements with 21 million population are between 500 and 1000 mt. height.
-12 settlements with 7 million population are between 1000 and 1500 mt. height.
-13 settlements with 9.2 million population are between 1500 and 2000 mt height.
-1 settlement with population of 5.2 million is between 2000 and 2500 mt. height.
-3 settlements with a population of 3.1 million are between 2500 and 3000 mt. height.

Source: Ekistics – Science of Human Settlements.



MAP 10: WORLD
Number and Population of Large Settlements with Reference to Altitudes (in metres)

CHAPTER 7

Trends at National Level

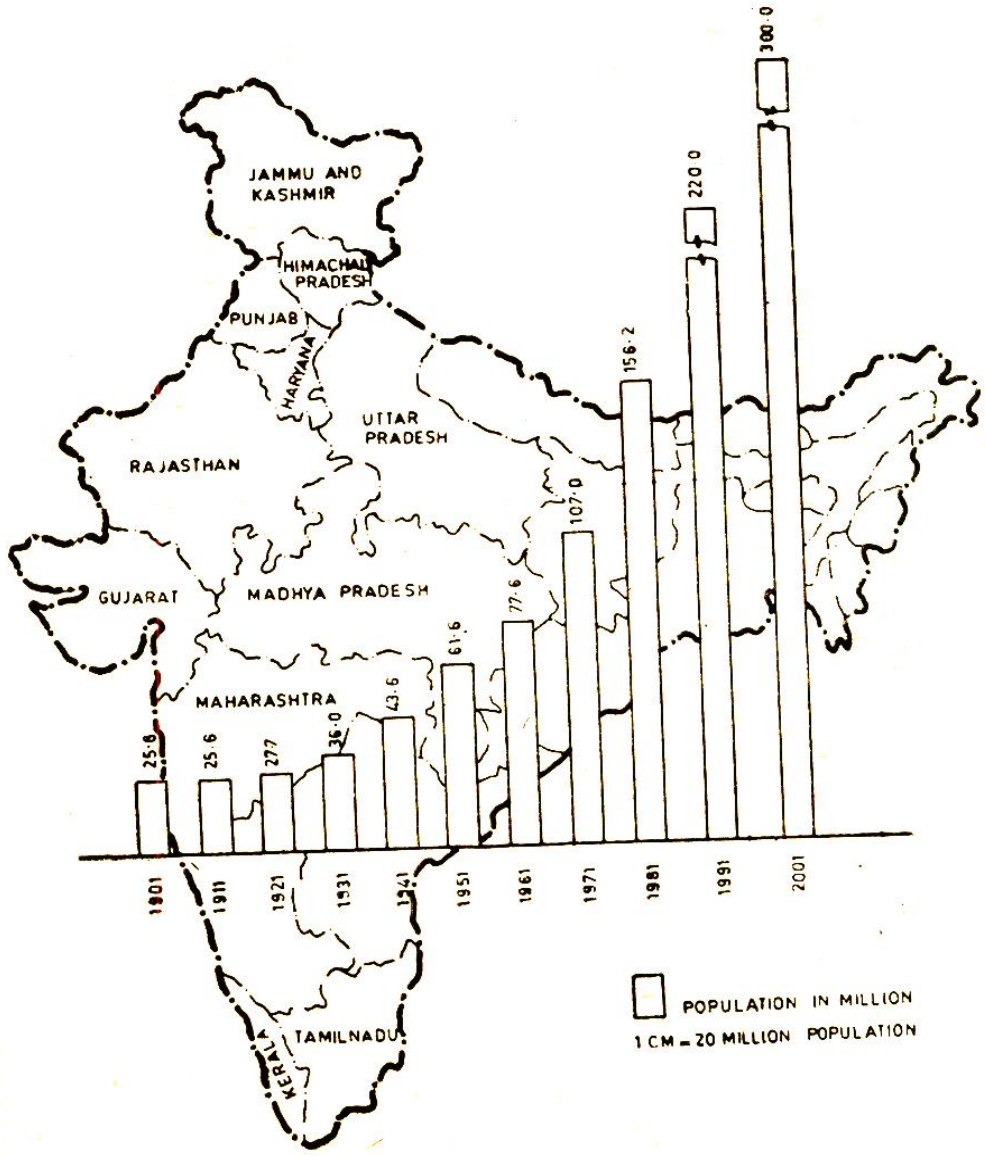
Increase in Urban Population During the Last 80 Years: (Map 11)

During the last 80 years (1901-81), percentage of urban population to total population in the country has increased from 11.0% in 1901 to 10.40% in 1911; 11.34% in 1921; 12.18% in 1931; 14.10 in 1941; 17.62% in 1951; 18.26% in 1961; 20.22% in 1971 and 23.73% in 1981. It means, the percentage of urban population to total population has increased to more than two times in the last 8 decades. It is also expected that by the end of the century, the ratio of urban population to total population may reach to 30% or to the entire country. This increase of urban population is not in accordance with the development of urban infrastructure with the result that it poses bigger problems in respect of water supply, sewerage, drainage, power, traffic transportation, (roads and railways), decentralization of trades, commerce and industries.

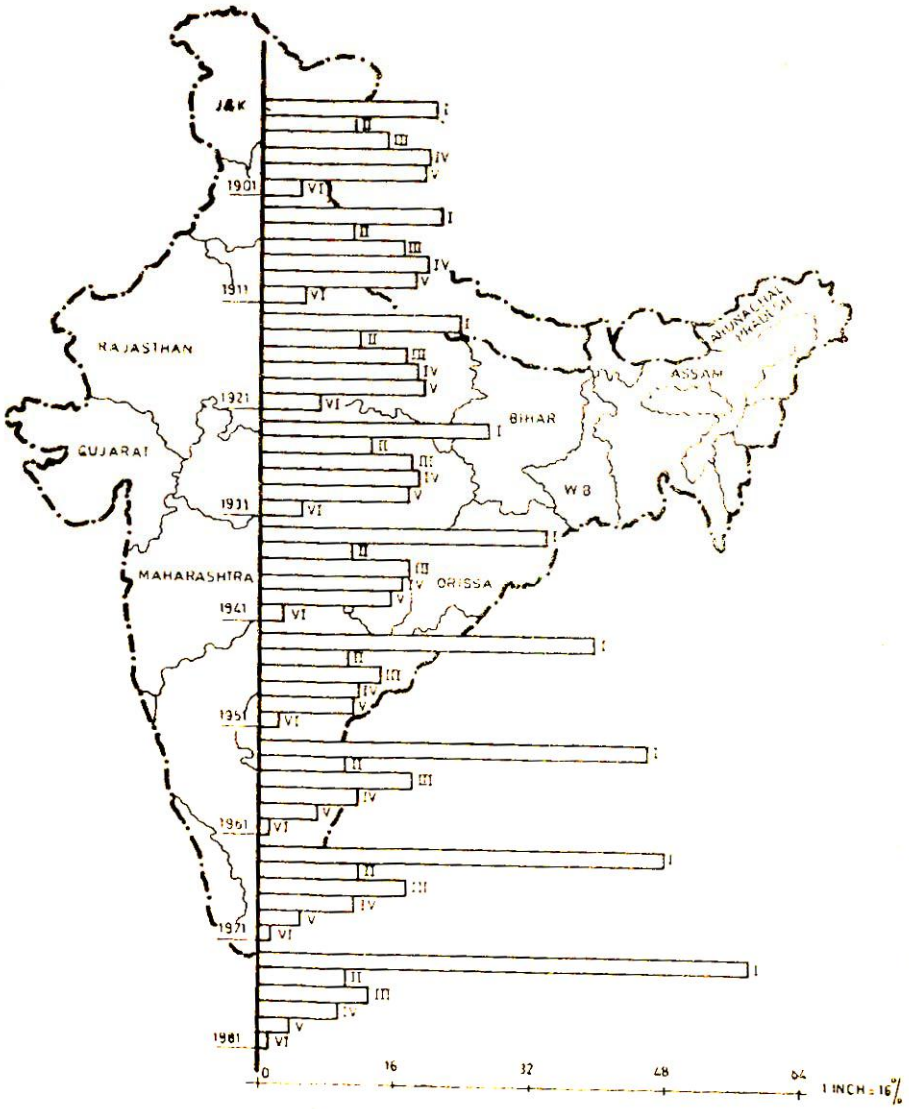
(1) Percentage distribution of urban population, amongst various class of cities and towns from 1901 to 1981 (Map 12).

Census % age population in each class of city and towns to total							
Year	*urban population*						*Total*
1	*C;ass-1 1,00,000 and above*	*Class-II 50,000-99,999*	*Class-III 20.000-49,000*	*Class-IV 10,000-19,999*	*Class-V 5,000-9,999*	*Class-VI 5,000 and below*	
1901	22.93	11.94	16.50	22.06	20.38	6.29	100
1911	24.19	10.90	17.69	20.46	19.81	6.95	100
1921	25.31	12.43	16.89	18.91	19.03	7.43	100
1931	27.37	11.95	18.76	18.97	17.32	5.63	100
1941	35.40	11.77	17.71	16.29	15.38	3.45	100
1951	41.77	11.06	16.73	14.02	13.20	3.22	100
1961	48.37	11.89	18.53	13.03	7.23	0.95	100
1971	52.41	12.15	17.36	12.04	5.24	0.80	100
1981	60.37	11.65	14.35	9.52	3.61	0.50	100

(2) Number of the settlements, along with their population in million, on page 55 and percentage of population in a particular class.



MAP 11: INDIA
Urban Population of the Country of the Present Century.



MAP 12: INDIA
Percentage Distribution of Urban Population Amongst Various Class of Cities and Towns 1901-81.

S. No.	*Size of population*	*No. of settlements*	*Population in million*	*Percentage of the population in this size class with the total urban population*
1	*2*	*3*	*4*	*5*
1.	1 m and above	12	42.0	26.88
2.	5 lac to 1m	28	18.7	11.97
3.	2 lac to 5 lac	62	18.6	11.90
4.	1 lac to 2 lac	114	15.0	9.60
5.	50,000 to 1 lac	270	18.2	11.65
6.	20,000 to 1 lac	739	22.4	14.35
7.	10,000 to 20,000	1048	14.9	9.53
8.	5,000 to 10,000	742	5.6	3.61
9.	Less than 5,000	230	0.8	0.51
	Total	3245	156.2	100.00

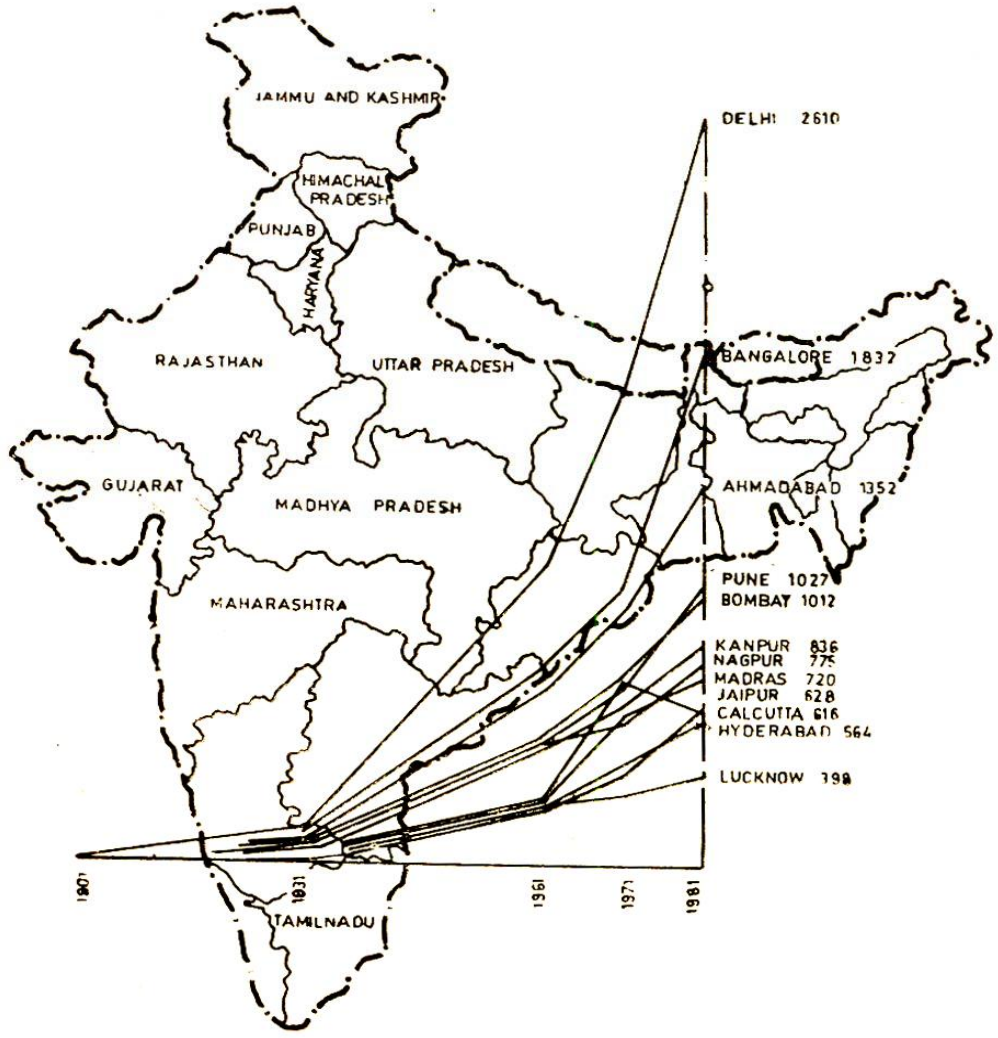
Source: Census of India, 1981; Series 1; India, Paper 2 of 1981-
Provisional population, total; Rural-urban distribution-
These figures do not include Assam and Jammu and Kashmir.

(3) Comparative growth of 12 metropolitan Cities in the last 80 years (Map 13).

There is a lot of different between growth in 12 Metropolitan Cities as details given under:

SI. No.	*Name of City*	*Growth in population*				
		1901	*1931*	*1961*	*1971*	*1981*
1.	Delhi	100	208	1101	1703	2610
2.	Bangalore	100	193	749	1027	1832
3.	Ahmedabad	100	169	652	941	1352
4.	Poona	100	152	449	692	1027
5.	Bombay	100	156	510	734	1012
6.	Kanpur	100	120	478	628	836
7.	Nagpur	100	145	473	558	775
8.	Madras	100	132	320	586	720
9.	Jaipur	100	92	256	398	628
10.	Calcutta	100	130	313	753	616
11.	Hyderabad	100	104	279	401	564
12.	Lucknow	100	107	256	317	398

Source: Census of India of 1971 and 1981.
Note: 1901 has been taken as the base year to calculate the increase in population for other years.



MAP 13: INDIA
Comparative Growth of 12 Metropolitan Cities 1901-81.

(4) Urban population and its rate of growth by class of towns-81.

State/U.T. Class of town	*Number of UAs/towns*	*Urban population of the class in'000*	*Population of urban population in each size class to total urban population*		*Growth*	*rate*
1	*2*	*3*	*4*	*5*	*6*	*7*
India (Map 14)						
I-VI	3,245	156,189	100.00	100.00	37.91	46.02
I	216	94,293	56.21	60.37	62.67	56.83
II	270	18,192	11.24	11.65	40.94	51.22
III	739	22,413	16.32	14.35	29.27	28.41
IV	1,048	14,862	11.20	9.52	18.85	24.03
V	742	5,642	4.57	3.61	10.38	15.44
VI	230	737	0.45	0.50	19.70	60.74

Andhra Pradesh: (Map 15)

I-VI	237	12,458	100.00	100.00	33.92	48.26
I	20	6,688	48.36	53.69	50.06	64.59
II	30	2,014	13.35	16.17	110.70	79.62
III	88	2,610	20.92	20.95	17.84	48.50
IV	64	913	13.41	7.32	13.53	19.02
V	28	218	3.78	1.75	41.99	31.38
VI	4	15	0.18	0.12	611.86	4.03

Bihar (Map 16)

I-VI	179	8,699	100.00	100.00	43.95	54.40
I	16	7,708	45.39	54.12	65.99	84.10
II	19	1,251	11.08	14.38	3.86	100.38
III	57	1,675	23.91	19.26	52.93	24.36
IV	59	874	14.36	10.04	35.73	7.94
V	23	176	4.79	2.02	1.93	34.85
VI	5	15	0.47	0.18	30.98	40.80

Gujarat (Map 17)

1	*2*	*3*	*4*	*5*	*6*	*7*
I-VI	220	10,556	100.00	100.00	41.00	40.82
I	13	6,114	48.97	57.92	55.36	66.54
II	23	1,534	15.44	14.53	52.72	32.58
III	46	1,412	15.75	13.37	8.21	19.59
IV	76	1,080	12.80	10.23	50.84	12.58
V	53	394	6.76	3.74	16.85	22.50
VI	9	22	0.28	0.21	39.42	2.25

Haryana (Map 18)

I-VI	77	2,822	100.00	100.00	35.58	59.16
I	11	1,598	12.82	56.64	115.31	603.34
II	5	305	39.75	10.82	48.81	56.67
III	13	418	26.06	14.80	24.47	9.63
IV	24	329	12.54	11.64	8.43	47.74
V	22	164	7.84	5.83	28.99	18.32
VI	2	8	0.99	0.27	60.66	56.52

Himachal Pradesh (Map 19)

I-VI	45	327	100.00	100.00	35.68	35.25
I	-	-	-	-	-	-
II	1	70	22.89	21.54	-	27.29
III	2	41	8.81	12.49	49.99	91.79
IV	5	73	27.18	22.17	42.85	10.32
V	9	64	19.63	19.72	6.66	35.89
VI	29	79	21.49	24.08	34.06	51.50

Karnataka (Map 20)

I-VI	250	11,711	100.00	100.00	35.23	50.39
I	17	6,277	51.06	58.60	67.87	72.61
II	11	692	8.24	6.46	11.38	17.89
III	64	1,902	15.38	17.75	30.39	73.59
IV	100	1,471	19.35	13.74	34.19	6.79
V	42	307	4.74	2.87	24.25	8.90
VI	16	62	1.23	0.58	29.98	29.64

Kerala (Map 21)

1	*2*	*3*	*4*	*5*	*6*	*7*
I-VI	85	4,771	100.00	100.00	35.72	37.63
I	8	2,535	42.32	53.13	67.22	72.79
II	7	454	13.38	9.52	57.53	2.09
III	49	1,520	31.77	31.86	34.25	38.02
IV	17	228	10.12	4.76	26.04	34.87
V	4	34	2.15	0.70	12.43	55.00
VI	-	-	0.26	-	219.41	-

Madhya Pradesh (Map 22)

I-VI	85	4,771	100.00	100.00	35.72	37.63
I	8	2,535	42.32	53.13	67.22	72.79
II	7	454	13.38	9.52	57.53	2.09
III	49	1,520	31.77	31.86	34.25	38.02
IV	17	228	10.12	4.76	26.04	34.87
V	4	34	2.15	0.70	12.43	55.00
VI	-	-	0.26	-	219.41	-

Maharashtra (Map 23)

I-VI	276	21,967	100.00	100.00	40.75	39.82
I	25	16,528	70.79	75.24	51.17	48.61
II	20	1,306	6.93	5.95	41.93	19.94
III	81	2,390	11.14	10.88	37.52	36.60
IV	91	1,341	8.03	6.10	7.51	5.59
V	43	347	2.76	1.58	18.30	20.05
VI	16	55	0.30	0.25	12.25	16.64

Manipur (Map 24)

I-VI	32	373	100.00	100.00	108.95	163.77
I	1	156	70.93	41.70	48.21	55.07
II	-	-	-	-	-	-
III	2	42	-	11.29	-	-
IV	4	55	-	14.64	-	-
V	9	62	22.18	16.72	-	98.89
VI	16	58	6.89	15.65	-	499.20

Meghalaya (Map 25)

1	*2*	*3*	*4*	*5*	*6*	*7*
I-VI	7	239	100.00	100.00	25.25	62.74
I	1	173	83.41	72.26	19.88	40.99
II	-	-	-	-	-	-
III	1	35	-	14.67	-	-
IV	1	13	10.52	5.39	74.27	16.66
V	1	6	6.07	2.55	44.09	31.64
VI	3	12	-	5.13	-	-

Nagaland (Map 26)

I-VI	7	120	100.00	100.00	168.28	133.84
I	-	-	-	-	-	-
II	-	-	-	-	-	-
III	2	68	41.92	56.86	-	217.15
IV	2	30	58.08	24.75	-	0.34
V	3	22	-	18.39	-	-
VI	-	-	-	-	-	-

Orissa (Map 27)

I-VI	103	3,106	100.00	100.00	66.30	68.29
I	6	1,293	38.28	41.63	382.88	83.00
II	7	396	3.94	12.76	74.57	445.43
III	23	678	29.17	21.83	189.32	25.94
IV	29	529	15.47	17.03	4.99	85.25
V	25	196	12.69	6.31	29.07	16.32
VI	3	14	0.45	0.44	13.44	65.11

Punjab (Map 28)

I-VI	134	4,620	100.00	100.00	25.27	43.66
I	7	2,144	40.62	46.40	31.97	64.13
II	9	614	15.68	13.28	141.13	21.68
III	28	985	21.74	21.31	5.60	40.80
IV	35	511	1378	11.07	49.83	15.35
V	41	310	7.00	6.72	12.96	38.05
VI	14	56	1.18	1.22	48.18	48.31

Rajasthan (Map 29)

1	*2*	*3*	*4*	*5*	*6*	*7*
I-VI	195	7,140	100.00	100.00	38.47	57.15
I	11	3,322	41.87	46.52	50.42	74.62
II	11	717	10.75	10.05	102.49	46.95
III	52	1,572	20.47	22.02	39.39	69.01
IV	98	1,339	19.77	18.74	28.28	48.99
V	22	186	6.78	2.61	18.31	39.54
VI	1	4	0.36	0.06	46.42	74.68

Sikkim (Map 30)

I-VI	195	7,140	100.00	100.00	38.47	57.15
I	11	3,322	41.87	46.52	50.42	74.62
II	11	717	10.75	10.05	102.49	46.95
III	52	1,572	20.47	22.02	39.39	69.01
IV	98	1,339	19.77	18.74	28.28	48.99
V	22	186	6.78	2.61	18.31	39.54
VI	1	4	0.36	0.06	46.42	74.68

Tamil Nadu (Map 31)

I-VI	245	15,928	100.00	100.00	38.64	27.78
I	20	9,906	57.74	62.19	68.48	37.62
II	37	2,547	14.16	15.99	39.21	44.29
III	63	1,994	15.11	12.35	4.02	5.92
IV	82	1,178	9.89	7.40	4.02	4.42
V	37	281	2.77	1.76	38.97	18.76
VI	0	22	0.33	0.14	17.34	45.38

Tripura (Map 32)

I-VI	10	225	100.00	100.00	57.64	38.51
I	1	131	61.75	58.48	-	31.17
II	-	-	-	-	-	-
III	1	21	-	9.25	-	-
IV	4	5	32.50	23.13	298.47	1.42
V	2	14	5.75	6.02	73.23	44.83
VI	2	7	-	3.12	-	-

Uttar Pradesh (Map 33)

1	*2*	*3*	*4*	*5*	*6*	*7*
I-VI	659	19,973	100.00	100.00	30.68	61.22
I	30	10,283	57.06	51.49	37.00	45.47
II	37	2,539	10.83	12.71	20.37	89.30
III	85	2,465	16.70	12.34	31.07	19.16
IV	194	2,667	10.44	13.35	23.85	106.27
V	231	1,728	4.74	8.65	4.64	194.06
VI	82	291	0.23	1.46	32.14	909.39

West Bengal (Map 34)

I-VI	130	14,433	100.00	100.00	28.41	31.61
I	12	11,091	70.98	76.84	26.35	42.48
II	21	1,557	11.85	10.78	92.31	19.80
III	36	1,113	9.63	7.71	10.48	5.30
IV	34	499	4.97	3.46	15.55	8.47
V	20	151	2.45	1.05	4.81	43.70
VI	7	22	0.12	0.16	35.58	79.03

Union Territories
Andaman and Nicobar Islands

I-VI	1	50	100.00	100.00	86.27	89.31
I	-	-	-	-	-	-
II	-	-	-	-	-	-
III	1	50	100.00	100.00	86.27	89.31
IV	-	-	-	-	-	-
V	-	-	-	-	-	-
VI	-	-	-	-	-	-

Arunachal Pradesh

I-VI	6	40	100.00	100.00	-	129.73
I	-	-	-	-	-	-
II	-	-	-	-	-	-
III	-	-	-	-	-	-
IV	-	-	-	-	-	-
V	5	36	29.59	90.42	-	601.90
VI	1	4	70.41	9.58	-	68.73

Chandigarh

1	*2*	*3*	*4*	*5*	*6*	*7*
I-VI	1	421	100.00	100.00	134.67	80.84
I	1	421	100.00	100.00	134.67	80.84
II	-	-	-	-	-	-
III	-	-	-	-	-	-
IV	-	-	-	-	-	-
V	-	-	-	-	-	-
VI	-	-	-	-	-	-

Dadra and Nagar Haveli

I-VI	1	7	-	100.00	-	-
I	-	-	-	-	-	-
II	-	-	-	-	-	-
III	-	-	-	-	-	-
IV	-	-	-	-	-	-
V	1	7	-	100.00	-	-
VI	-	-	-	-	-	-

Delhi

I-VI	6	5,753	100.00	100.00	54.57	57.73
I	1	5,714	100.00	99.32	54.57	56.66
II	-	-	-	-	-	-
III	-	-	-	-	-	-
IV	1	13	-	0.22	-	-
V	4	26	-	0.46	-	-
VI	-	-	-	-	-	-

Goa, Daman and Diu

I-VI	17	351	100.00	100.00	125.28	54.88
I	-	-	-	-	-	-
II	3	211	26.13	6012	-	256.37
III	2	47	49.68	13.38	217.64	58.27
IV	3	39	7.64	11.18	12.71	126.66
V	5	41	12.09	11.53	15.40	47.68
VI	4	13	4.46	3.79	41.93	31.45

Lakshadweep

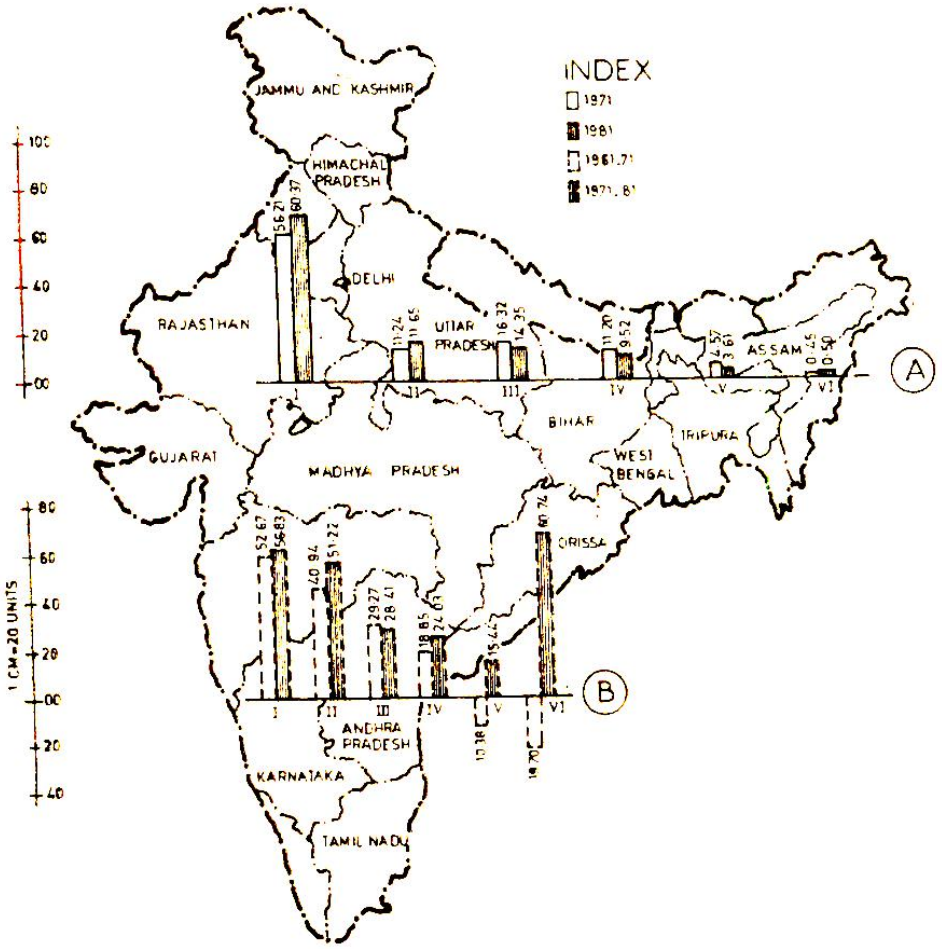
I-VI	3	19	-	100.00	-	-
I	-	-	-	-	-	-
II	-	-	-	-	-	-
III	-	-	-	-	-	-
IV	-	-	-	-	-	-
V	3	19	-	100.00	-	-
VI	-	-	-	-	-	-

Mizoram

I-VI	6	123	100.00	100.00	164.85	-
I	-	-	-	-	-	-
II	1	76	-	61.88	-	-
III	-	-	34.06	-	-	-
IV	1	18	-	14.48	-	-
V	4	29	15.94	23.64	-	-
VI	-	-	-	-	-	-

Pondicherry

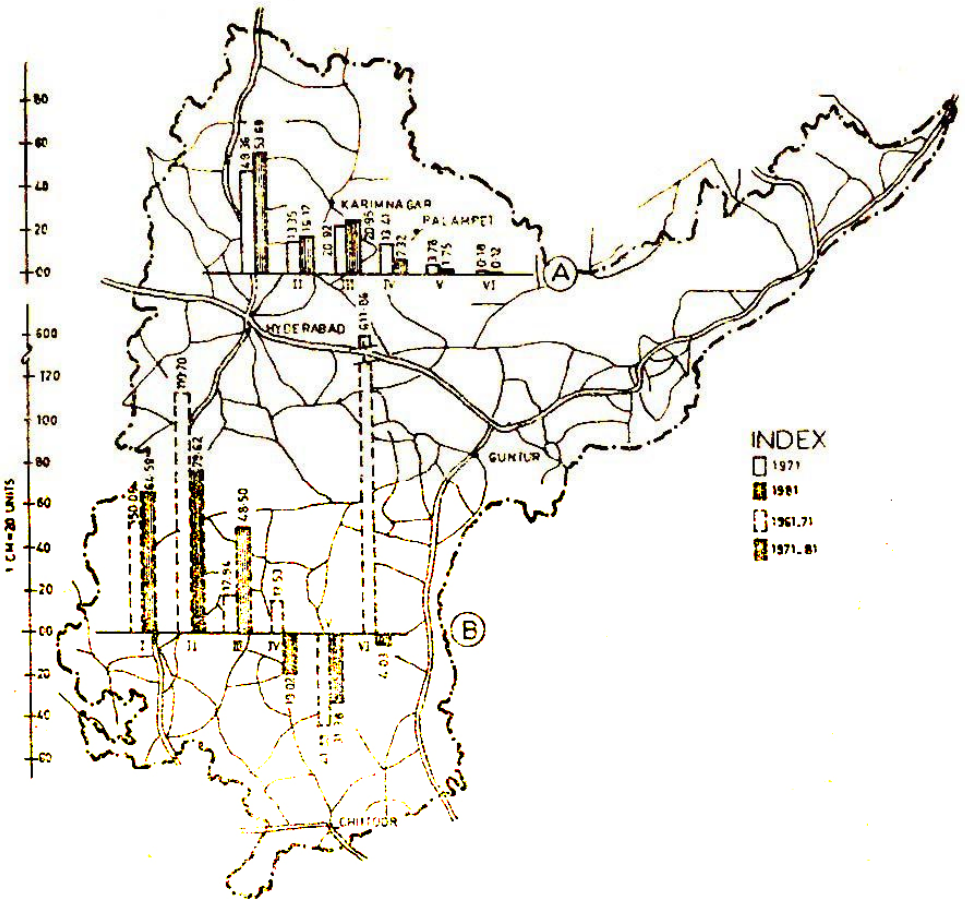
I-VI	4	316	100.00	100.00	122.80	59.41
I	1	251	77.32	79.56	-	64.01
II	-	-	-	-	-	-
III	1	43	13.15	13.15	17.20	66.41
IV	1	12	-	-	-	-
V	1	10	8.71	8.71	15.22	44.46
VI	-	-	0.82	0.82	-	-



MAP 14: INDIA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

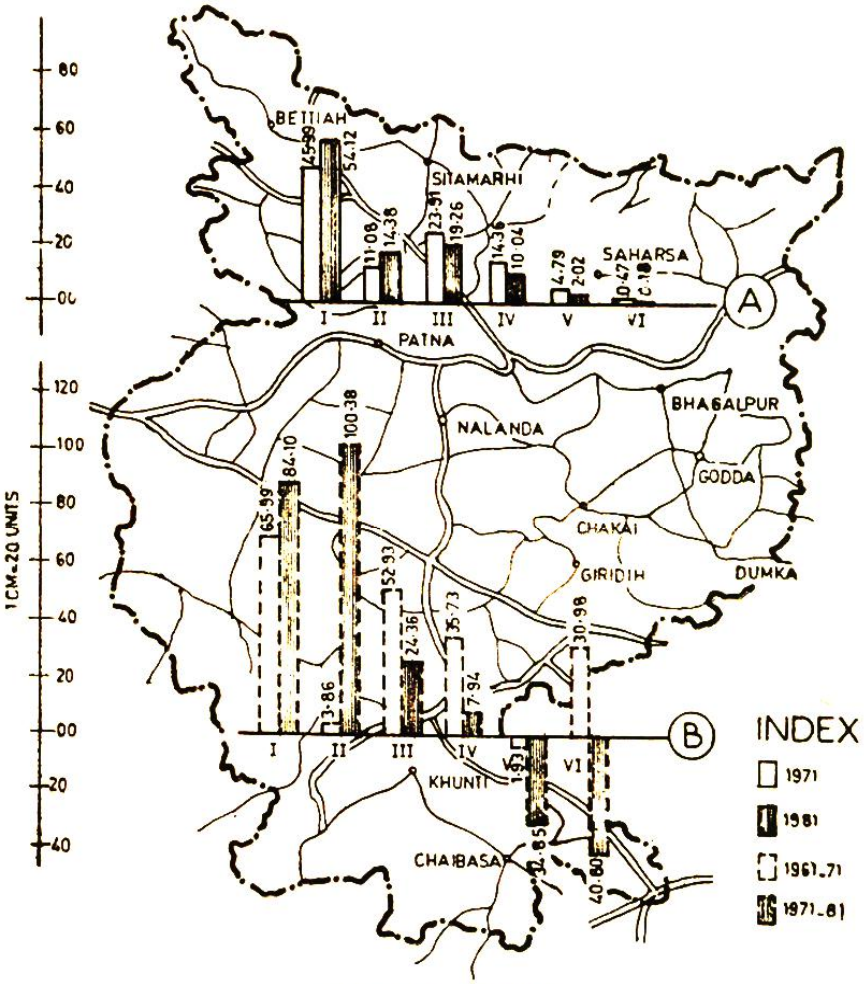
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 15: ANDHRA PRADESH

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

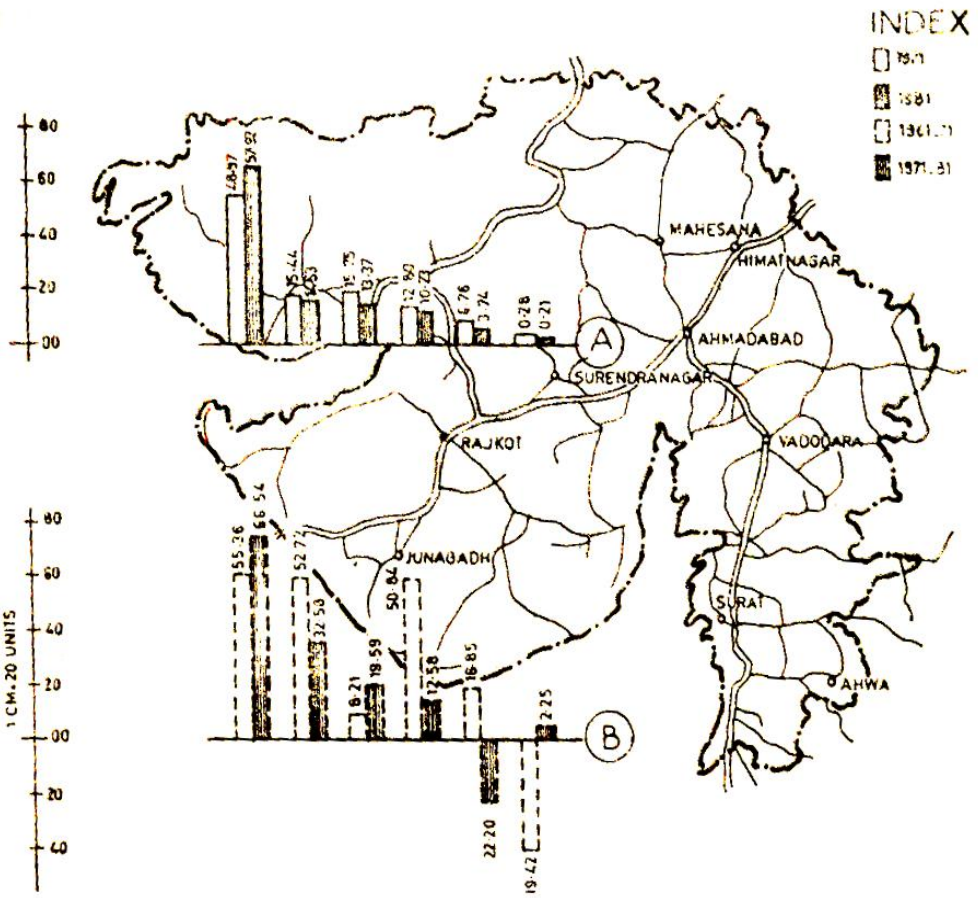
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 16: BIHAR

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

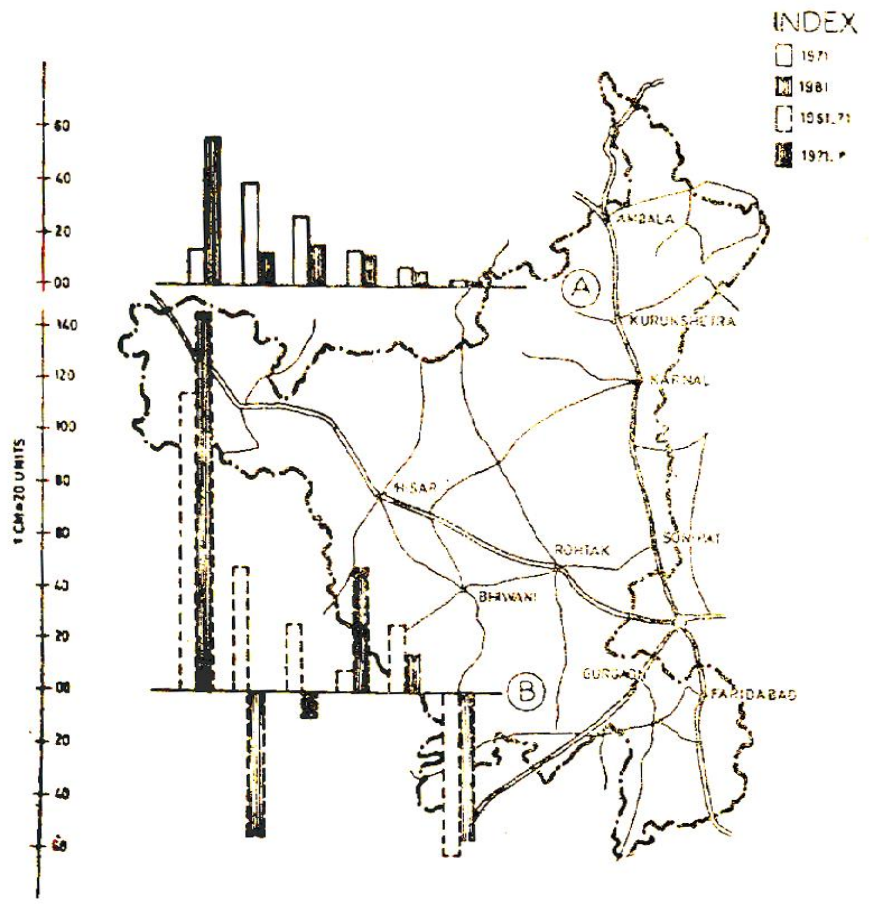
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 17: GUJARAT

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

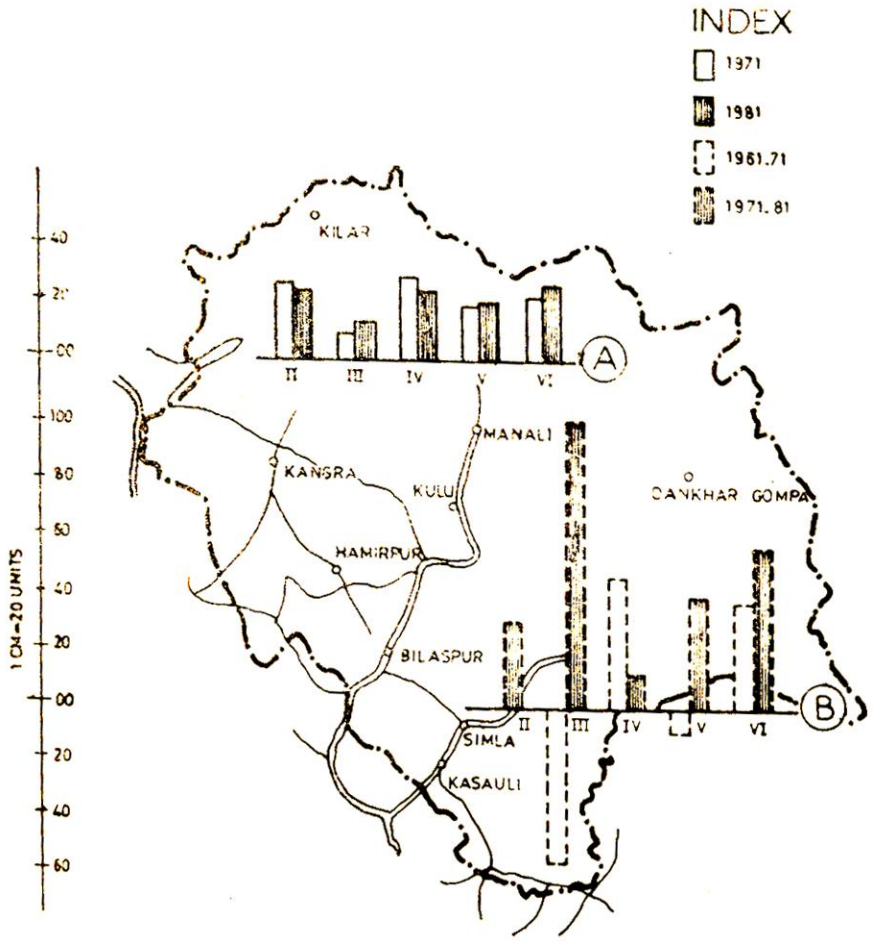
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 18: HARYANA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

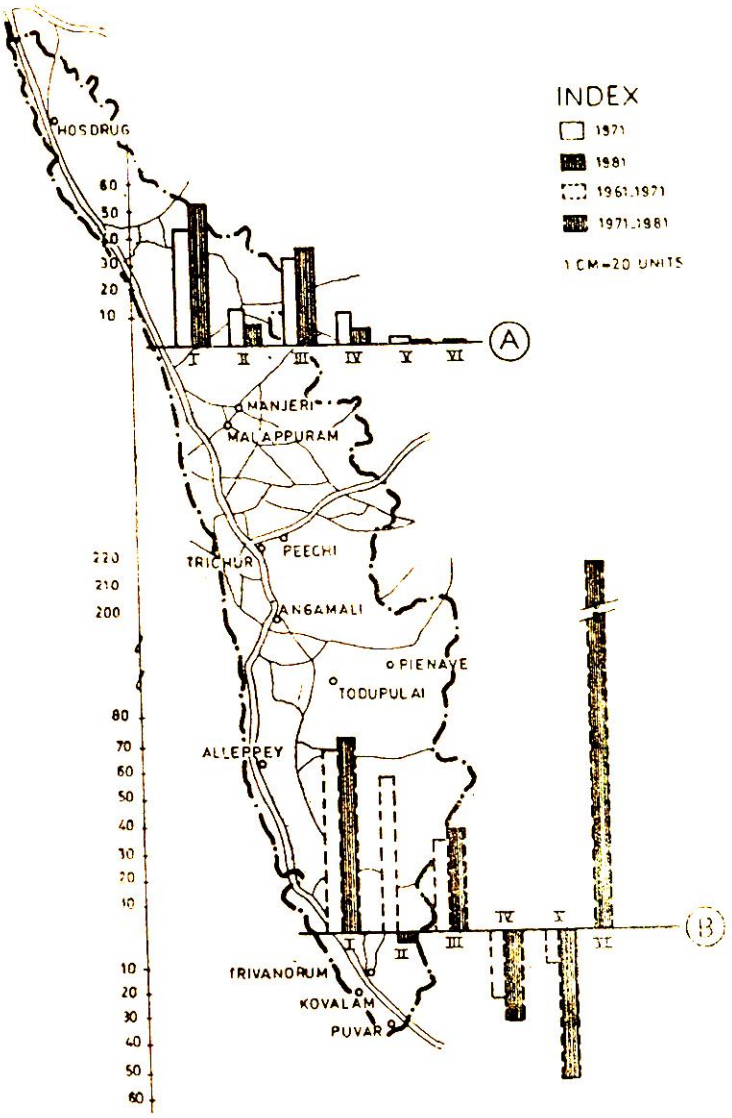
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 19: HIMACHAL PRADESH

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

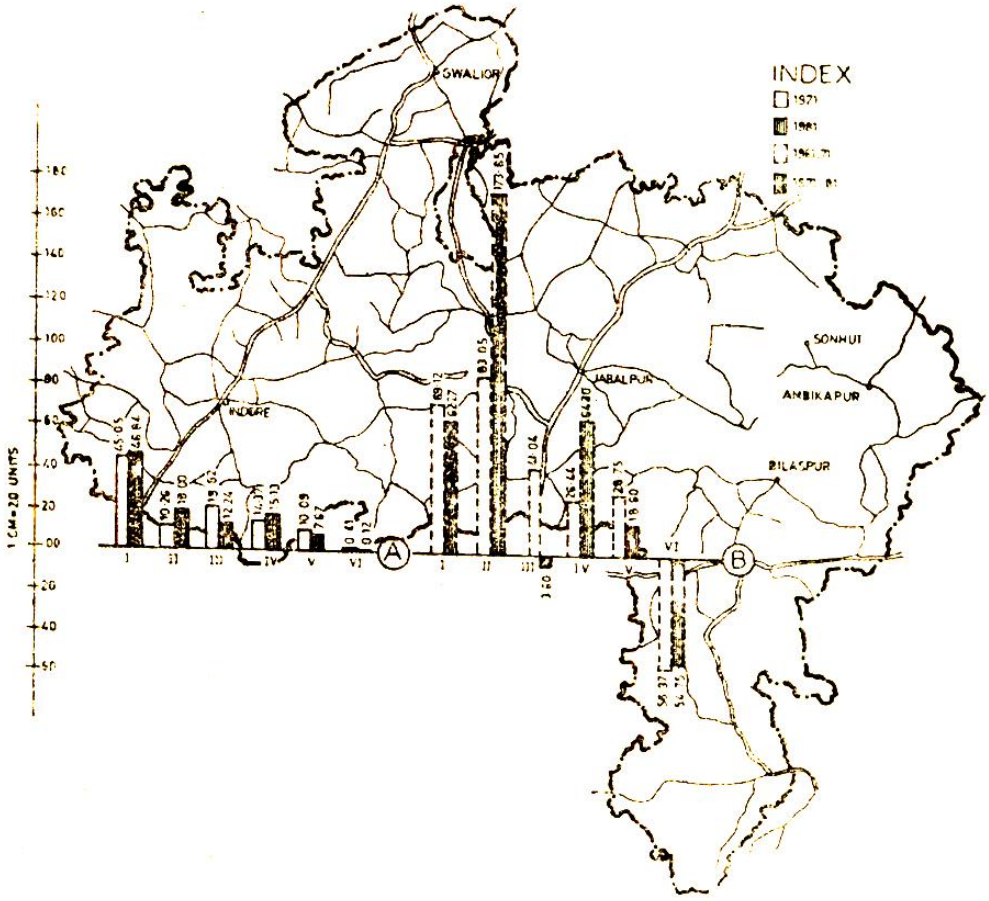
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 21: KERALA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

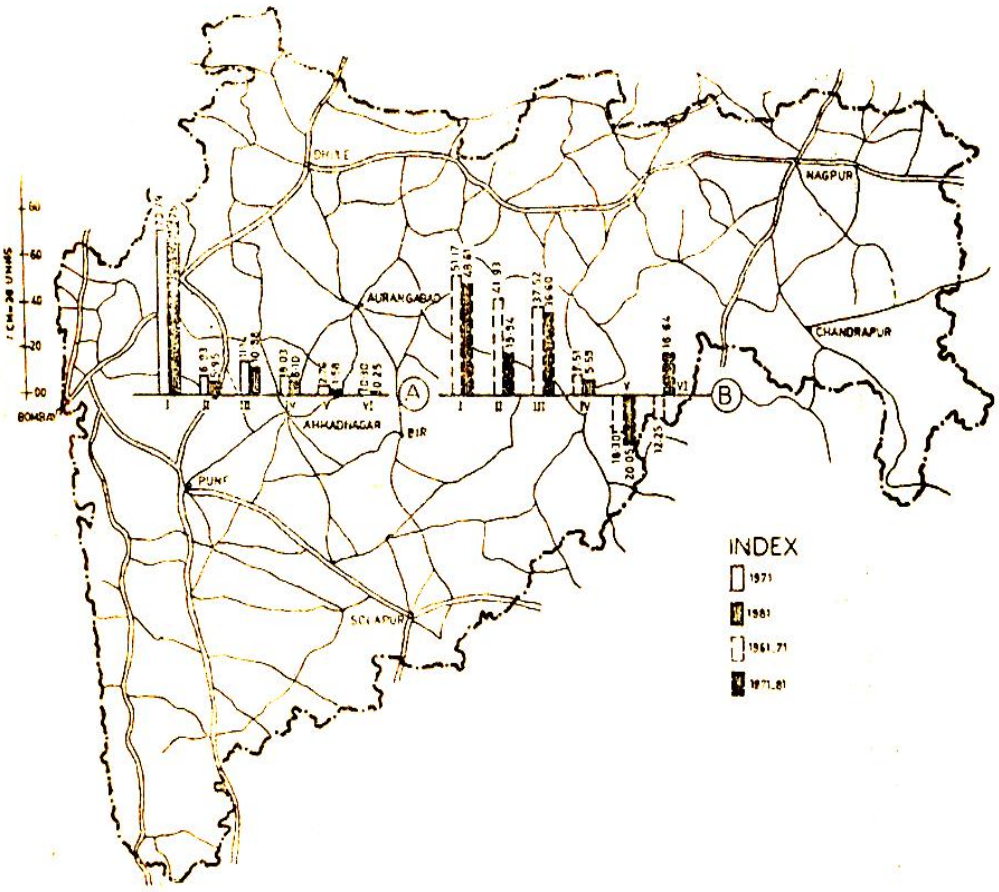
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 22: MADHYA PRADESH

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

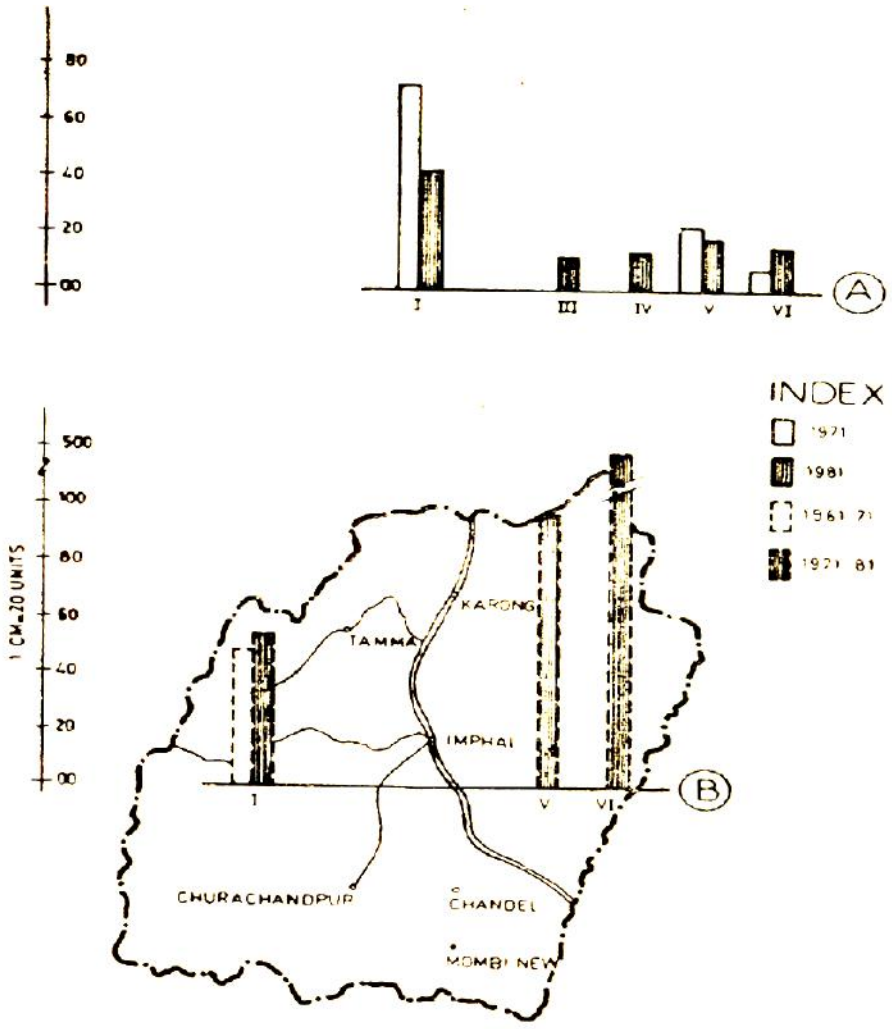
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 23: MAHARASHTRA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

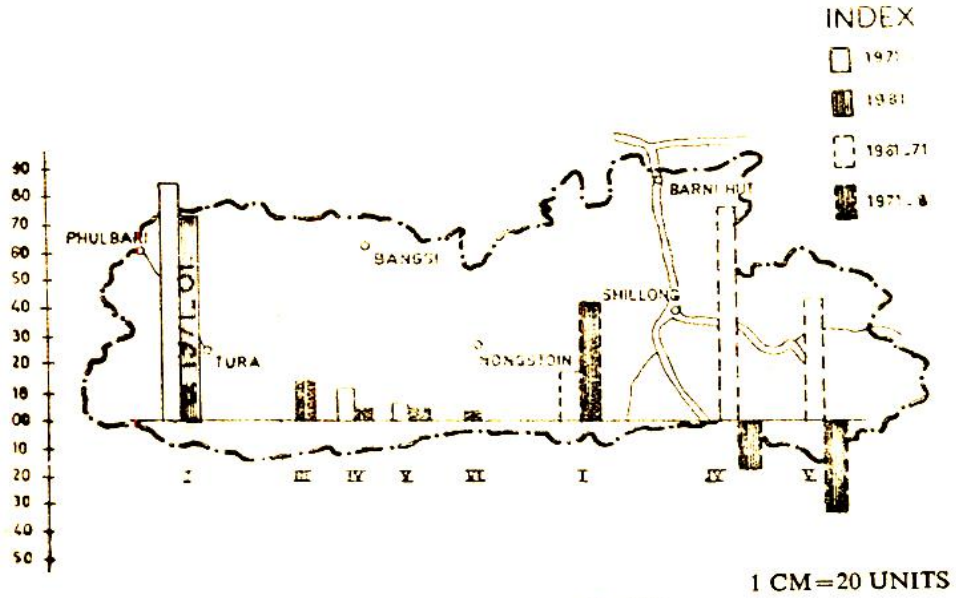
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 24: MANIPUR

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

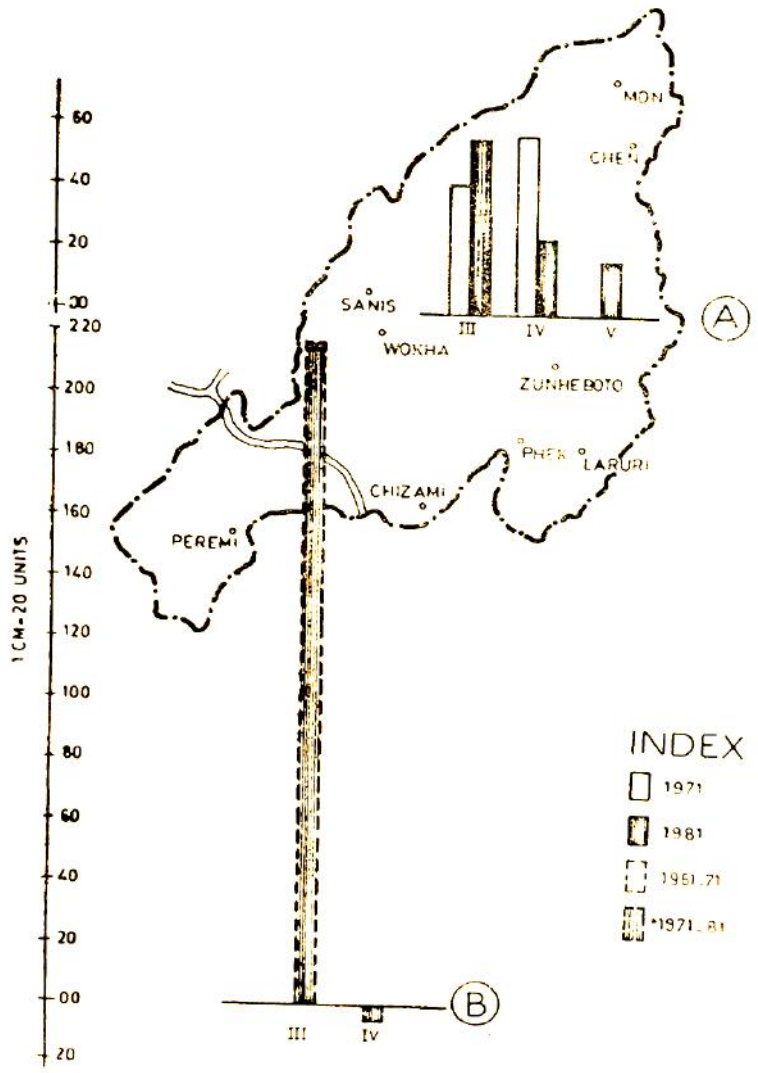
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 25: MEGHALAYA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

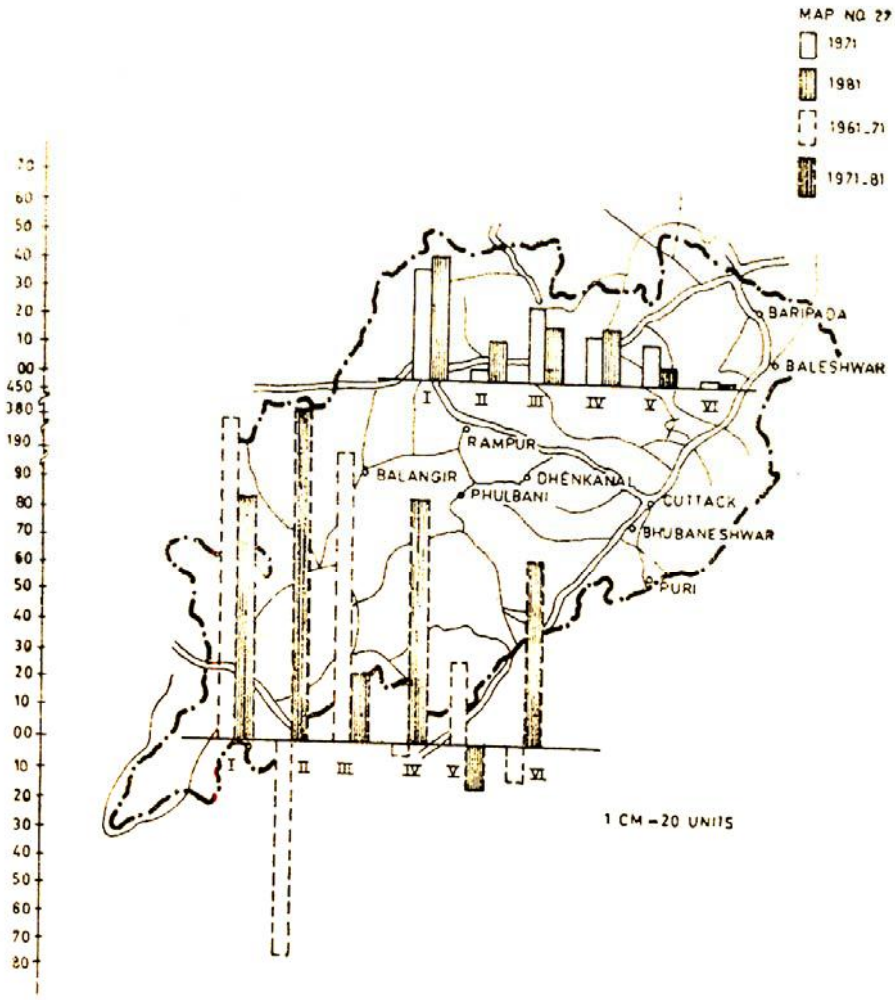
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 26: NAGALAND

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

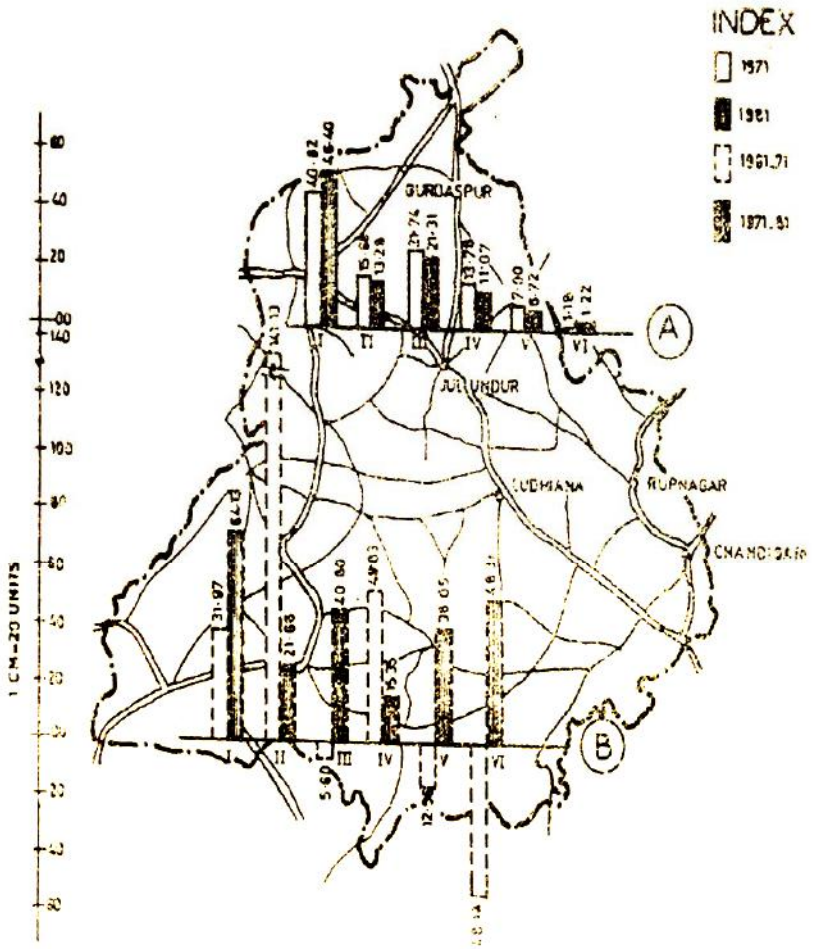
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 27: ORISSA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

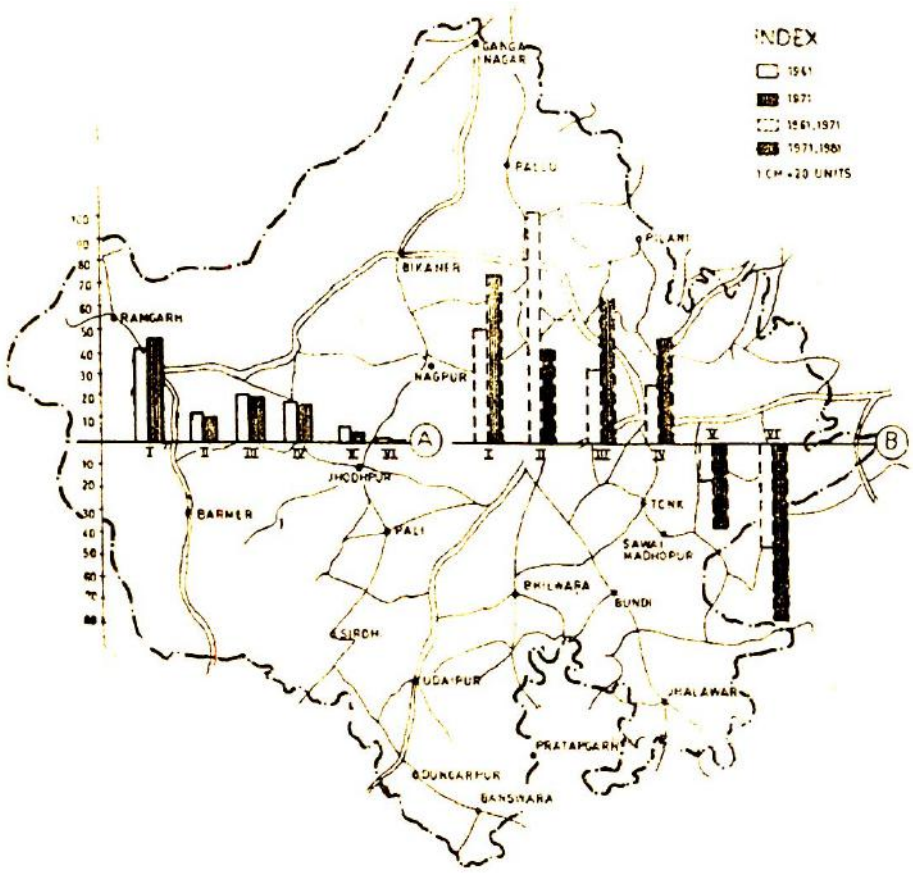
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 28: PUNJAB

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

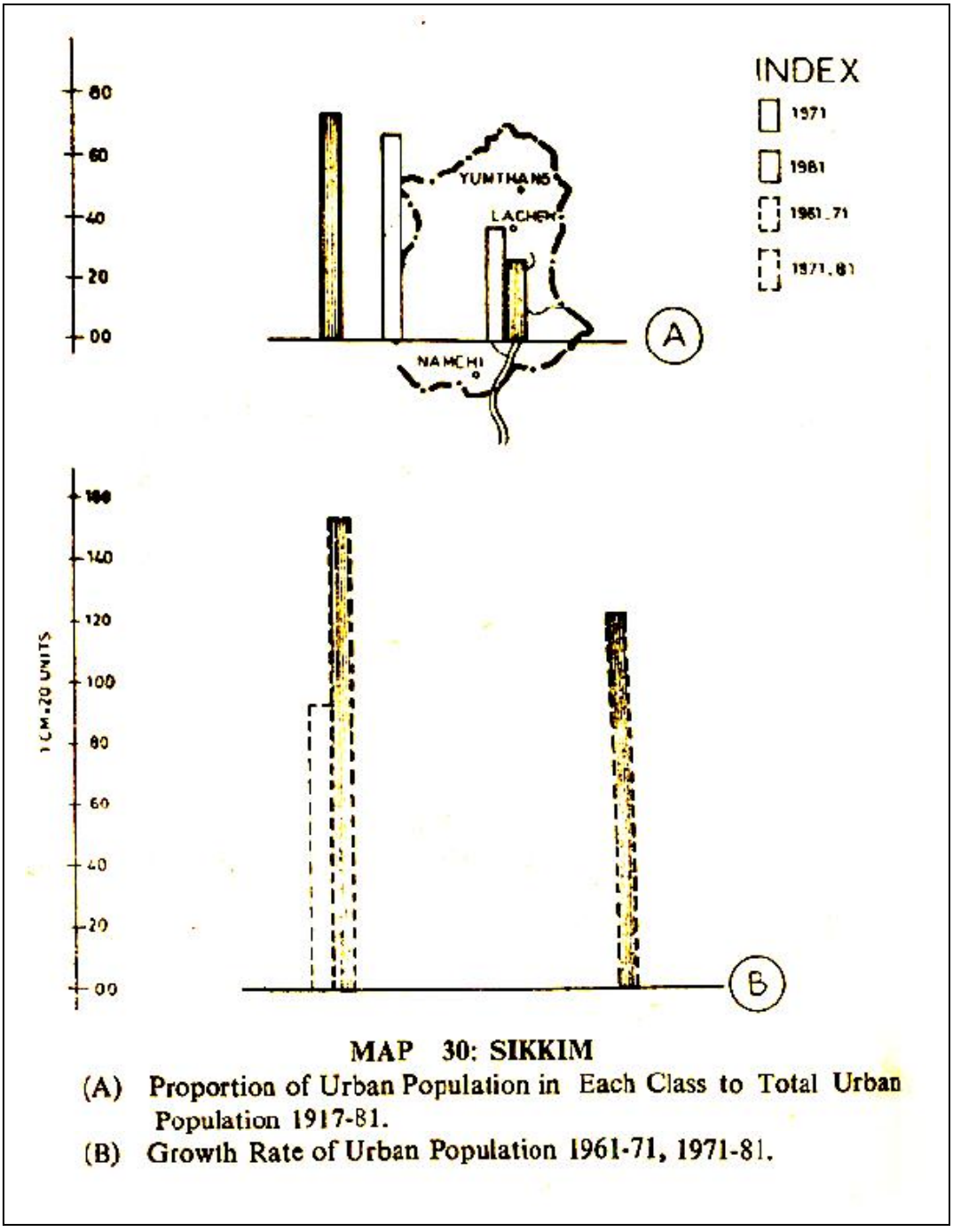
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 29: RAJASTHAN

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

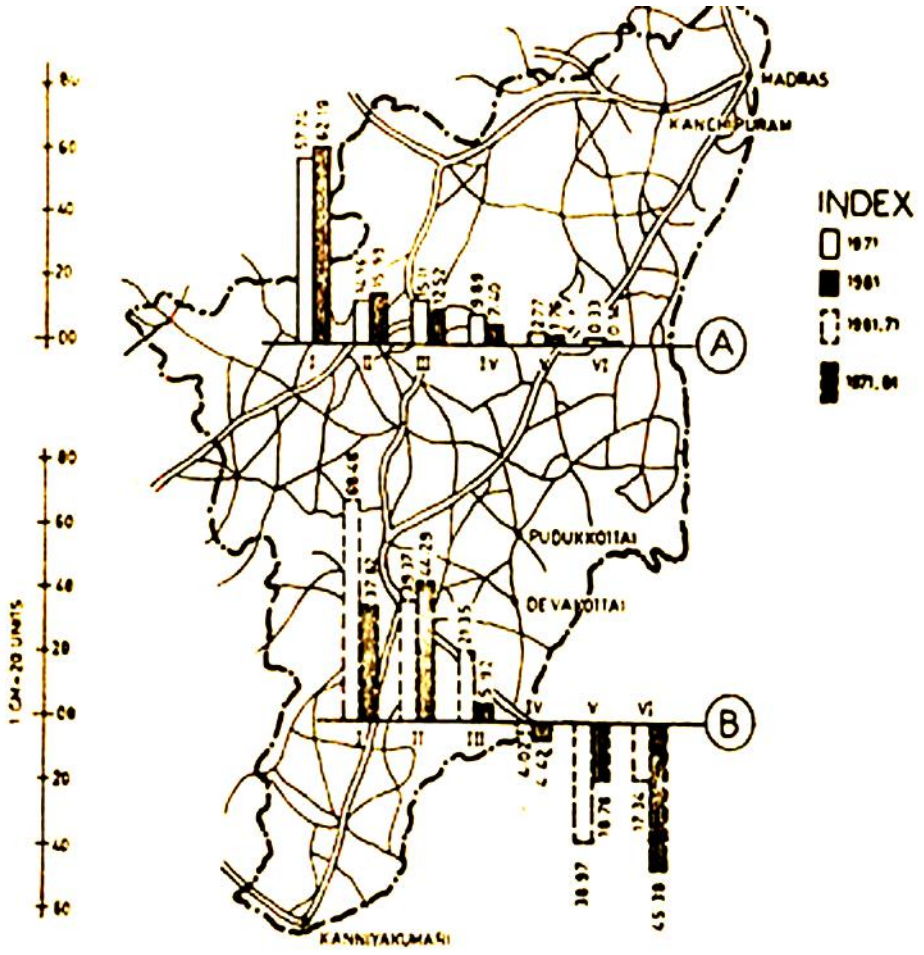
(B) Growth Rate of Urban Population During 1961-71, 1971-81.



MAP 30: SIKKIM

(A) Proportion of Urban Population in Each Class to Total Urban Population 1917-81.

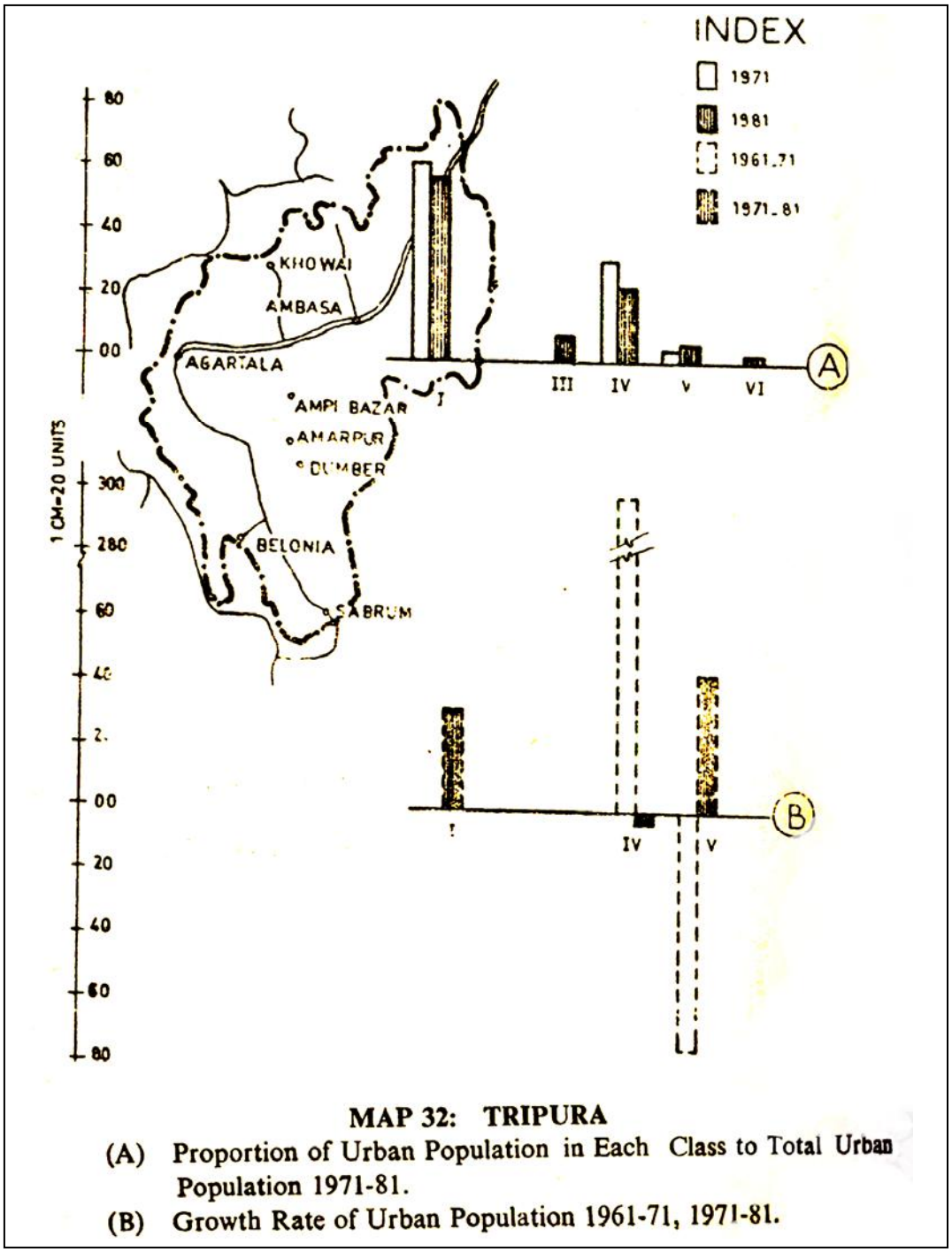
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 31: TAMIL NADU

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

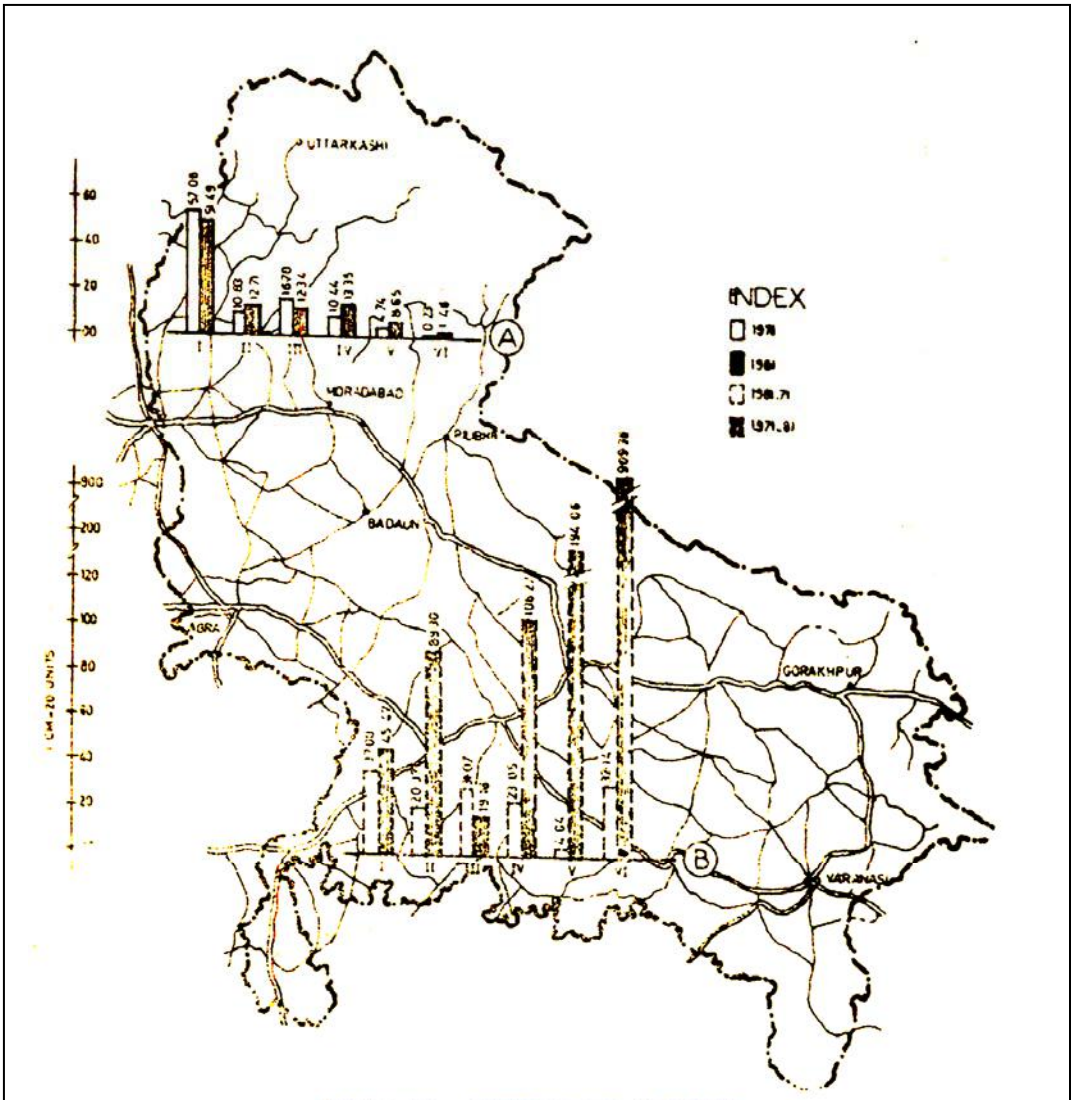
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 32: TRIPURA

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

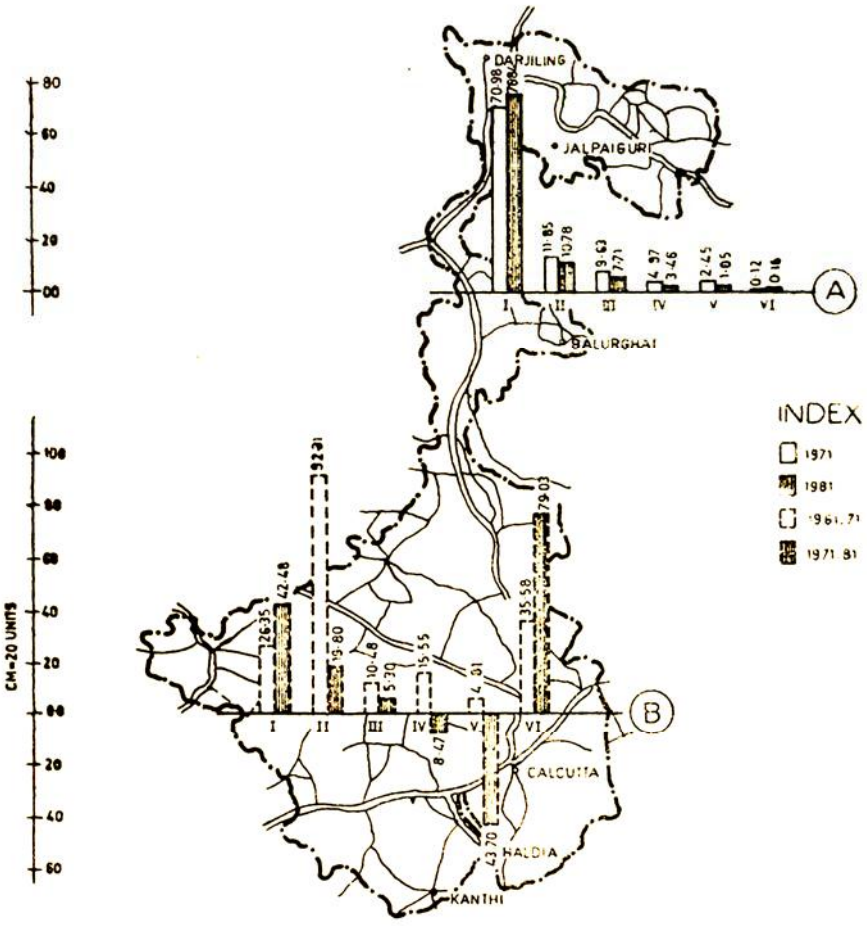
(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 33: UTTAR PRADESH

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

(B) Growth Rate of Urban Population 1961-71, 1971-81.



MAP 34: WEST BENGAL

(A) Proportion of Urban Population in Each Class to Total Urban Population 1971-81.

(B) Growth Rate of Urban Population 1961-71, 1971-81.

CHAPTER 8

Dynamics of Settlements

All the Urban Settlements, about which data were available have been divided into the following five categories, depending upon their rate of growth during 1971-81. Settlements numbering about 2,346 data for which was available in the 1981 provisional census have been divided in the following five categories.

(1) Settlements up to rate of growth of 1.5 per cent per annum have been called called static settlements.
(2) Settlements between rate of growth of 1.5 and 2.5 and 3.5 per cent per annum have been called normal settlements.
(3) Settlements between rate of growth of 2.5 and 3.5 per cent per annum have been called normal settlements.
(4) Settlements between rate of growth 3.5 and 5 per cent per annum have been called dynamic settlements.
(5) And settlements with a rate of growth of more than 5 per cent per annum have been called extraordinary settlements.

Number of settlements in different categories would be as follows.

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
India: (Map 35)							
More than 1 m	12	11	0	1	2	6	2
0.5 to 1m	28	24	0	3	4	8	9
0.2 to 0.5 m	62	59	0	1	12	25	21
0.1 to 0.2 m	114	100	2	14	28	26	30
50,000 to 0.1 m	270	264	11	34	68	68	83
20,000 to 50,000	739	694	60	128	171	203	132
10,000 to 20,000	1,048	792	118	184	220	157	113
5,000 to 10,000	742	319	59	93	82	56	29
Less than 5,000	230	83	34	16	13	5	15
Total	3,245	2,346	284	474	600	554	434

Studies have also been conducted about the rate of growth of different settlements in various states and are given as follows.

Size of class	*No. of settlements*						
	Total	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(1) Andhra Pradesh (Map 36)							
More than 1 m	1	1	-	-	-	1	-
0.5 to 1m	2	2	-	-	-	-	2
0.2 to 0.5 m	6	6	-	-	-	3	3
0.1 to 0.2 m	11	11	-	2	3	1	5
50,000 to 0.1 m	30	30	-	-	7	6	17
20,000 to 50,000	88	86	3	13	15	29	26
10,000 to 20,000	64	55	4	11	13	19	8
5,000 to 10,000	28	11	2	3	3	2	1
Less than 5,000	4	2	2	-	-	-	-
Total	234	204	11	29	41	61	62

(2) *Bihar* (Map 37)							
	-	-	-	-	-	-	-
More than 1 m	4	4	-	-	-	1	3
0.5 to 1m	3	3	-	-	1	1	1
0.2 to 0.5 m	9	9	-	-	4	1	4
0.1 to 0.2 m	19	19	-	-	4	5	10
50,000 to 0.1 m	57	54	2	1	12	27	12
20,000 to 50,000	59	47	1	11	10	9	16
10,000 to 20,000	23	11	1	1	4	2	3
5,000 to 10,000	5	2	-	2	-	-	-
Less than 5,000							
Total	179	149	4	15	35	46	49

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(3) *Gujarat* (Map 38)							
More than 1 m	1	1	-	-	-	1	-
0.5 to 1m	2	2	-	-	-	-	2
0.2 to 0.5 m	3	3	-	-	-	3	-
0.1 to 0.2 m	7	7	-	1	4	1	1
50,000 to 0.1 m	23	23	1	4	9	4	5
20,000 to 50,000	46	45	6	14	15	7	3
10,000 to 20,000	76	74	16	17	29	6	6
5,000 to 10,000	53	32	8	9	12	3	-
Less than 5,000	9	2	2	-	-	-	-
Total	220	189	33	45	69	25	17
(4) *Haryana* (Map 39)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	1	-	-	-	-	-	-
0.1 to 0.2 m	10	6	-	1	1	2	2
50,000 to 0.1 m	5	5	-	2	1	1	1
20,000 to 50,000	13	13	-	2	3	5	3
10,000 to 20,000	24	13	3	2	4	2	2
5,000 to 10,000	22	15	1	7	4	3	-
Less than 5,000	2	2	-	1	-	-	1
Total	77	54	4	15	13	13	9

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(5) *Himachal Pradesh* (Map 40)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	-	-	-	-	-	-	-
50,000 to 0.1 m	1	1	-	-	1	-	-
20,000 to 50,000	2	2	1	-	1	-	-
10,000 to 20,000	5	5	1	1	2	1	-
5,000 to 10,000	9	9	1	2	1	2	3
Less than 5,000	29	18	7	3	5	1	2
Total	46	35	10	6	10	4	5

(6) *Karnataka* (Map 41)							
More than 1 m	1	1	-	-	-	-	1
0.5 to 1m	1	1	-	-	-	1	-
0.2 to 0.5 m	5	5	-	-	1	2	2
0.1 to 0.2 m	10	9	-	2	1	3	3
50,000 to 0.1 m	11	11	-	-	1	5	5
20,000 to 50,000	64	62	6	11	15	19	11
10,000 to 20,000	100	82	10	17	31	18	6
5,000 to 10,000	42	30	4	8	9	7	2
Less than 5,000	16	13	6	2	2	1	2
Total	250	214	26	40	60	56	32

Size of class	*No. of settlements*						
	Total	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(7) *Kerala* (Map 42)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	3	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	5	-	-	-	-	-	-
50,000 to 0.1 m	7	5	3	1	-	-	1
20,000 to 50,000	49	30	17	7	1	-	5
10,000 to 20,000	17	1	1	-	-	-	-
5,000 to 10,000	4	-	-	-	-	-	-
Less than 5,000	-	-	-	-	-	-	-
Total	85	36	21	8	1	-	6

(8) *Madhya Pradesh* (Map 43)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	4	4	-	-	-	3	1
0.2 to 0.5 m	4	4	-	-	1	1	2
0.1 to 0.2 m	6	6	-	-	3	3	-
50,000 to 0.1 m	28	28	-	1	3	10	14
20,000 to 50,000	41	40	2	3	15	15	5
10,000 to 20,000	113	98	2	20	32	23	21
5,000 to 10,000	104	48	4	16	15	11	2
Less than 5,000	3	2	1	-	-	-	1
Total	303	230	9	40	69	56	46

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(9) *Maharashtra* (Map 44)							
More than 1 m	3	3	-	-	-	3	
0.5 to 1m	2	1	-	-	-	1	
0.2 to 0.5 m	9	9	-	-	4	2	
0.1 to 0.2 m	11	11	-	1	3	2	
50,000 to 0.1 m	20	20	-	7	6	5	
20,000 to 50,000	81	74	4	25	26	12	
10,000 to 20,000	91	83	19	32	15	11	
5,000 to 10,000	43	32	7	17	3	4	
Less than 5,000	16	9	7	1	-	-	
Total	85	36	21	8	1	-	6
(10) *Manipur* (Map 45)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	1	1	-	-	-	-	1
50,000 to 0.1 m	-	-	-	-	-	-	-
20,000 to 50,000	2	2	-	-	-	-	2
10,000 to 20,000	4	3	-	-	-	-	3
5,000 to 10,000	9	1	-	-	1	-	-
Less than 5,000	16	1	-	-	1	-	-
Total	32	8	-	-	2	-	6

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(11) *Meghalaya* (Map 46)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	1	1	-	-	1	-	-
50,000 to 0.1 m	-	-	-	-	-	-	-
20,000 to 50,000	1	1	-	-	-	1	1
10,000 to 20,000	1	1	-	-	1	-	-
5,000 to 10,000	1	-	-	-	-	-	-
Less than 5,000	3	-	-	-	-	-	-
Total	7	3	-	-	-	2	1

(12) *Nagaland* (Map 47)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	-	-	-	-	1	-	-
50,000 to 0.1 m	-	-	-	-	-	-	-
20,000 to 50,000	2	2	-	-	-	-	2
10,000 to 20,000	2	1	1	-	-	-	-
5,000 to 10,000	3	-	-	-	-	-	-
Less than 5,000	-	-	-	-	-	-	-
Total	7	3	1	-	-	-	2

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(13) *Orissa* (Map 48)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	3	3	-	-	-	1	2
0.1 to 0.2 m	3	3	-	-	-	2	1
50,000 to 0.1 m	7	6	-	-	-	2	4
20,000 to 50,000	23	21	1	1	1	11	7
10,000 to 20,000	39	30	1	7	9	7	6
5,000 to 10,000	25	10	1	4	1	3	1
Less than 5,000	3	1	-	-	1	-	-
Total	103	74	3	12	12	26	21

(14) *Punjab* (Map 49)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	2	2	-	-	-	1	1
0.2 to 0.5 m	2	2	-	-	-	2	-
0.1 to 0.2 m	3	3	-	-	1	1	1
50,000 to 0.1 m	9	9	-	1	3	4	1
20,000 to 50,000	28	27	2	4	6	7	8
10,000 to 20,000	35	33	5	10	8	8	2
5,000 to 10,000	41	24	4	5	5	4	6
Less than 5,000	14	6	2	3	1	-	-
Total	134	106	13	23	24	27	19

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(15) *Rajasthan* (Map 50)							
More than 1 m	1	1	-	-	-	-	1
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	5	5	-	-	-	2	3
0.1 to 0.2 m	5	5	-	-	-	4	1
50,000 to 0.1 m	11	11	-	1	-	7	3
20,000 to 50,000	52	51	1	5	8	23	14
10,000 to 20,000	98	61	2	12	24	14	9
5,000 to 10,000	22	14	1	4	4	4	1
Less than 5,000	1	1	-	-	-	-	1
Total	195	149	4	22	36	54	33
(16) *Sikkim* (Map 51)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	-	-	-	-	-	-	-
50,000 to 0.1 m	-	-	-	-	-	-	-
20,000 to 50,000	1	1	-	-	-	-	1
10,000 to 20,000	-	-	-	-	-	-	-
5,000 to 10,000	-	-	-	-	-	-	-
Less than 5,000	7	6	-	-	-	1	5
Total	8	7	-	-	-	1	6

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(17) *Tamil Nadu* (Map 52)							
More than 1 m	1	1	-	-	-	1	-
0.5 to 1m	4	4	-	2	2	-	-
0.2 to 0.5 m	5	5	-	1	-	3	1
0.1 to 0.2 m	10	10	1	6	3	-	-
50,000 to 0.1 m	37	37	5	14	9	7	2
20,000 to 50,000	63	63	13	27	14	5	4
10,000 to 20,000	82	76	40	25	7	2	2
5,000 to 10,000	37	27	19	5	3	-	-
Less than 5,000	6	5	4	-	-	-	1
Total	245	228	82	80	38	18	10

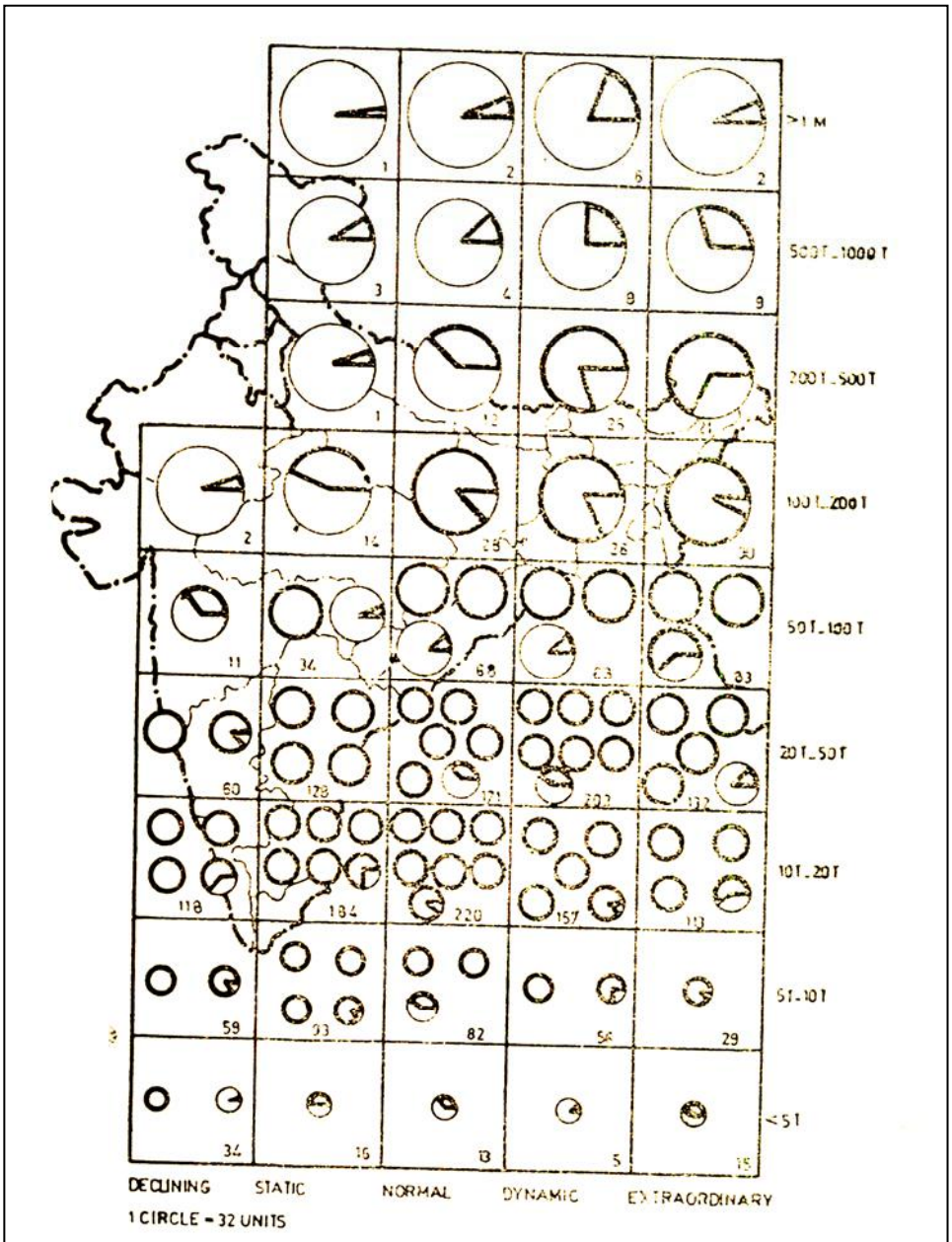
(18) *Tripura* (Map 53)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	1	1	-	-	1	-	-
50,000 to 0.1 m	-	-	-	-	-	-	-
20,000 to 50,000	1	-	-	-	-	-	-
10,000 to 20,000	4	4	2	2	-	-	-
5,000 to 10,000	2	-	-	-	-	-	-
Less than 5,000	2	-	-	-	-	-	-
Total	10	5	2	2	1	-	-

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(19) *Uttar Pradesh* (Map 54)							
More than 1 m	2	2	-	1	1	-	-
0.5 to 1m	4	4	-	1	2	1	-
0.2 to 0.5 m	11	10	-	-	5	3	2
0.1 to 0.2 m	13	13	1	1	4	4	3
50,000 to 0.1 m	37	36	-	1	14	9	12
20,000 to 50,000	85	79	2	5	25	33	14
10,000 to 20,000	194	89	5	10	30	28	16
5,000 to 10,000	231	37	4	7	11	9	6
Less than 5,000	82	7	3	-	1	1	2
Total	659	277	15	26	93	88	55

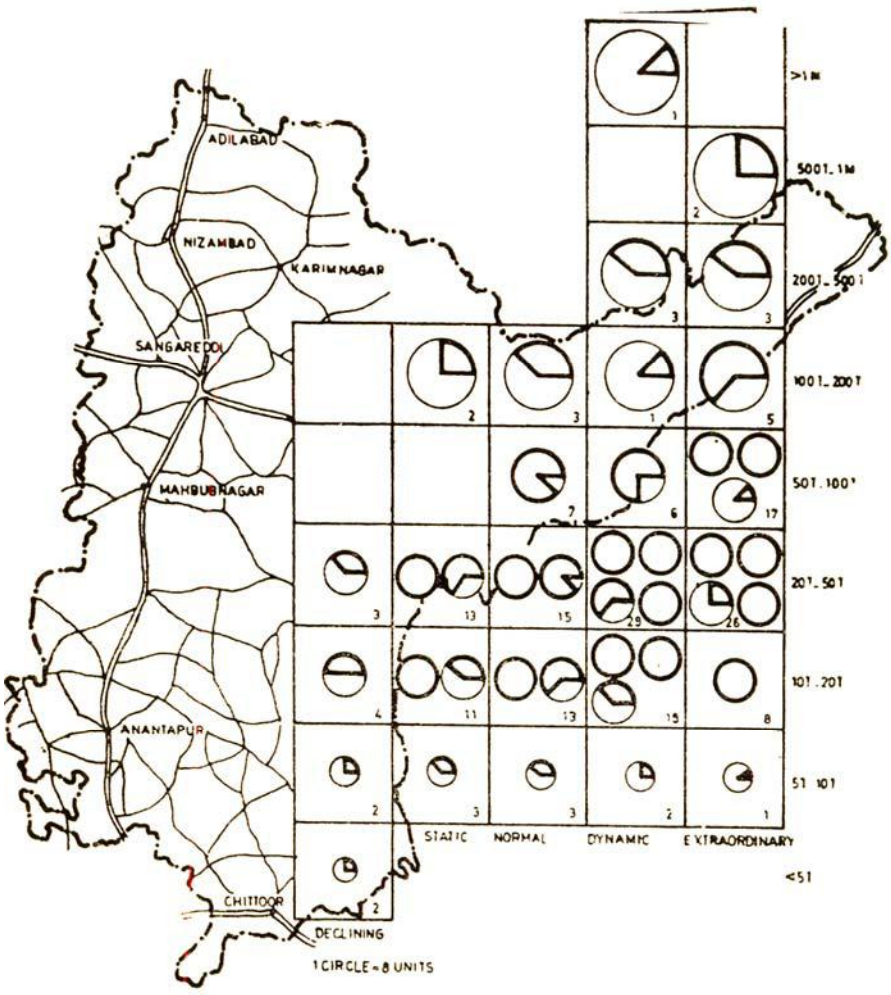
(20) *West Bengal* (Map 55)							
More than 1 m	1	1	-	-	1	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	3	3	-	-	-	2	1
0.1 to 0.2 m	8	8	-	1	1	2	4
50,000 to 0.1 m	21	20	2	2	7	3	6
20,000 to 50,000	36	36	-	7	13	10	6
10,000 to 20,000	34	32	5	7	5	7	8
5,000 to 10,000	20	9	1	4	2	1	1
Less than 5,000	7	2	-	2	-	-	-
Total	130	111	8	23	29	25	26

	No. of settlements						
Size of class	*Total*	*About with data is available*	*Declin-ing*	*Static*	*Normal*	*Dynami-c*	*Extraord-inary*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
(21) *Arunachal Pradesh* (Map 56)							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	-	-	-	-	-	-	-
50,000 to 0.1 m	-	-	-	-	-	-	-
20,000 to 50,000	-	-	-	-	-	-	-
10,000 to 20,000	-	-	-	-	-	-	-
5,000 to 10,000	5	3	-	-	1	1	1
Less than 5,000	1	1	-	1	-	-	-
Total	6	4	-	1	1	1	1

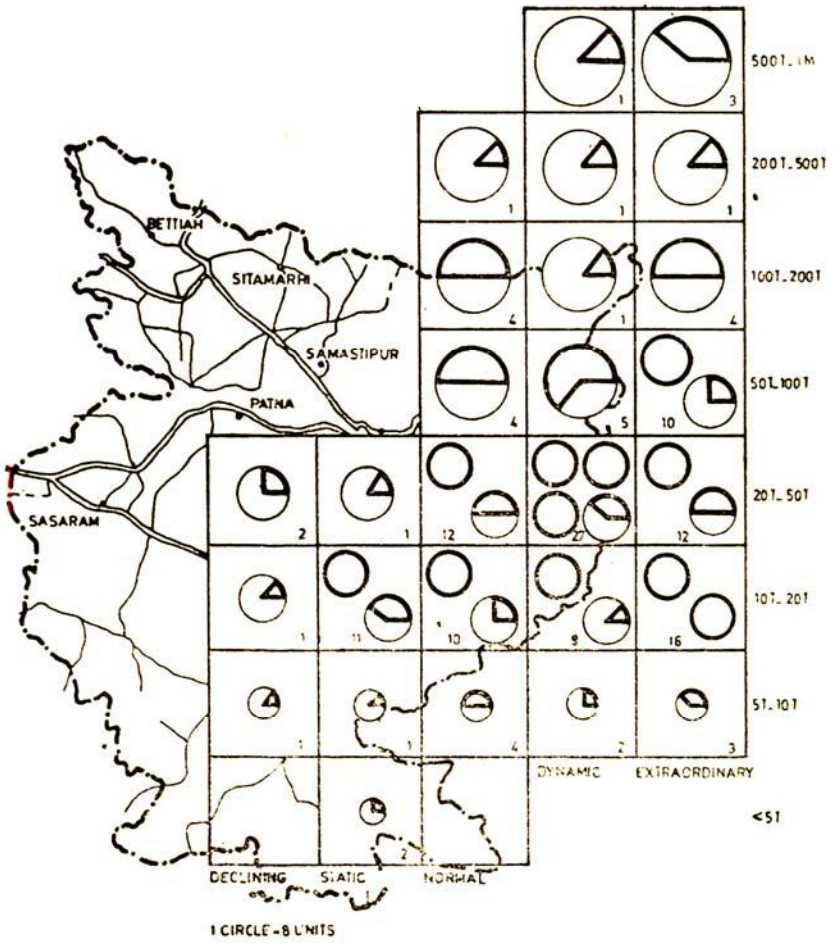
(22) *Goa, Daman and Diu (Map 57)*							
More than 1 m	-	-	-	-	-	-	-
0.5 to 1m	-	-	-	-	-	-	-
0.2 to 0.5 m	-	-	-	-	-	-	-
0.1 to 0.2 m	-	-	-	-	-	-	-
50,000 to 0.1 m	3	3	-	-	2	-	1
20,000 to 50,000	2	2	-	1	1	-	-
10,000 to 20,000	3	2	-	-	1	-	1
5,000 to 10,000	5	2	-	1	1	-	-
Less than 5,000	4	4	-	1	2	1	-
Total	17	13	-	3	7	1	2



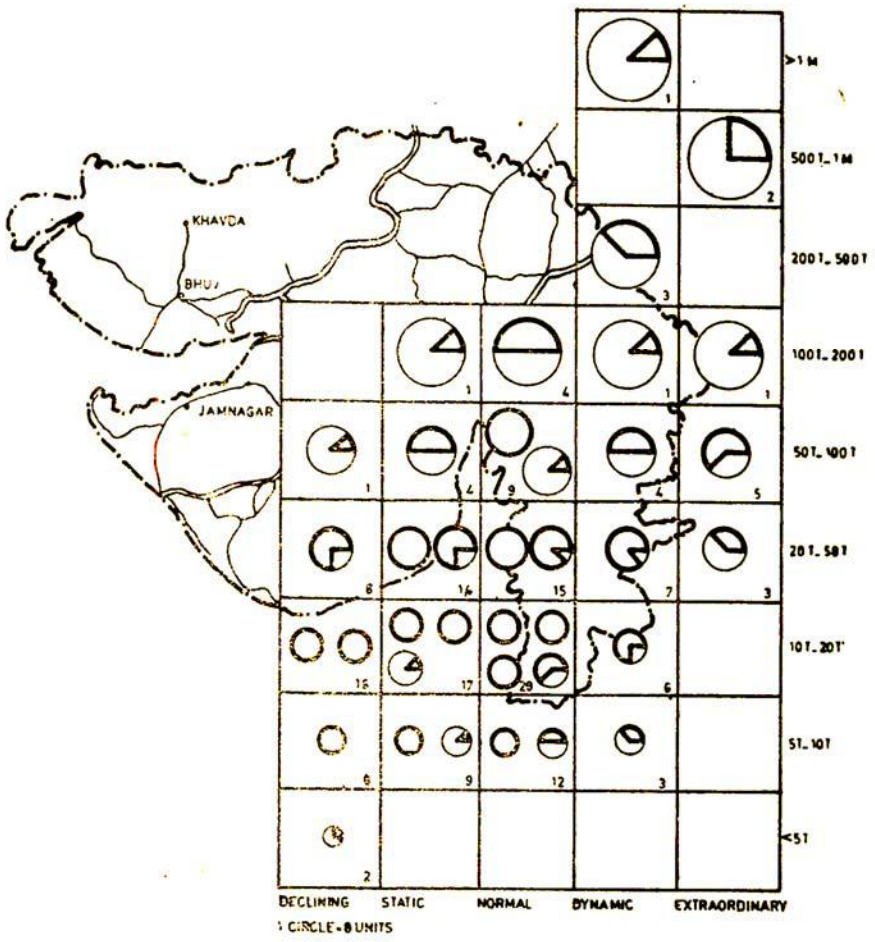
MAP 35: INDIA
Dynamics of Settlements.



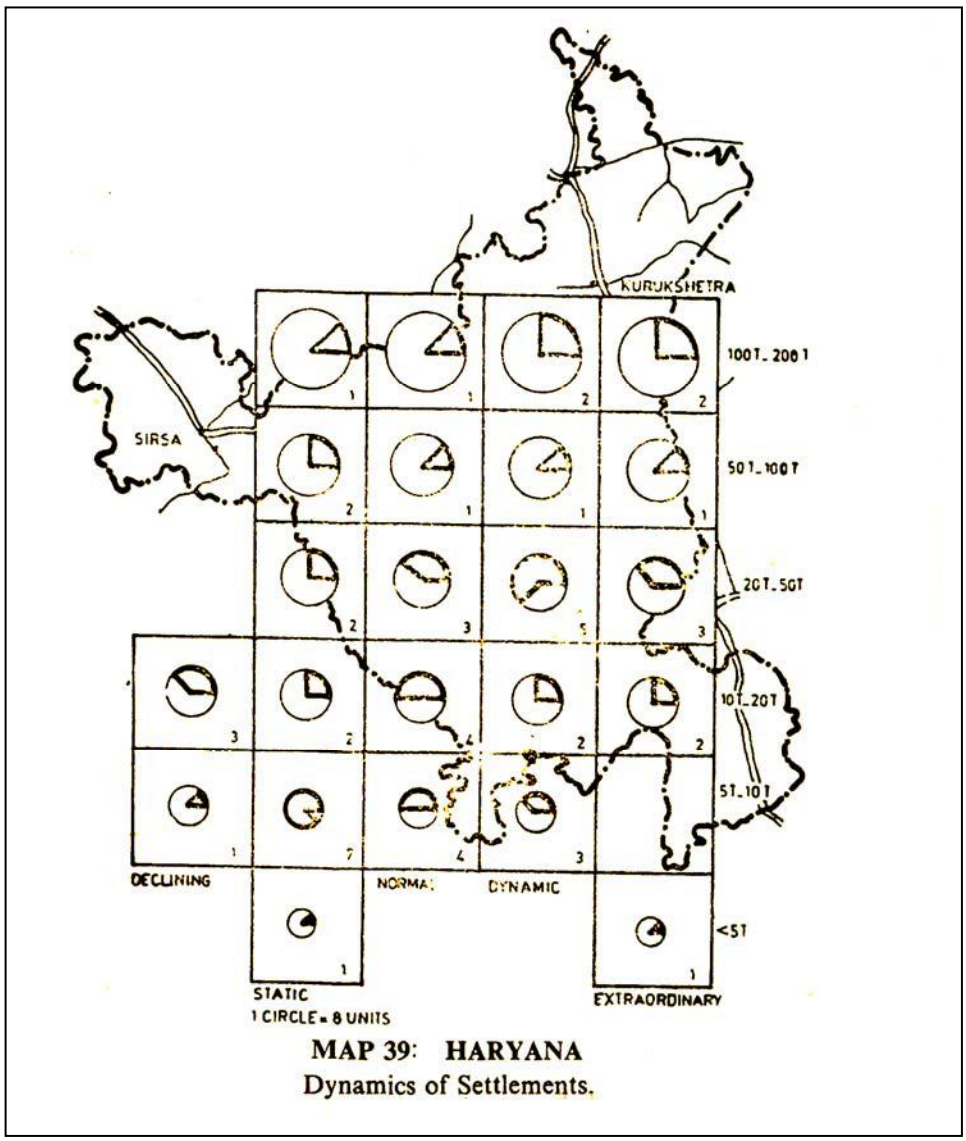
MAP 36: ANDHRA PRADESH
Dynamics of Settlements.



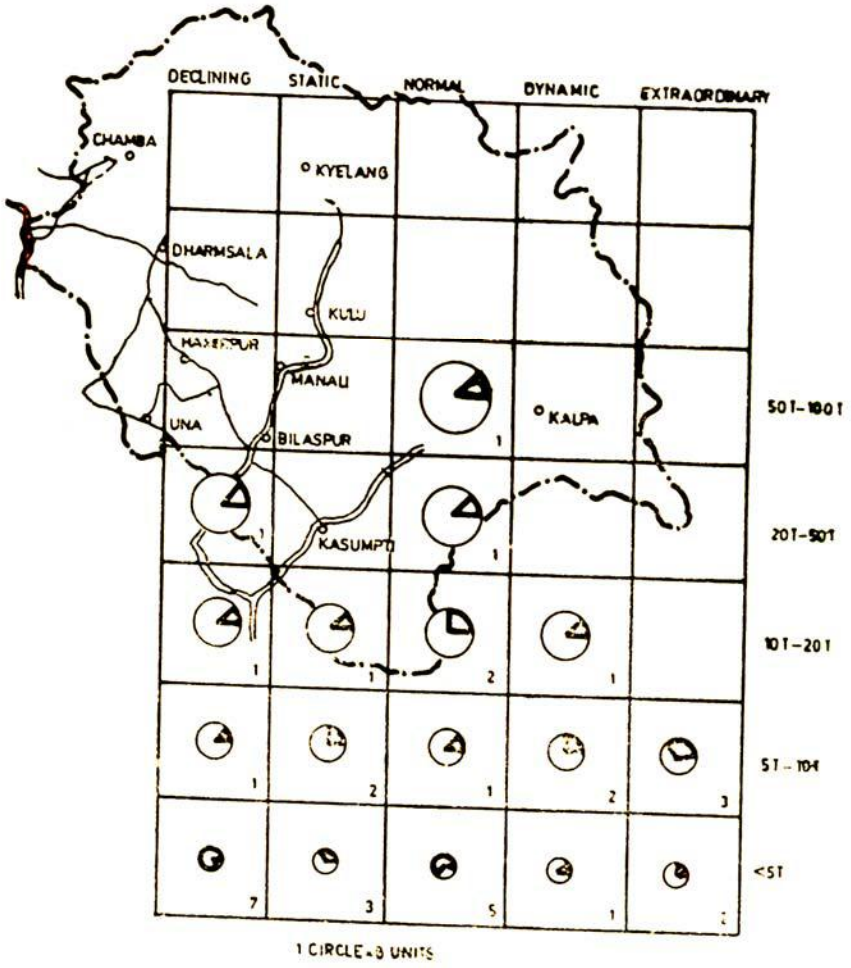
MAP 37: BIHAR
Dynamics of Settlements.



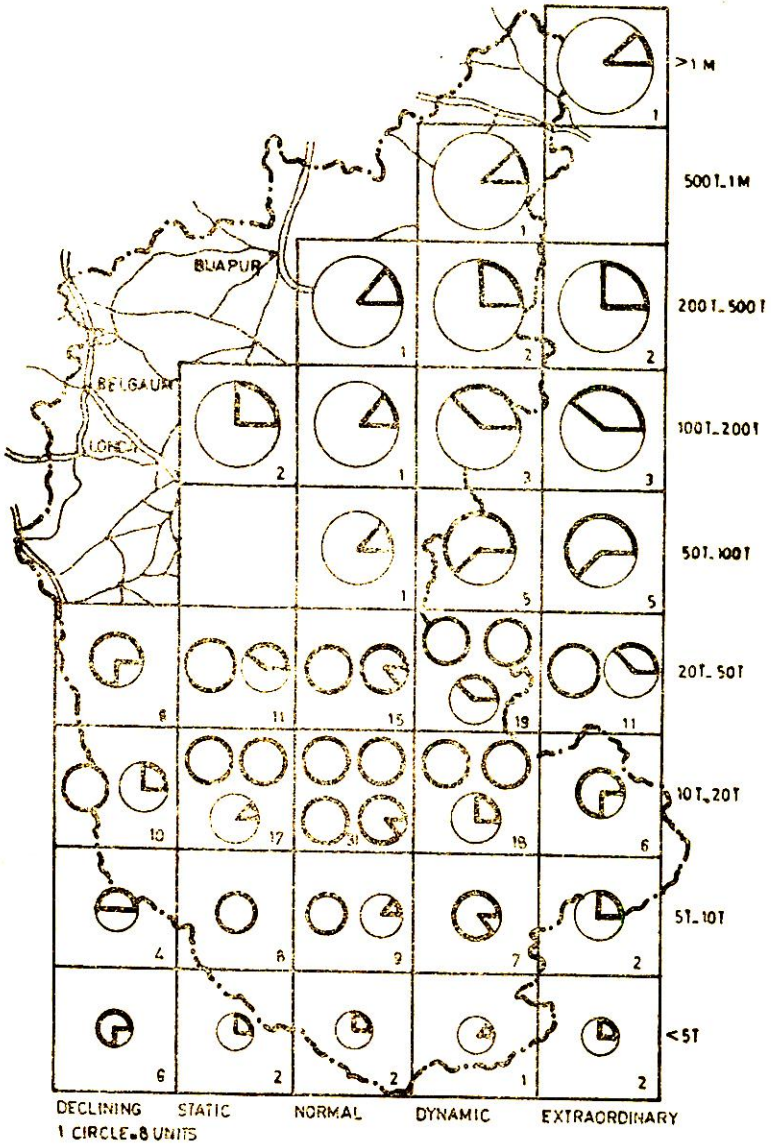
MAP 38: GUJARAT
Dynamics of Settlements.



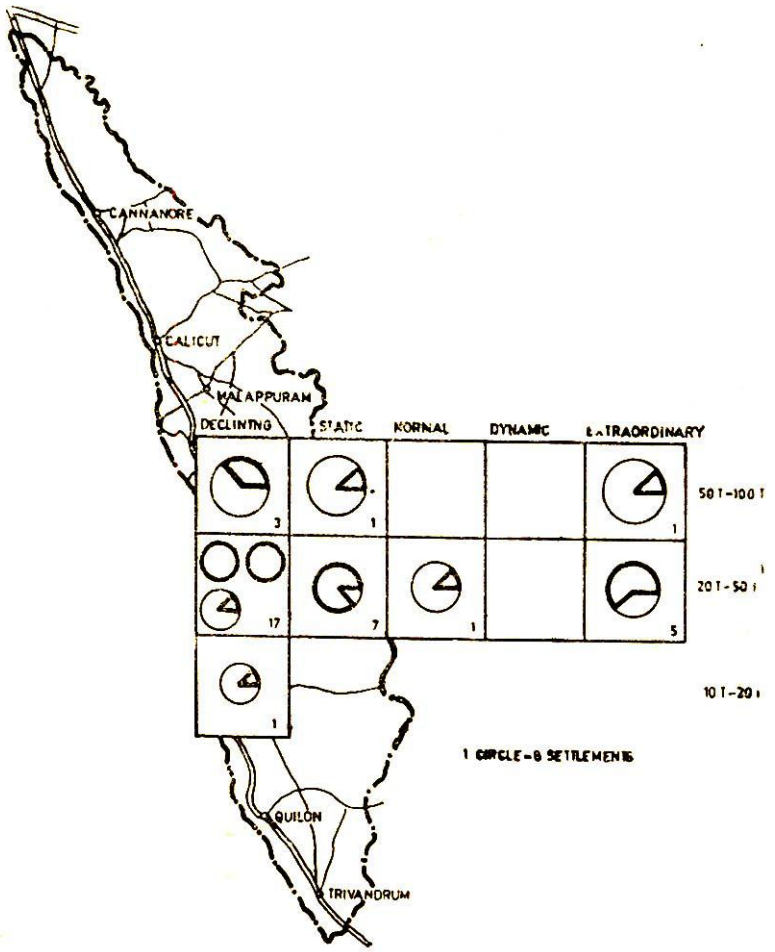
MAP 39: HARYANA
Dynamics of Settlements.



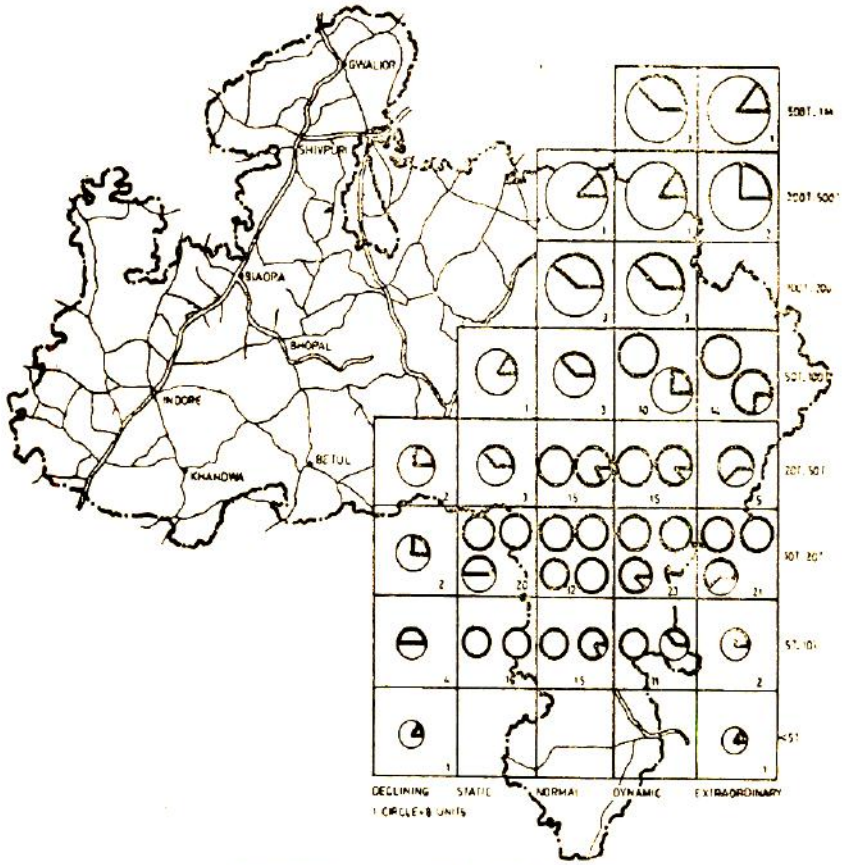
MAP 40: HIMACHAL PRADESH
Dynamics of Settlements.



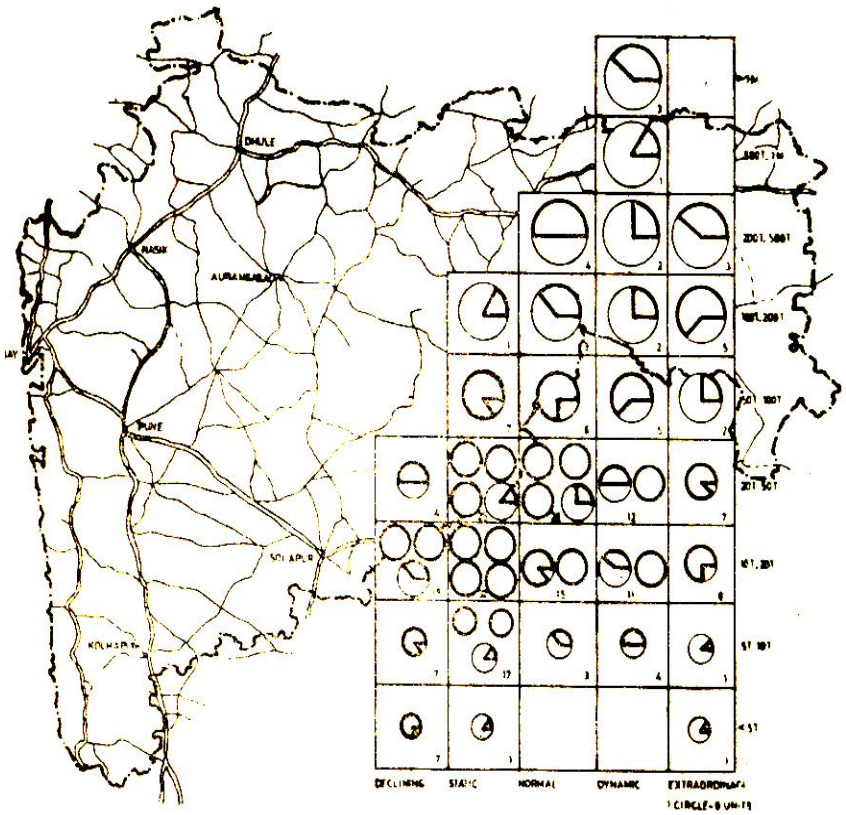
MAP 41: KARNATAKA
Dynamics of Settlements.



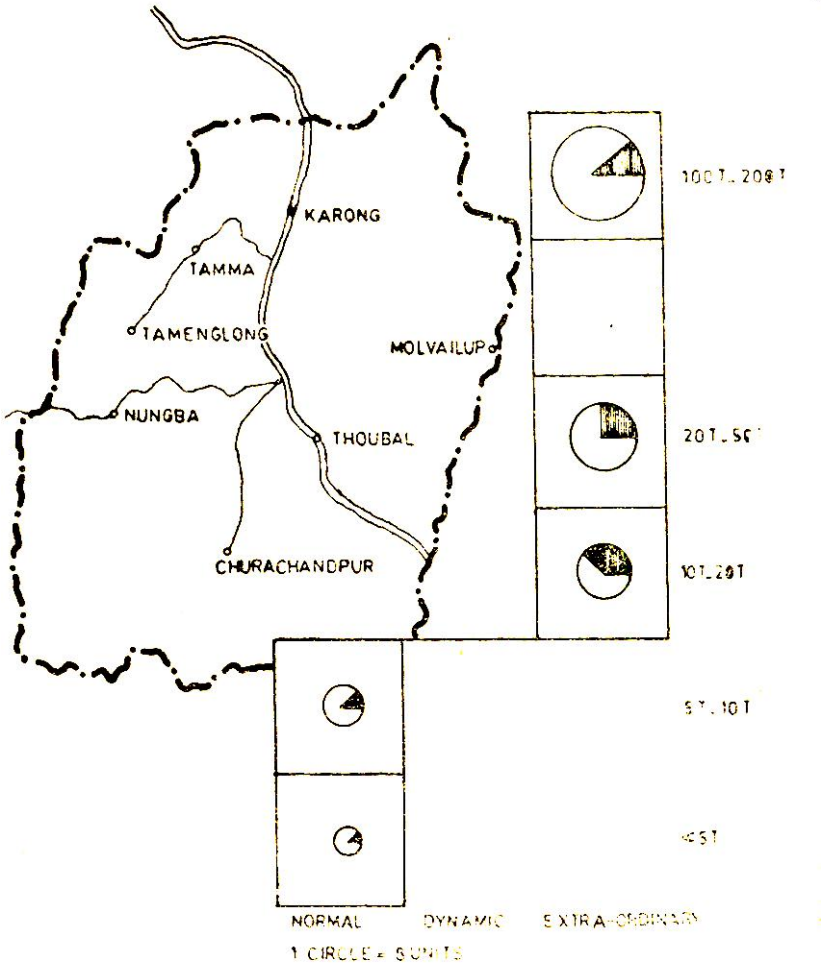
MAP 42: KERALA
Dynamics of Settlements.



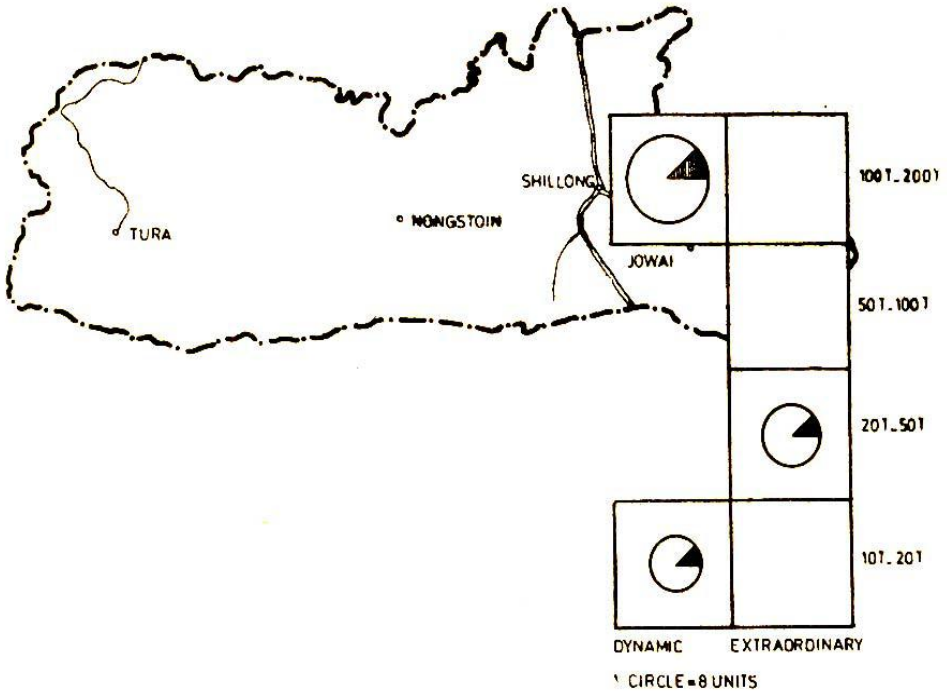
MAP 43: MADHYA PRADESH
Dynamics of Settlements



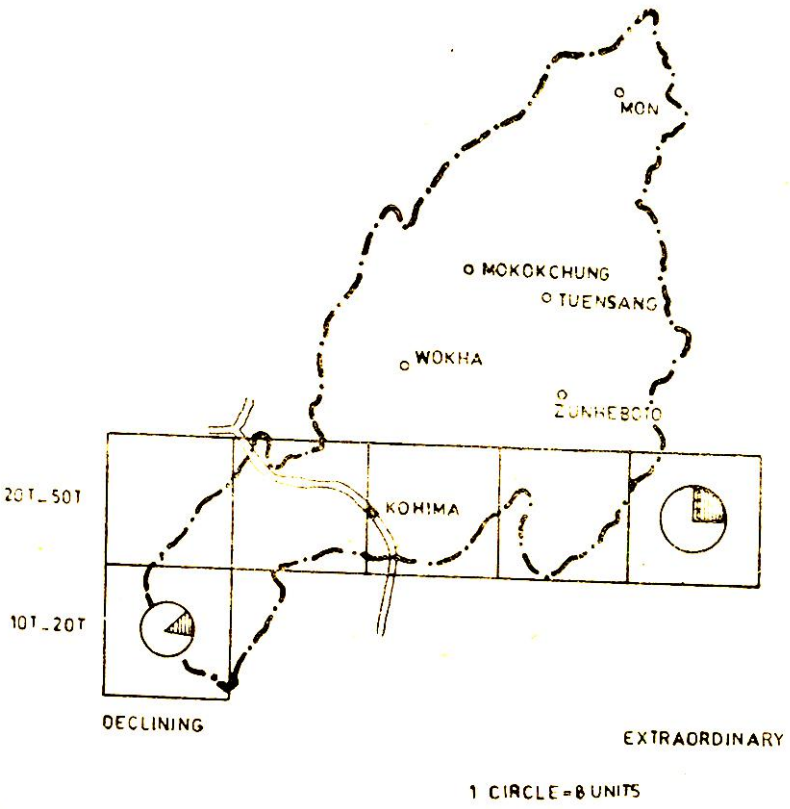
MAP 44: MAHARASHTRA
Dynamics of Settlements.



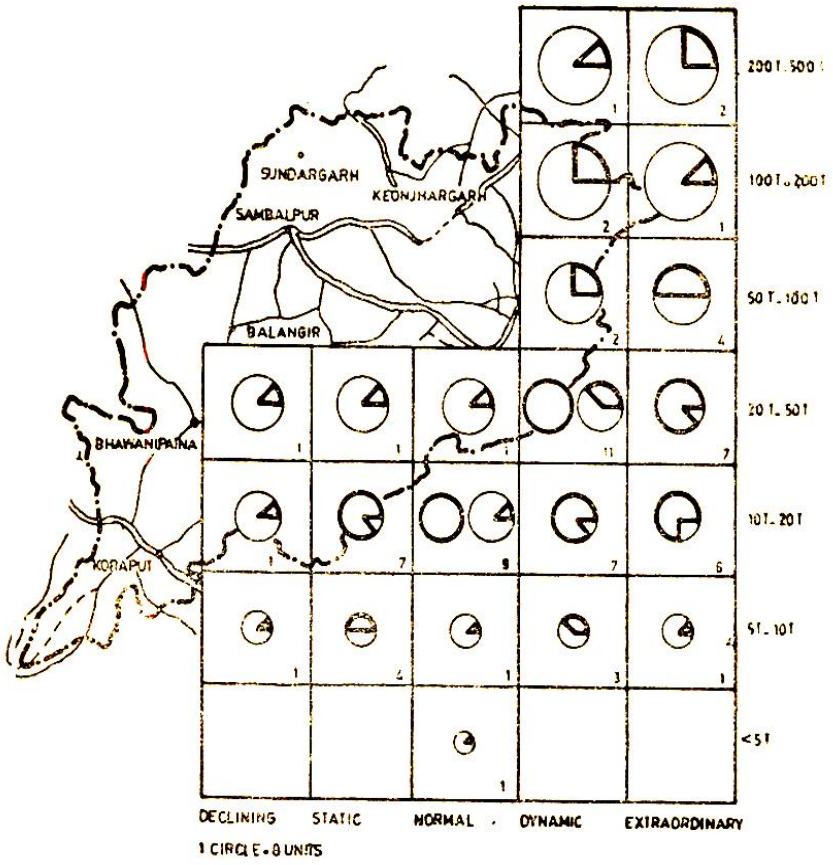
MAP 45: MANIPUR
Dynamics of Settlements.



MAP 46: MEGHALAYA
Dynamics of Settlements.

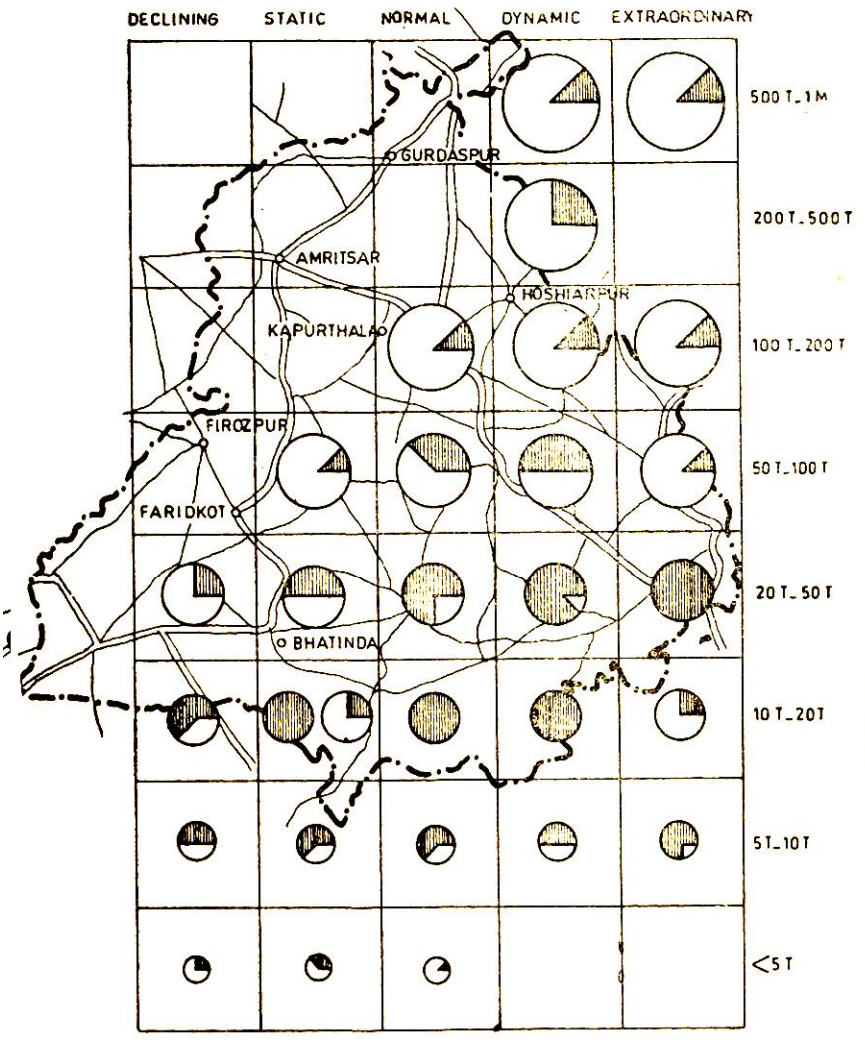


MAP 47: NAGALAND
Dynamics of Settlements.

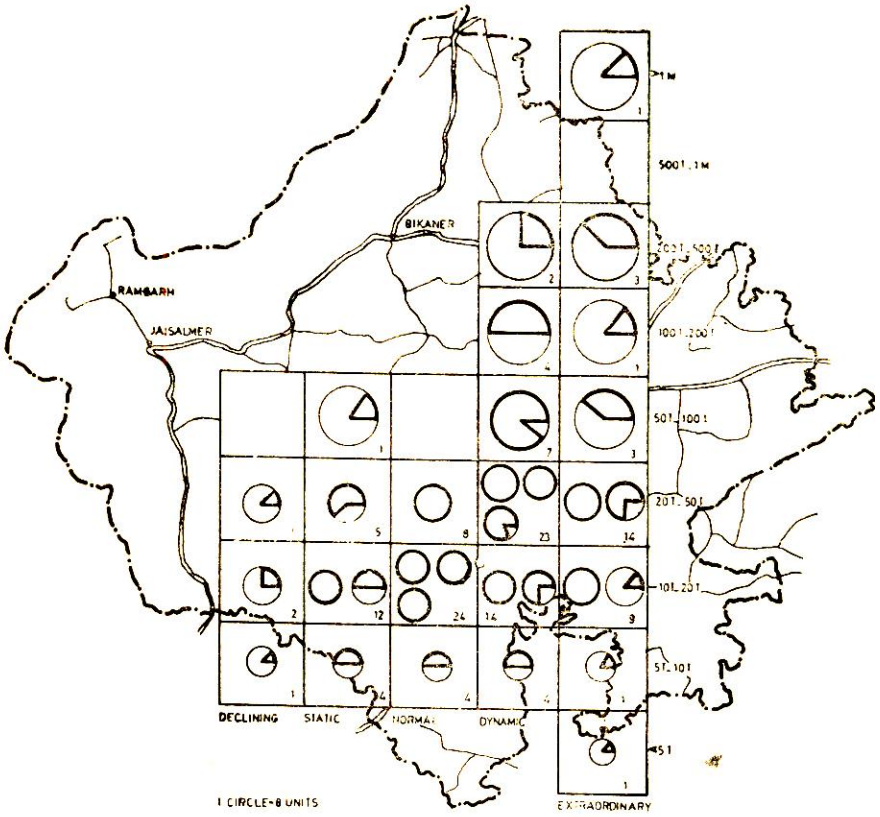


MAP 48: ORISSA

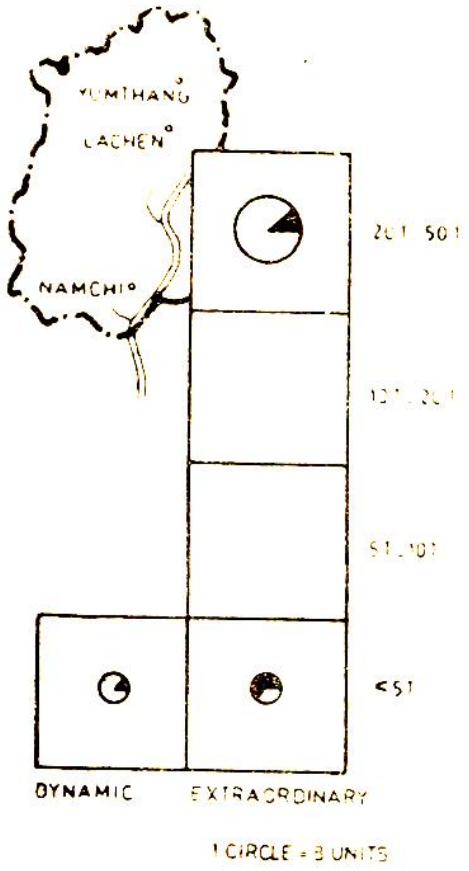
Dynamics of Settlements.



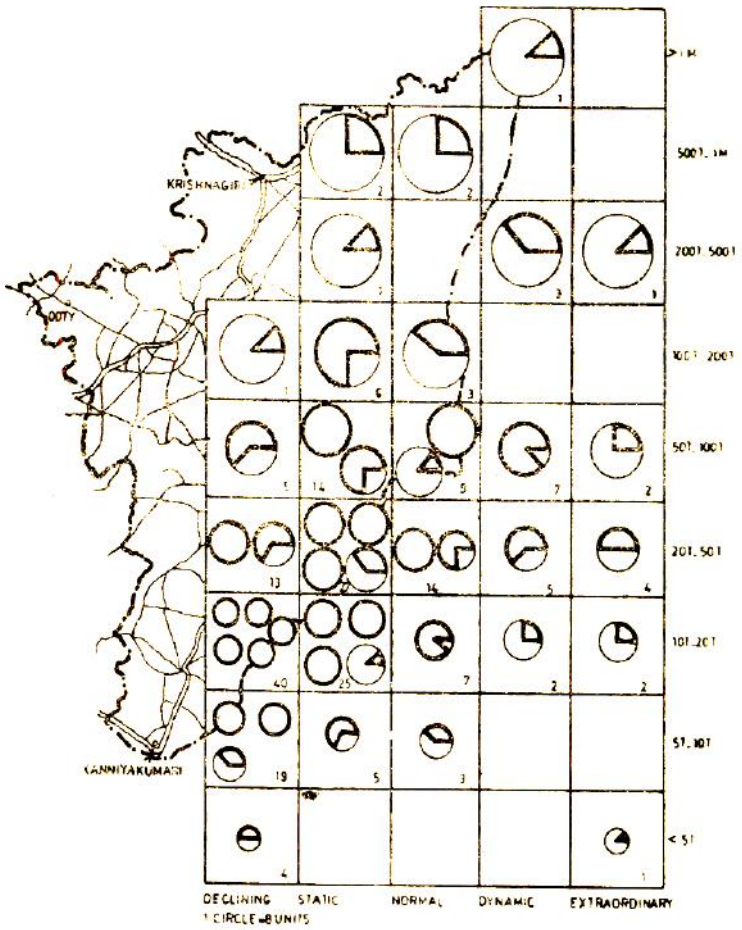
MAP 49: PUNJAB
Dynamics of Settlements.



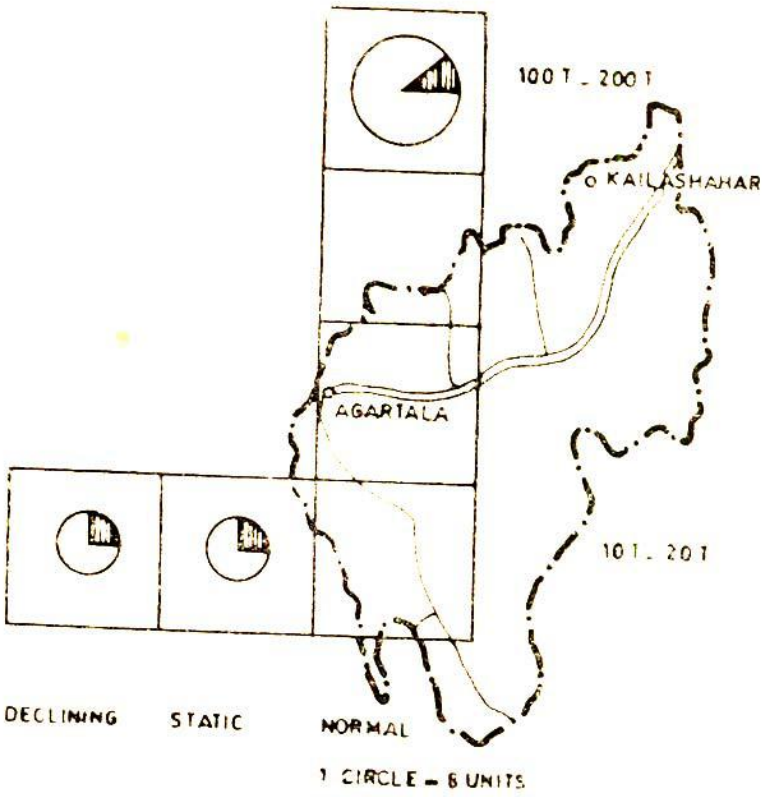
MAP 50: RAJASTHAN
Dynamics of Settlements.



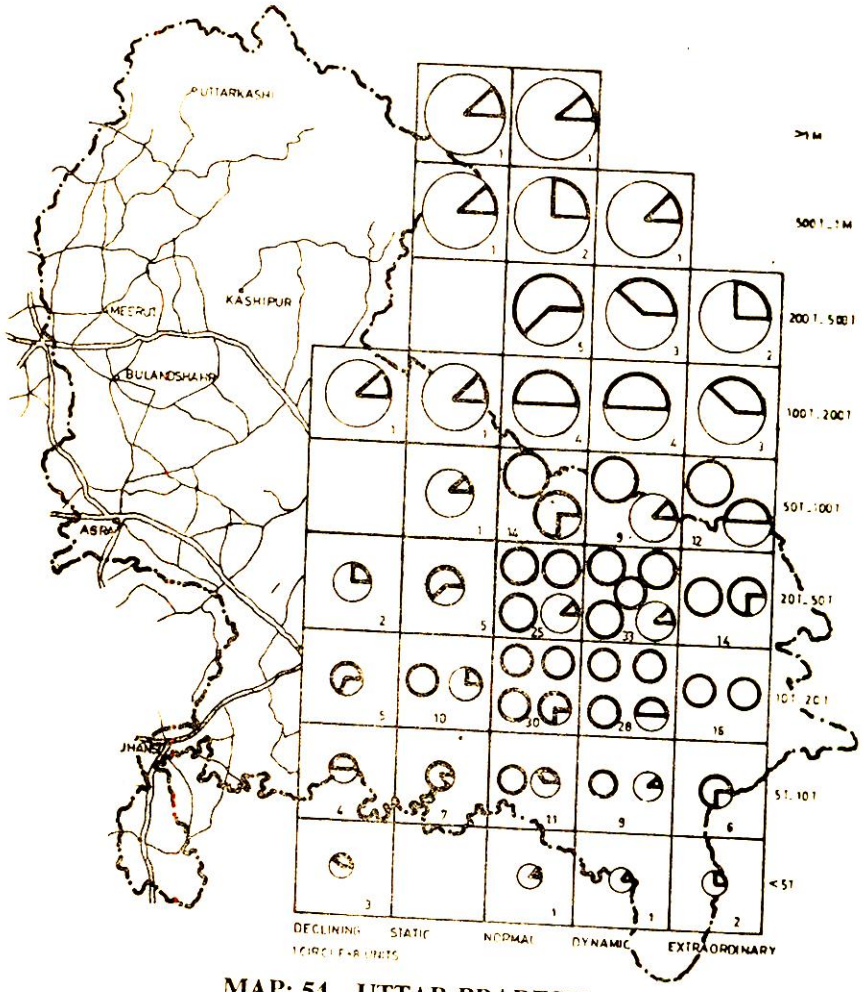
MAP 51: SIKKIM
Dynamics of Settlements.



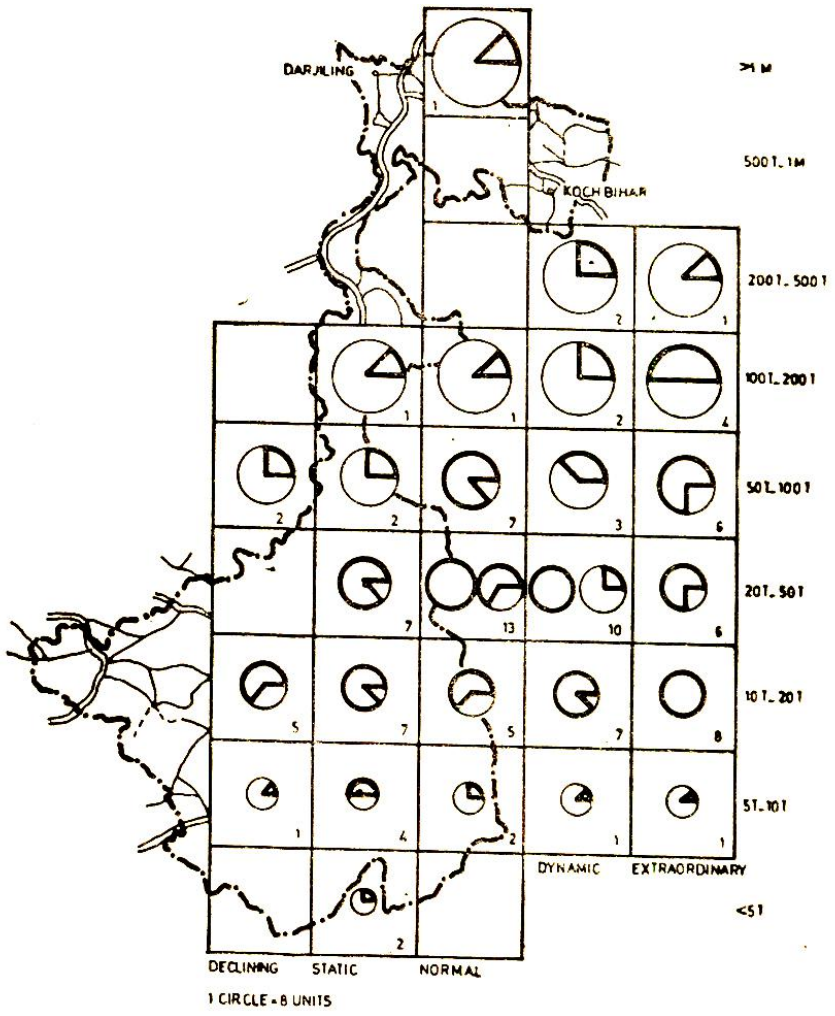
MAP 52: TAMIL NADU
Dynamics of Settlements.



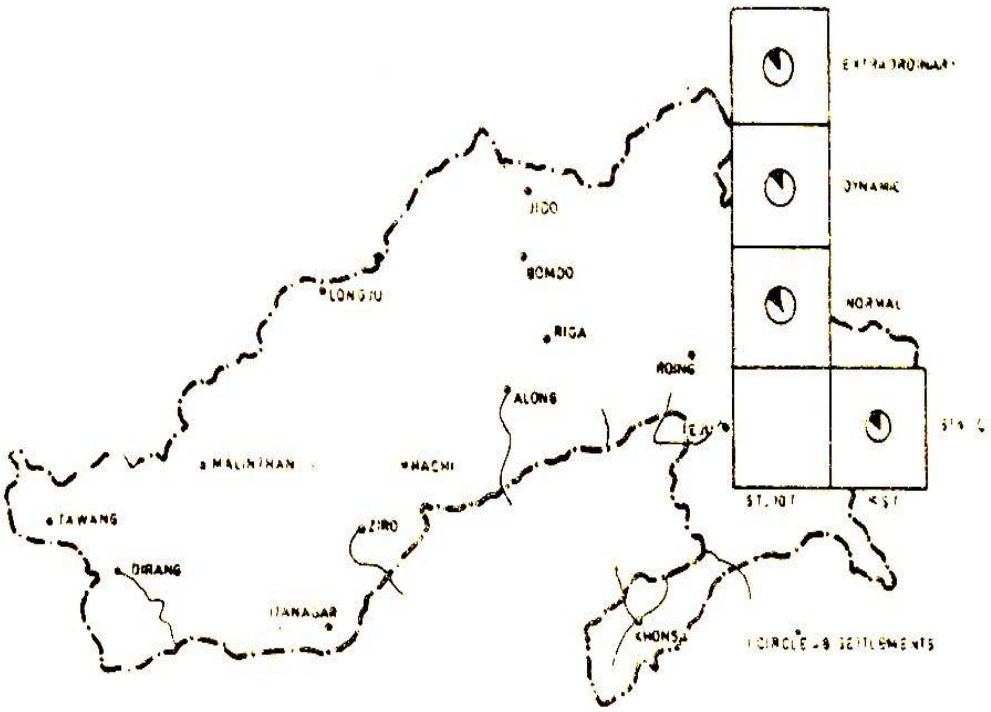
MAP 53: TRIPURA
Dynamics of Settlements.



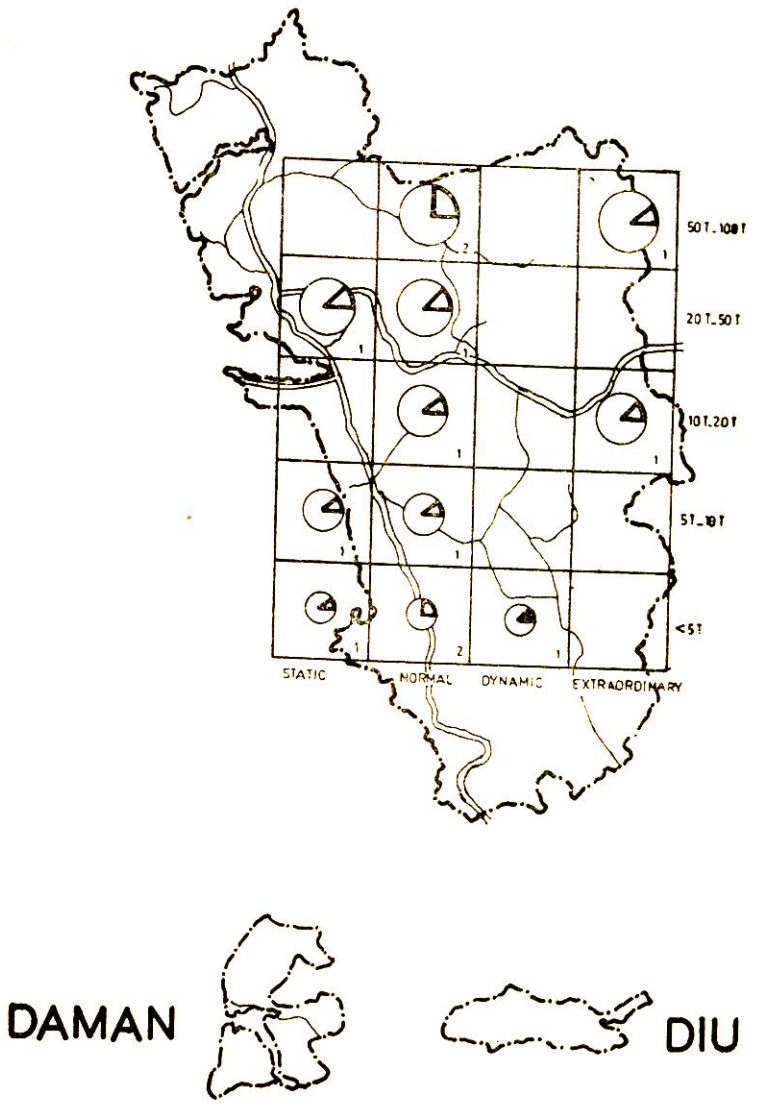
MAP: 54 UTTAR PRADESH
Dynamics of Settlements.



MAP 55: WEST BENGAL
Dynamics of Settlements.



MAP 56: ARUNACHAL PRADESH
Dynamics of Settlements.



MAP 57: GOA, DAMAN AND DIU
Dynamics of Settlements

Position of Rural Settlement

As per 1971 census, there were 5,75,933 rural settlements with the following break-up in terms of their numbers and population in million.

(1) Distribution of rural settlements with regard to numbers and population.

Size-Class	*Nos.*	*Population in million*
10,000 and above	1,358	22.3
5,000 - 10,000	4,974	32.7
2,000 - 5,000	36,005	104.5
1,000 - 2,000	81,973	113.1
500 - 1,000	1,32,990	94.4
200 - 500	1,68,561	56.6
Less than 200	1,50,072	15.2
Total	5,75,933	438.8

Source: Census of India, 1971.

(2) Rate of Growth

In these settlements, the rate of growth is higher for large settlements than for smaller ones. The rate of growth of large rural settlements, each having a population of more than 10,000 was 1.8 per cent year against 0.8 per cent per year for smaller villages with a population of less than 500. Details given as follows.

Village in different size class	*Growth factor*
200 - 500	0.8
500 - 1,000	1.0
1,000 - 2,000	1.1
2,000 - 5,000	1.3
5,000 - 10,000	1.4
More than 10,000	1.8

CHAPTER 9

Economic Characteristics of Settlements

The data computed is based on 1971 census, as 1981 census concerning the economic characteristics were not published till then. The data is given only for 10 states, namely, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh. The first two categories, which have the maximum number of workers, have been presented in tabular form as well as shown graphically. Category of economic characteristics have been adopted, the same, as given in the census which are as follows.

I. Cultivators.
II. Agricultural laborers.
III. Livestock, factory, fishing, hunting and plantation, orchards and allied activities.
IV. Mining and quarrying.
V. Manufacturing, processing, servicing and repairs (house-hold and non-household industry).
VI. Construction.
VII. Trade and commerce.
VIII. Transport, storage and communication.
IX. Other services.

In the first four categories, a less percentage of workers are working, as such, these have been clubbed together and given as category (I-IV).

Category V-A and V-B have also been clubbed together and written as category V.

Column 5 and 6 give maximum percentage of workers working in a category.

In the end of each state, a composite picture regarding number of towns with different economic characteristics has been added.

Economic characteristics of small and medium towns between a population of 20,000 and 99,999 as per 1971 Census Haryana (Map 58).

SI. No.	*Name of the towns*	*Total population*	*% age of workers to total population*	*%age of workers working in the first two economic categories according to importance*	
1	*2*	*3*	*4*	*5*	*6*
1.	Karnal	92,784	27.6	37.3 (IX)	23.4 (VII)
2.	Hisar	89,437	28.1	34.5 (IX)	22.6 (VII)
3.	Panipat	87,981	26.7	32.8 (V)	25.6(VII)
4.	Faridabad Township	85,762	34.5	58.8 (IX)	23.2(IX)
5.	Ambala	83,633	25.5	38.2 (IX)	27.1 (VII)
6.	Bhiwani	73,086	26.2	41.5 (V)	21.6(VII)
7.	Yamuna Nagar	72,594	29.5	41.3 (V)	22.3 (IX)
8.	Sonepat	62,393	25.5	27.5 (VI)	24.6 (VIII)
9.	Gurgaon	57,151	25.5	46.6 (IX)	20.5(VII)
10.	Sirsa	48,808	26.6	36.7 (VII)	26.6(IX)
11.	Kaithal	45,199	26.0	33.3 (VII)	25.2(IX)
12.	Rewari	43,855	23.9	35.1 (VII)	21.7(IX)
13.	Hansi	41,108	24.3	29.2 (IX)	28.9(VII)
14.	Jind	38,161	25.2	40.7 (IX)	28.2(VII)
15.	Palwal	36,207	24.3	27.4 (IX)	25.5(VII)
16.	Jagadhri	35,094	27.3	39.1 (V)	21.2(VII)
17.	Narnaul	31,875	24.2	31.3 (IX)	26.8(VII)
18.	Jhanesar	29,555	25.6	36.9 (IX)	24.3(VII)
19.	Bahadurgarh	25,812	27.1	31.1 (IX)	27.1(V)
20.	Fatehbad	22,630	26.2	33.2 (VII)	22.4(IX)
21.	Shahbad	21,500	25.7	31.3 (VII)	24.8(IX)
22.	Narwana	21,319	26.2	27.6 (VII)	23.1(I-IV)
23.	Mandi-Dabwali	20,921	28.1	40.6 (VII)	23.3(V)

Number of towns in the first two categories according to importance (maximum number of workers working in particular category).

Haryana

SI. No.	*Category*	*Ist*	*IInd*
1.	I to IV	0	1
2.	V	5	2
3.	VI	1	0
4.	VII	7	13
5.	IX	10	7

***Kerala* (Map 59)**

1	2	3	4	5	6
1.	Palghat	95,788	29.2	27.7 (IX)	24.4(VII)
2.	Trichur	76,241	24.8	36.7 (IX)	27.7 (VII)
3.	Tellicherry	68,759	25.3	26.2(VII)	24.6 (IX)
4.	Kottayam	59,714	28.9	35.1(IX)	22.1 (VII)
5.	Cannanore	55,162	27.7	29.8 (V)	25.1 (VII)
6.	Kayamkulam	54,102	25.5	30.7 (I-IV)	20.5 (VII)
7.	Badagara	53,855	24.1	26.1(V)	25.4 (VII)
8.	Chaganacherry	48,545	25.4	28.2(IX)	22.9 (VII)
9.	Killikolloor	41,871	31.7	53.0 (V)	17.5 (I-IV)
10.	Chalakudy	37,562	26.4	38.3 (I-VI)	20.5 (V)
11.	Shertalai	36,752	29.5	39.2(V)	17.3 (IX)
12.	Ponnani	35,723	29.0	30.2 (I-VI)	25.0 (V)
13.	Kasargod	34,984	27.8	27.4(A (VII)	22.8 (IX)
14.	Tirur	32,272	23.9	27.7 (I-IV)	24.8 (VII)
15.	Malappuran	32,272	22.3	36.4 (IX)	34.3 (I-IV)
16.	Kanhangad	32,002	33.7	49.2 (I-IV)	21.6 (V)
17.	Haripad	31,869	28.6	51.1 (I-IV)	17.5 (IX)
18.	Feroke	30,516	25.8	41.4 (V)	21.2 (I-IV)
19.	Chavakkad	29,443	25.8	30.3 (I-IV)	28.8 (V)
20.	Pantalayani	28,530	25.2	36.5 (I-IV)	20.7 (VII)
21.	Cheruvannue	28,522	23.7	44.1 (V)	18.5 (IX)
22.	Chittur-Thathamangalam	28,510	31.2	33.2(I-IV)	24.5 (V)
23.	Trippunithura	28,090	28.4	30.5 (IX)	23.0 (I-IV)
24.	Bepoore	27,688	25.9	30.1 (V)	18.4 (VIII)
25.	Attingal	27,052	26.2	31.1(I-IV)	24.1 (IX)
26.	Thiruvalla	26,683	24.0	37.3 (IX)	26.1 (I-IV)
27.	Payyannur	26,524	28.7	44.9 (I-IV)	19.5 (V)
28.	Ollur	25,957	27.3	32.2 (V)	22.3 (IX)
29.	Nemom	25,846	25.7	39.6 (I-IV)	22.2 (IX)
30.	Mavelikkara	25,648	24.5	37.6 (I-IV)	30.7 (IX)
31.	Irinjalikuda	25,405	24.2	31.5 (IX)	20.7 (VII)
32.	Nileshwar	25,972	32.7	39.0 (I-IV)	28.6 (V)
33.	Ottapalam	24,823	30.7	31.2 (I-IV)	24.2 (IX)
34.	Parur	24,393	25.2	29.3 (IX)	26.4 (V)
35.	Alwaye	24,067	29.2	31.7 (IX)	30.3 (V)
36.	Neyyattinkara	23,983	26.8	38.41 (I-IV)	25.7 (IX)
37.	Muvattuzha	22,137	27.9	28.4 (IX)	22.7 (VII)
38.	Shoranur	22,038	27.9	27.6 (VIII)	25.5 (I-IV)
39.	Pappinisseri	21,952	27.9	48.4 (V)	23.1 (I-IV)
40.	Kunnamangalam	21,756	23.8	49.9 (I-IV)	12.8 (IX)
41.	Thodupuzha	20,880	28.6	34.6 (I-IV)	24.4 (IX)
42.	Eloor	20,725	30.3	30.3 (V)	20.3 (IX)

43.	Kanjirapally	20,687	27.3	27.3 (I-IV)	20.4 (IX)
44.	Varkala	20,365	24.2	24.2 (I-IV)	20.2 (IX)
45.	Palai	20,273	26.7	26.7 (I-IV)	29.7 (VII)
46.	Vaikom	20,014	27.8	27.8 (I-IV)	12.2 (IX)

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category).

Kerala

SI.No.	***Category***	***Ist.***	***IInd.***
1.	I To IV	22	7
2.	V	10	9
3.	VII	2	11
4.	VIII	1	1
5.	IX	11	18

Karnataka **(Map 60)**

1	***2***	***3***	***4***	***5***	***6***
1.	Gadag Betgeri	95,426	31.2	32.8 (V)	23.1 (VII)
2.	Raichur	79,831	28.7	23.2 (VII)	22.8(VIII)
3.	Mandya	72,132	28.4	22.0 (V)	21.3 (VII)
4.	Tumkur	70,476	27.3	25.9 (VII)	24.6 (IX)
5.	Hospet	65,196	32.9	40.1 (I-IV)	19.0 (V)
6.	Bagalkot	51,746	26.2	28.1 (VII)	23.5 (V)
7.	Hassan	51,325	26.1	29.4 (IX)	24.6 (VII)
8.	Bidar	50,670	24.6	34.8 (IX)	26.5 (VII)
9.	Chitradurga	50,254	26.5	28.7 (IX)	25.0 (VII)
10.	Kolar	43,518	27.7	26.3 (IX)	22.4 (VII)
11.	Chikmagalur	41,639	28.3	24.6 (IX)	22.8 (VII)
12.	Ranibennur	40,749	33.6	36.7 (V)	25.2 (I-IV)
13.	Rabkavi-Banhatti	37,509	39.0	64.8 (V)	15.3 (I-IV)
14.	Doddaballapur	35,600	31.5	59.2 (V)	14.1 (VII)
15.	Nippani	35,600	31.6	38.8 (V)	23.1 (VII)
16.	Gangavati	34,647	36.9	47.5 (I-IV)	22.5 (VII)
17.	Harihar	33,888	29.9	47.2 (V)	14.9 (I-IV)
18.	Yadgir	32,756	33.5	33.9 (V)	17.2 (VII)
19.	Channa-Patna	32,588	28.8	31.6 (V)	21.2 (VII)
20.	Ramnagaram	31,442	30.6	45.2 (I-IV)	16.2 (VII)
21.	Chamaraganagar	31,069	30.0	33.4 (I-IV)	21.3 (V)

22.	Likal	30,014	35.1	63.2 (V)	14.0 (VII)
23.	Jamkhandi	29,981	29.8	28.5 (V)	25.7 (I-IV)
24.	Gokak	29,960	27.4	27.3(VII)	25.3(V)
25.	Udipi	29,753	27.1	31.5 (VII)	28.4 (VIII)
26.	Chikballapur	29,227	30.1	28.8 (I-IV)	21.8 (VII)
27.	Kollegal	28,706	30.7	29.2(I-IV)	25.1 (V)
28.	Sirsi	28,576	28.3	25.2 (VII)	23.1 (IX)
29.	Karwar	27,770	26.8	31.0 (IX)	20.4 (I-IV)
30.	Sagar	27,573	27.1	30.1 (VII)	22.4 (IX)
31.	Haveri	27,499	32.0	25.8 (VII)	25.6 (I-IV)
32.	Koppal	27,277	27.8	33.2 (I-IV)	22.6 (IX)
33.	Chintamani	26,684	29.5	25.0 (VII)	21.4 (V)
34.	Guledgud	26,365	34.9	63.0 (V)	14.9 (VII)
35.	Basavakalyan	25,592	31.8	35.4 (V)	34.3 (IX)
36.	Athani (Taluk)	24,378	26.5	33.1 (I-IV)	21.0 (VII)
37.	Arsikere	24,155	27.7	29.9 (VII)	26.5 (VIII)
38.	Coondapur	23,831	28.3	28.6 (I-IV)	22.6 (VII)
39.	Shahbad	23,560	26.1	28.4 (V)	20.4 (I-IV)
40.	Tiptur	22,592	27.8	34.3 (VII)	22.9 (IX)
41.	Nanjangud	22,583	28.4	29.5 (V)	24.7 (IX)
42.	Aland	21,568	34.9	37.1 (I-IV)	29.7 (V)
43.	Shorapur	21,056	29.9	30.7 (V)	22.7 (VII)
44.	Lakshmeshwar	20,594	34.9	57.0 (I-IV)	14.9 (V)
45.	Kanakapura	20,297	30.9	29.6 (I-IV)	25.6 (V)
46.	Tarikere	20,022	29.6	40.0 (I-IV)	18.1 (VII)

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category).

Karnataka

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	13	7
2.	V	16	9
3.	VII	11	20
4.	VIII	0	3
5.	IX	6	7

Madhya Pradesh (Map 61)

1	2	3	4	5	6
1.	Murwara	86.535	29.0	24.0 (V)	21.1 (IX)
2.	Khandwa	85.403	25.7	31.9 (IX)	23.1 (VII)
3.	Rewa	69.182	28.1	36.5 (IX)	21.0 (V)
4.	Mhow	63.739	27.8	61.7 (IX)	12.1 (V)
5.	Satna	62,162	30.6	31.1 (IX)	25.9 (V)
6.	Damoha	59,983	27.0	35.5 (V)	21.2 (IX)
7.	Mandsaur	56,988	27.5	34.5 (IX)	24.9 (V)
8.	Rajnajdgaon	55,827	30.9	37.6 (V)	26.3 (IX)
9.	Chhindwara	53,508	25.5	33.4 (IX)	22.2 (VII)
10.	Dewas	51,866	24.4	36.9 (IX)	30.2 (V)
11.	Shivpuri	50,858	26.6	30.8(IX)	19.4 (I-IV)
12.	Neemuch	49,748	28.1	31.8(IX)	16.8 (VII)
13.	Raigarh	48,049	30.8	28.8(IX)	23.5 (V)
14.	Itarsi	46,866	26.7	34.9 (VIII)	21.3 (IX)
15.	Bhind	45,794	25.7	29.8(IX)	22.5 (I-IV)
16.	Morena	44,901	24.2	34.1(IX)	22.1 (VII)
17.	Dhamtari	43,362	34.5	26.9(IX)	24.3 (V)
18.	Vidisha	43,212	26.0	35.3(IX)	22.2 (VII)
19.	Guna	42,330	25.5	32.4(IX)	21.9 (V)
20.	Khargone	42,316	25.1	27.6(IX)	23.6 (VII)
21.	Chikhali-Kalan	39,868	28.9	76.0 (I-IV)	7.7 (VII)
22.	Seoni	38,396	26.0	34.2 (IX)	23.5 (VII)
23.	Jaora	37,499	27.1	29.2(IX)	26.7 (V)
24.	Datia	37,436	24.8	29.0(IX)	21.6 (V)
25.	Jagdalpur	36,932	29.4	36.6(IX)	20.2 (I-IV)
26.	Dhar	36,172	25.2	48.4(IX)	15.0 (I-IV)
27.	Sehore	36,136	28.0	33.7(IX)	26.4 (V)
28.	Bina-Itawa	33,476	25.2	36.4(VIII)	21.5 (IX)
29.	Balaghat	33,346	28.4	28.1 (IX)	23.4 (I-IV)
30.	Korba	32,654	35.1	37.1 (IX)	27.4 (IX)
31.	Nagda	32,569	31.0	60.0 (V)	17.7 (IX)
32.	Chattarpur	32,271	26.2	41.7 (IX)	19.7 (V)
33.	Shahdol	32,236	27.1	30.4(IX)	19.4 (I-IV)
34.	Betul	30,862	25.2	41.0(IX)	18.1 (VII)
35.	Kurasia	30,105	31.2	74.1 (I-IV)	11.4 (IX)
36.	Hoshangabad	29,434	26.5	40.2 (IX)	21.4 (V)
37.	Burhar-Dhanpuri	29,167	34.7	52.7 (I-IV)	22.3 (V)
38.	Harda	28,504	25.2	27.2(IX)	26.3 (VII)
39.	Tikamgarh	27,905	24.6	40.3(IX)	19.3 (V)
40.	Mandla	27,465	26.8	32.2(IX)	26.1 (I-IV)
41.	Rajhurajharandalli	26,657	20.5	28.5(IX)	22.9 (V)
42.	Narsimhapur	25,552	24.6	37.7(IX)	18.9 (V)
43.	Shajapur	25,189	26.0	36.7(IX)	22.8 (I-IV)

44.	Panna	24,367	26.4	32.5(IX)	30.1 (I-IV)
45.	Ambikapur	23,740	27.7	37.6(IX)	20.6 (I-IV)
46.	Pandhurna	22,554	35.2	64.7 (I-IV)	11.2 (VII)
47.	Sironja	22,413	26.9	26.0(IX)	23.3 (I-IV)
48.	Barwani	22,099	25.7	33.3(IX)	27.8 (I-IV)
49.	Bharapara	21,859	29.2	28.1 (I-IV)	25.1 (VII)
50.	Dabra	21,430	26.0	30.8 (V)	23.2 (VII)
51.	Basoda	20,440	24.9	31.8 (IX)	25.8 (VII)
52.	Badnagar	20,057	27.3	28.5(IX)	22.9 (V)

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category).

Madhya Pradesh

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	6	12
2.	V	5	18
3.	VII	2	14
4.	VIII	0	0
5.	IX	39	8

Maharashtra **(Map 62)**

1	***2***	***3***	***4***	***5***	***6***
1.	Jalna	91,099	27.4	33.3 (IX)	22.3 (VII)
2.	Ichal-Karnaji	87,731	32.0	65.1 (V)	12.5(VII)
3.	Bhivandi	79,576	42.0	71.6 (V)	13.8(VII)
4.	Gondia	77,992	32.1	36.0 (V)	21.2(VII)
5.	Chandrapur	75,134	26.6	35.6 (IX)	20.1(VII)
6.	Latur	70,156	26.2	29.7 (IX)	26.5(VII)
7.	Wardha	69,037	24.7	33.3 (IX)	19.8(VII)
8.	Achalpur	66,451	29.6	41.7 (I-IV)	24.0(V)
9.	Satara	66,433	24.3	40.0 (IX)	21.9(VII)
10.	Yeotmal	64,836	27.6	32.8 (IX)	21.3(VII)
11.	Barsi	62,374	26.3	29.8 (V)	26.5(VII)
12.	Parbhani	61,570	26.2	38.0 (IX)	21.5(VII)
13.	Amalner	55,544	25.2	34.0 (V)	21.8 (I-IV)
14.	Nandurbar	54,070	26.8	27.5 (VII)	19.2(I-IV)
15.	Khamgaon	53,692	26.5	24.4 (IX)	23.0(VII)

16.	Pandharpur	53,638	26.4	27.2 (VII)	27.0(IX)
17.	Bhir	49,965	24.8	30.8 (IX)	21.7(VII)
18.	Bassein	44,909	33.8	28.5 (I-VII)	24.1(V)
19.	Hinganghat	44,349	25.4	40.9 (V)	19.0 (IX)
20.	Karad	42,329	26.4	26.8 (IX)	26.2(VII)
21.	Chalisgaon	41,720	28.9	21.0 (VII)	17.5(V)
22.	Akot	41,534	32.6	37.6 (I-IV)	13.1(VII)
23.	Manmad	40,061	24.9	22.6 (V)	21.9(VIII)
24.	Sharirampur	39,492	29.1	27.3 (VII)	20.8(V)
25.	Bhandara	39,423	30.5	28.6 (V)	19.5 (I-IV)
26.	Ratnagiri	37,551	25.4	41.0 (IX)	17.0(VII)
27.	Dhond	35,970	27.2	26.4 (IX)	25.8(V)
28.	Malkapur	35,476	27.3	48.2 (I-IV)	18.5(VII)
29.	Ballarpur	34,268	31.7	46.5 (V)	19.2 (I-IV)
30.	Pulgaon	33,382	26.9	34.8 (IX)	28.9(V)
31.	Chopda	32,656	31.4	58.6 (I-IV)	18.5 (IX)
32.	Washim	32,496	28.5	42.0 (I-IV)	17.8 (VII)
33.	Hingoli	31,948	26.5	28.1 (IX)	25.1(I-IV)
34.	Karanja	31,150	31.3	52.1 (I-IV)	18.2(VII)
35.	Parli	31,078	28.6	26.9 (I-IV)	22.3 (IX)
36.	Udgir	30,647	23.0	29.8 (IX)	26.7 (VII)
37.	Tumsar	29,721	34.0	32.1 (V)	16.5 (I-IV)
38.	Sangamner	28,594	26.6	32.3 (V)	25.4 (VII)
39.	Pusad	27,960	29.5	28.8 (I-IV)	21.3 (IX)
40.	Baramati	27,912	27.2	28.6 (VII)	25.0 (IX)
41.	Anjangaon	27,901	32.6	62.5 (I-IV)	12.5 (VII)
42.	Ambejogai	27,716	25.1	34.6 (I-IV)	25.4 (IX)
43.	Lonavla	27,501	30.0	26.0 (V)	24.4 (IX)
44.	Badnera	27,477	29.0	35.6 (I-IV)	19.3 (IX)
45.	Osmanabad	27,279	26.5	36.8 (IX)	30.2 (I-IV)
46.	Uran-Islampur	27,160	25.4	40.8 (I-IV)	18.6 (IX)
47.	Umrer	27,092	31.7	34.6 (I-IV)	34.5 (V)
48.	Phaltan	26,774	26.6	25.4 (V)	24.5 (V)
49.	Panvel	26,602	29.4	28.6 (IX)	24.5 (VII)
50.	Arvi	26,494	32.0	52.1(I-IV)	15.1 (VII)
51.	Akalkot	26,485	27.6	38.7 (I-IV)	20.3(VII)
52.	Shegaon	25,993	34.2	64.8 (I-IV)	10.4(VII)
53.	Kopargaon	25,829	29.4	25.4 (VII)	20.8(IX)
54.	Shirpur	25,746	28.5	38.9 (I-IV)	21.7(VII)
55.	Warora	25,377	27.2	48.3 (IX)	17.1(VII)

56.	Buldhana	25,303	28.8	38.5 (IX)	32.3 (I-IV)
57.	Yeola	24,533	26.7	43.5 (V)	22.4 (VII)
58.	Wani	24,455	27.2	27.6 (VII)	25.6 (IX)
59.	Dharangaon	24,365	32.4	54.5(I-IV)	16.6 (V)
60.	Pachora	24,099	27.6	33.3(I-IV)	23.8 (VII)
61.	Murtzapur	23,141	28.1	43.5(I-IV)	17.4 (VII)
62.	Nandgaon	22,981	26.5	46.1(I-IV)	15.5(VIII)
63.	Kalamb	22,834	28.1	47.6 (V)	34.6 (I-IV)
64.	Delgur	21,743	27.9	38.1 (I-IV)	22.9 (IX)
65.	Tasgaon	21,583	27.7	55.9 (I-IV)	15.9 (IX)
66.	Balapur	21,381	31.5	61.9 (I-IV)	14.1 (VII)
67.	Ozar	21,260	34.3	45.0 (V)	35.0 (I-IV)
68.	Warud	21,100	37.7	67.9(I-IV)	11.4(VII)
69.	Basmath	21,081	27.7	27.3(IX)	26.3(I-IV)
70.	Wai	21,040	26.4	31.1 (I-IV)	24.2 (IX)
71.	Digras	20,974	31.2	43.9(I-IV)	20.9 (VII)
72.	Chiplun	20,942	25.7	26.4(I-IV)	23.6 (VII)
73.	Nandura	20,259	31.6	55.6(I-IV)	17.7(VII)
74.	Sinnar	20,218	33.3	49.6 (V)	15.8 (IX)
75.	Dondaicha	20,185	30.2	47.2 (I-IV)	22.0(VII)
76.	Yaval	20,175	32.4	62.4(I-IV)	11.5 (IX)
77.	Daryapur-Banosa	20,054	32.2	65.3(I-IV)	13.3 (IX)

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category.

Maharashtra

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	34	11
2.	V	16	9
3.	VII	7	37
4.	VIII	0	2
5.	IX	20	18

***Orissa* (Map 63)**

1	*2*	*3*	*4*	*5*		*6*
1.	Puri	72,674	29.3	43.3	(IX)	23.9 (VII)
2.	Balasore	46,239	28.7	33.8	(IX)	20.6 (VII)
3.	Bhadrak	40,487	26.8	25.7	(I-IV)	24.5 (IX)
4.	Bolangir	35,748	27.7	39.9	(IX)	18.4 (I-IV)
5.	Jeypore	34,319	28.0	32.8	(IX)	24.4 (VII)
6.	Brajrajnagar	31,817	34.4	46.2	(V)	34.0 ((I-IV)
7.	Jatni	29,894	28.8	34.1	(VIII)	27.2 (IX)
8.	Baripada	28,725	27.2	43.2	(IX)	20.3 (VII)
9.	Birmitrapur	28,063	33.2	67.0	(I-IV)	10.5 (VII)
10.	Sunebeda	27,980	31.6	37.1	(I-IV)	26.2 (V)
11.	Parlakhemundi	26,917	26.9	31.8	(IX)	22.5 (VII)
12.	Rayagada	25,064	30.5	22.3	(I-IV)	21.3 (IX)
13.	Gharsuguda	24,727	30.1	28.7	(VIII)	20.9 (VII)
14.	Barbil	24,342	39.8	23.8	(I-IV)	22.5 (IX)
15.	Chowdwar	24,300	39.3	60.8	(V)	13.4 (IX)
16.	Bhawanipatna	23,264	28.0	40.0	(IX)	22.5 (I-IV)
17.	Bargarh	22,865	30.1	26.2	(VII)	23.9 (IX)
18.	Rajgangpur	21,876	32.4	44.0	(V)	17.6 (I-IV)
19.	Koraput	21,505	32.2	40.6	(I-IV)	37.8 (IX)
20.	Kendrapara	20,079	24.4	33.2	(IX)	24.6 (VII)

Number of towns in the first two categories according to importance (Maximum number of workers working in that particular category).

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	6	4
2.	V	3	1
3.	VII	1	8
4.	VIII	2	-
5.	IX	8	7

Punjab **(Map 64)**

1	*2*	*3*	*4*	*5*	*6*
1.	Pathankot	78,192	26.7	41.3 (IX)	24.8 (VII)
2.	Batala	76,488	26.2	33.8 (V)	25.3(VII)
3.	Bhatinda	65,318	28.3	27.2 (IX)	26.4(VII)
4.	Moga	61,625	28.1	28.9 (VII)	24.7 (IX)
5.	Abohar	58,925	28.2	28.7 (VII)	27.9 (V)
6.	Hoshiarpur	57,691	27.4	32.4(VII)	32.2 (V)
7.	Phagwara	55,012	29.1	44.8 (V)	22.6 (VII)
8.	Firozpur Town	51,090	28.1	41.1 (IX)	22.3 (VII)
9.	Malerkotla	48,859	26.8	25.4 (VII)	24.9 (IX)
10.	Firozpur (Cantt)	41,571	24.2	44.1 (IX)	20.6 (VIII)
11.	Muktsar	39,403	27.7	25.4 (VII)	24.1 (I-IV)
12.	Fazilka	36,281	28.6	32.2 (IX)	25.5 (VII)
13.	Kapurthala	35,482	13.2	64.0 (IX)	61.5 (V)
14.	Khanna	34,820	26.8	31.3 (VII)	27.1 (V)
15.	Nabha	34,761	26.6	38.4 (IX)	25.9 (VII)
16.	Kotkapura	34,116	27.3	26.6 (VII)	23.6 (I-IV)
17.	Sangrur	34,015	27.1	39.4 (IX)	23.6 (VII)
18.	Jullundar (Cantt.)	33,724	25.4	56.8 (IX)	18.7 (VII)
19.	Jagraon	32,999	26.8	32.2 (VII)	21.0 (IX)
20.	Gurdaspur	32,064	26.7	52.8 (IX)	21.3 (VII)
21.	Barnala	31,847	28.3	27.7 (VII)	23.3 (IX)
22.	Mansa	31,351	26.2	32.4 (VII)	20.3 (I-IV)
23.	Sunam	28,158	27.5	33.0 (I-IV)	22.0 (IX)
24.	Faridkot	27,725	27.2	38.7 (IX)	20.0 (VII)
25.	Malout	26,746	27.2	36.9 (VII)	26.4 (V)
26.	Rajpura-Township	25,374	28.5	34.3 (V)	30.6 (VII)
27.	Tarn Taran	24,116	25.9	32.2 (VII)	25.1 (I-IV)
28.	Rampura-Phul	23,466	27.4	29.1 (VII)	12.4 (VII)
29.	Nangal	21,356	29.5	72.4 (IX)	20.6 (I-IV)
30.	Samana	26,162	28.2	34.2 (VII)	

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category).

Punjab

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	1	5
2.	V	3	4
3.	VII	14	13
4.	VIII	0.	1
5.	IX	12	7

***Rajasthan* (Map 65)**

1	***2***	***3***	***4***	***5***	***6***
1.	Ganganagar	90,042	28.2	30.2 (IX)	28.2 (V)
2.	Bhilwara	82,155	32.0	30.0 (V)	23.9 (I-IV)
3.	Sikar	70,987	22.6	27.7(VII)	25.8 (VII)
4.	Bharatpur	69,902	25.5	35.7 (IX)	23.8 (V)
5.	Beawar	66,114	27.5	41.4 (V)	23.3 (VII)
6.	Tonk	55,866	26.9	28.1 (V)	27.9 (IX)
7.	Churu	53,185	22.4	25.0 (IV)	21.1 (I-IV)
8.	Pali	49,839	29.0	48.5 (V)	20.6 (IX)
9.	Sawaimadhopur	43,284	28.7	33.1 (V)	27.1 (IX)
10.	Sujangarh	39,073	21.6	34.7 (I-IV)	20.7 (VII)
11.	Barmer	38,630	27.3	41.7 (IX)	22.3 (VII)
12.	Sardarshahr	38,346	21.4	27.0 (I-IV)	22.5 (IX)
13.	Kishangarh	37,105	29.8	41.9 (V)	25.5 (IX)
14.	Nagaur	36,448	25.9	33.9 (IX)	23.0 (V)
15.	Fatehpur	34,929	19.5	22.8 (I-IV)	19.6 (V)
16.	Bundi	34,492	26.5	37.3 (IX)	24.4 (V)
17.	Gangapur	32,660	24.4	30.6 (VIII)	23.1 (IX)
18.	Hanumangarh	32,532	27.2	23.7 (VII)	23.1 (IX)
19.	Jhun-Jhunun	32,024	23.8	29.6 (IX)	19.2 (VII)
20.	Dholpur	31,865	23.8	34.2 (IX)	17.7 (V)
21.	Ratangarh	31,506	22.5	25.7 (I-IV)	22.5 (IX)
22.	Baran	29,809	26.5	26.8 (IX)	26.0 (VII)
23.	Ladnu	28,226	20.8	24.2 (IX)	23.3 (I-IV)
24.	Hindaun	27,793	26.0	28.0 (I-IV)	21.9 (VII)
25.	Karauli	27,363	25.6	30.0 (I-IV)	28.4 (IX)
26.	Banswara	26,565	24.5	41.1 (IV)	20.9 (VII)
27.	Nawalgarh	25,331	19.5	22.7 (V)	21.0 (IX)
28.	Chittaurgarh	25,917	28.4	34.0 (IX)	20.6 (VII)
29.	Nasirabad	25,732	31.5	54.6 (IX)	15.6 (V)
30.	Abu-road	25,331	24.9	45.3 (VIII)	16.8 (VII)
31.	Makrana	23,243	26.1	58.3 (V)	12.7 (I-IV)

32.	Rajgarh	23,179	23.5	47.1 (I-IV)	16.2 (IX)
33.	Deeg	22,267	25.1	27.0 (I-IV)	23.9 (IX)
34.	Lachhmangarh	22,158	20.5	23.8 (I-IV)	23.0 (VII)
35.	Dungargarh	21,412	20.8	40.9 (I-IV)	22.4 (VII)
36.	Pilani	20,059	21.0	52.6 (IX)	12.9 (I-IV)
37.	Jhalwar	20,035	23.3	48.9 (IX)	16.3 (V)

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category)

Rajasthan

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	12	5
2.	V	8	8
3.	VII	1	12
4.	VIII	2	0
5.	IX	14	12

Tamil Nadu **(Map 66)**

1	***2***	***3***	***4***	***5***	***6***
1.	Valparai	95,175	47.3	76.4 (I-IV)	7.0 (IX)
2.	Pollachi	93,838	32.2	27.5 (VII)	21.6 (IX)
3.	Karaikudi	88,371	26.8	28.1 (IX)	26.0 (VII)
4.	Rajapalayam	86,952	34.9	35.0 (I-IV)	32.0 (V)
5.	Arcot	75,911	28.2	40.6 (V)	20.4 (VII)
6.	Nagapatti	74,019	25.2	25.6 (VII)	24.7 (IX)
7.	Coonoor	70,813	30.2	34.7 (IX)	21.5 (VII)
8.	Gudiyatham	67,966	32.7	55.2 (V)	14.9 (VII)
9.	Pudukottai	66,384	25.7	33.3 (VII)	24.8 (IX)
10.	Karur	65,706	31.7	33.1 (V)	27.8 (VII)
11.	Ootacamund	63,310	32.8	29.9 (IX)	25.3 (I-IV)
12.	Aruppukkottai	62,233	42.7	62.7 (V)	13.3 (VII)
13.	Virudhunagar	61,902	29.6	37.7 (VII)	24.4 (V)
14.	Tiruvannamalai	61,370	29.6	31.2 (VII)	19.8 (V)
15.	Sivakasi	60,753	41.6	61.5 (V)	14.1 (VII)
16.	Villuparam	60,242	27.5	28.9 (VII)	20.1 (VIII)
17.	Mayuram	60,195	25.8	27.8 (VII)	26.4 (IX)

18.	Neyveli	58,285	27.0	49.6 (I-IV)	24.8 (IX)
19.	Vaniyambadi	57,686	27.5	39.9 (V)	27.3 (VII)
20.	Chidambaram	57,658	24.6	29.0 (IX)	26.6 (VII)
21.	Bharani	56,696	36.9	58.0 (V)	17.1 (VII)
22.	Trichandur	55,636	26.0	29.1 (I-IV)	21.4 (V)
23.	Bodinayakanna	54,176	34.2	67.0 (I-IV)	13.2 (VII)
24.	Ambur	54,011	29.1	38.4 (V)	22.7 (VII)
25.	Srivilliputhur	53,855	37.5	45.1 (V)	18.0 (IX)
26.	Palani	51,664	31.6	31.0 (IX)	24.9 (VII)
27.	Kadayanallur	50,295	35.5	41.5 (V)	38.0 (I-IV)
28.	Ambasamudvam	49,255	34.5	31.9 (V)	29.5 (I-IV)
29.	Paramakudi	48,880	30.8	46.4 (V)	21.9 (VII)
30.	Kovilpatli	48,509	32.6	41.9 (V)	24.0 (VII)
31.	Mettupalayam	48,365	32.7	25.9 (VII)	22.1 (IX)
32.	Tindivanam	45,058	27.6	26.1 (VII)	21.5 (IX)
33.	Arkonam	43,347	25.1	42.1 (VIII)	20.6 (VII)
34.	Mannargudi	42,783	28.1	30.3 (VII)	25.6 (IX)
35.	Tenkasi	42,627	29.7	29.2 (V)	23.9 (I-IV)
36.	Attur	41,569	32.4	32.4 (I-IV)	20.4 (VII)
37.	Periakulam	41,561	28.8	46.4 (I-IV)	17.8 (IX)
38.	Cumbum	40,796	34.2	64.0 (I-IV)	14.9 (VII)
39.	Tirupattur	40,357	27.5	37.2 (VII)	29.7 (V)
40.	Vikaramasingapuram	40,274	28.7	53.0 (V)	19.8 (IX)
41.	Dharampuri	40,036	28.9	26.4 (VII)	24.2 (IX)
42.	Udumalpet	39,311	31.5	27.5 (V)	25.3 (VII)
43.	Puliangudi	38,742	44.3	48.6 (I-IV)	33.9 (V)
44.	Arni	38,664	30.0	35.4 (V)	25.4 (VII)
45.	Chingleput	38,419	25.8	37.8 (IX)	20.0 (VII)
46.	Mettur	38,380	26.5	40.6 (V)	30.1 (IX)
47.	Pattukottai	37,682	27.9	27.0 (VII)	25.8 (I-IV)
48.	Neellikuppam	37,638	26.5	46.5 (I-IV)	27.6 (V)
49.	Tiruchengode	36,990	37.2	41.2 (V)	16.8 (I-IV)
50.	Gobichettipalayam	36,356	36.6	33.0 (I-IV)	21.3 (VII)
51.	Ramanathapuram	36,122	24.3	34.6 (VII)	33.9 (IX)
52.	Tiruvarur	35,850	27.3	30.5 (VII)	23.2 (IX)
53.	Krishnagiri	35,383	28.3	33.6 (VII)	22.7 (IX)
54.	Theniallingaram	34,854	32.7	44.5 (I-IV)	21.4 (VII)
55.	Dharampuram	34,500	31.7	28.3 (I-IV)	28.9 (VII)
56.	Panrutti	34,065	30.6	37.1 (I-IV)	26.3 (VII)
57.	Edapadi	32,996	34.7	39.9 (V)	36.8 (I-IV)
58.	Sankaranayanarkoil	32,994	39.2	42.7 (V)	20.2 (VII)
59.	Gudalur	32,843	43.4	79.8 (I-IV)	7.6 (IX)
60.	Manaparai	32,092	32.3	43.4 (I-IV)	18.9 (V)
61.	Vridhachalam	31,859	29.7	27.7 (I-IV)	24.0 (VII)
62.	Namakkal	29,983	29.7	24.6 (VII)	22.4 (V)
63.	Devakottai	28,974	23.6	34.6 (IX)	29.4 (VII)

64.	Rasipuram	28,492	35.3	42.5 (V)	21.3 (VII)
65.	Devarshola	26,890	42.2	83.3 (I-IV)	7.1 (IX)
66.	Chinnamanur	26,678	31.4	62.2 (I-IV)	14.4 (VII)
67.	Mallasumudram	26,373	48.3	50.5 (V)	30.0 (I-IV)
68.	Sathyamangalam	25,931	33.6	31.9 (I-IV)	20.3 (VII)
69.	Tiruvallur	25,324	27.5	25.4 (VII)	21.8 (IX)
70.	Kotagiri	25,194	45.1	68.5 (I-IV)	12.7 (IX)
71.	Chinnalpatti	24,417	36.6	62.5 (V)	18.2 (VII)
72.	Shencottah	23,889	28.4	32.2 (I-IV)	19.6 (V)
73.	Kilkarai	23,798	18.7	40.6 (VII)	24.7 (I-IV)
74.	Pernambut	23,325	28.9	47.7 (V)	24.2 (VII)
75.	Tirumangalam	22,896	29.0	29.0 (VII)	24.7 (IX)
76.	Sirkali	22,711	26.9	37.7 (I-IV)	23.3 (IX)
77.	Sathur	22,222	33.9	44.8 (V)	22.9 (VII)
78.	Usilampatti	21,887	28.1	30.6 (I-IV)	25.7 (VII)
79.	VEdarnayam	21,471	29.5	60.9 (I-IV)	12.9 (V)
80.	Sivaganga	20,826	24.4	50.0 (IX)	26.7 (VII)
81.	Illayankudi	20,644	21.0	35.0 (I-IV)	32.4 (VII)
82.	Kallakurichi	20,633	28.8	30.8 (I-IV)	23.5 (VII)
83.	Jolarpet	20,069	27.5	36.0 (VIII)	22.6 (I-IV)

Number of towns in the first two categories according to importance (maximum number of workers working in that particular category).

Tamil Nadu

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	27	10
2.	V	26	11
3.	VII	20	38
4.	VIII	2	1
5.	IX	18	20

***Uttar Pradesh* (Map 67)**

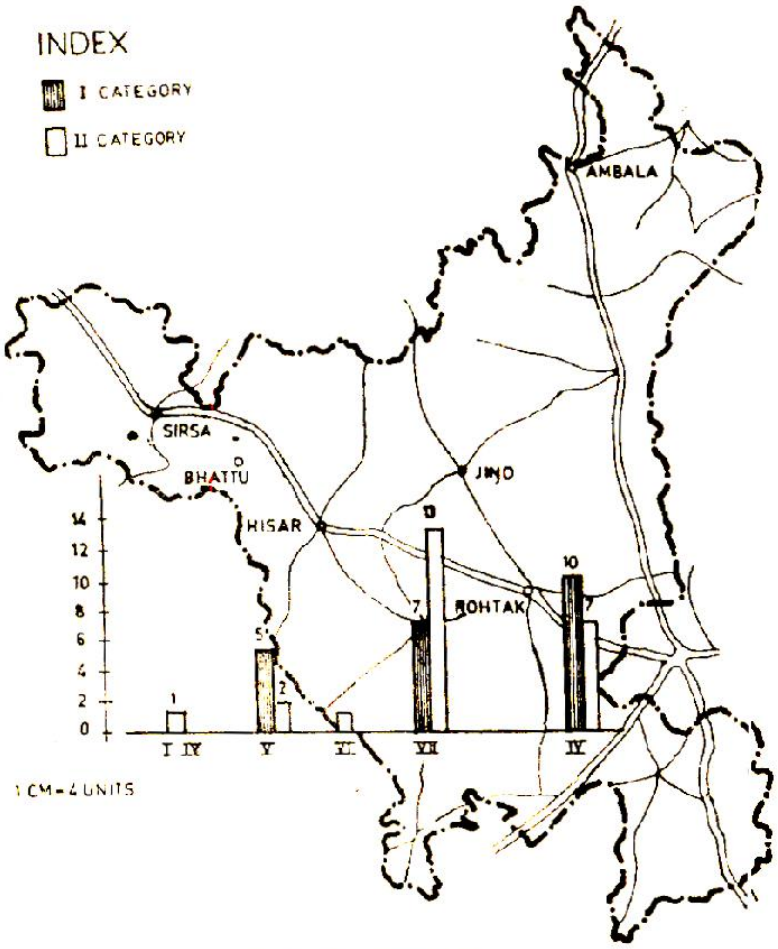
1	*2*	*3*	*4*	*5*	*6*
1.	Sambhal	86,323	27.4	30.2 (I-IV)	27.8 (V)
2.	Etawah	85,894	26.2	38.5 (IX)	24.1 (V)
3.	Amroha	82,702	25.1	34.6 (V)	19.6 (IX)
4.	Jaunpur	80,737	26.5	25.8 (VII)	24.7 (IX)
5.	Hardwar	79,277	29.2	36.3 (IX)	14.4 (VII)
6.	Hathras	74,349	26.7	28.9 (VII)	24.7 (V)
7.	Bahraich	73,931	28.3	30.1 (IX)	24.4 (VII)
8.	Budaun	72,204	25.5	33.2 (IX)	21.0 (VII)
9.	Hapur	71,266	25.4	24.1 (VII)	22.2 (V)
10.	Pilibhit	68,273	27.2	27.1 (IX)	23.5 (V)
11.	Sitapur	66,715	28.4	40.0 (IX)	24.7 (VII)
12.	Maunnath-Bhanjan	64,058	38.1	70.3 (V)	11.1 (VII)
13.	Roorkee	62,456	35.0	70.4 (IX)	12.6 (VII)
14.	Bulandshahr	59,505	25.0	31.9 (IX)	27.4 (VII)
15.	Fatehpur	54,665	27.0	41.7 (VII)	35.0 (I-IV)
16.	Chandausi	53,395	26.4	24.8 (IX)	22.9 (V)
17.	Gonda	52,662	27.7	33.7 (IX)	20.7 (VII)
18.	Haldwani-cum-kathgodam	52,205	31.2	29.7 (IX)	25.6 (VII)
19.	Banda	50,575	26.6	33.5 (IX)	24.6 (VII)
20.	Basti	49,635	28.7	36.5 (IX)	24.2 (I-IV)
21.	Ballia	47,101	25.7	39.7 (IX)	26.2 (VII)
22.	Hardoi	46,639	26.5	34.8 (IX)	24.1 (VII)
23.	Kasganj	46,467	26.4	27.5 (VII)	24.0 (IX)
24.	Ghazipur	45,635	24.4	38.7 (IX)	25.3 (VII)
25.	Mainpuri	43,849	25.1	35.9 (IX)	27.6 (VII)
26.	Lakhimpur	43,752	27.7	39.2 (IX)	26.1 (VII)
27.	Modinagar	43,470	33.9	70.2 (V)	12.8 (IX)
28.	Barabanki	43,385	29.2	40.8 (IX)	23.5 (V)
29.	Bijnor	43,290	25.8	33.0 (IX)	17.1 (VII)
30.	Nazibabad	42,586	26.4	28.7 (V)	22.2(VII)
31.	Orai	42,513	25.1	37.4 (IX)	33.9(VII)
32.	Tanda	41,611	31.6	62.0 (V)	13.5 (VII)
33.	Azamgarh	40,963	25.3	43.3 (IX)	21.7 (VII)
34.	Rae Bareli	38,765	26.4	30.2 (IX)	23.9 (VII)
35.	Unnao	38,195	24.6	47.5 (IX)	19.9 (VII)
36.	Deoband	38,194	26.4	23.5 (V)	21.2 (IX)
37.	Deoria	38,161	26.5	36.0 (IX)	24.2 (VII)
38.	Nagina	37,066	25.2	23.4 (IX)	22.4 (I-IV)
39.	Shamli	36,959	26.9	31.4 (V)	25.7 (VII)
40.	Balrampur	36,191	27.5	34.9 (IX)	20.4 (VII)
41.	Lalitpur	34,462	26.5	29.8 (IX)	22.1 (VII)
42.	Etah	33,514	26.0	35.7 (IX)	28.3 (VII)
43.	Kashipur	33,457	26.5	22.9 (IX)	22.8 (V)

44.	Shahbad	33,408	28.0	36.9 (I-IV)	19.1 (IX)
45.	Kairana	32,353	28.3	49.3 (I-IV)	20.6 (V)
46.	Sultanpur	32,330	28.1	35.9 (VII)	34.4 (IX)
47.	Sikandrabad	32,031	27.1	27.1 (V)	23.9 (I-IV)
48.	Shikohabad	31,442	25.7	30.6 (V)	26.2 (VII)
49.	Baraut	31,264	25.0	30.2 (VII)	24.4 (IX)
50.	Mahoba	29,707	28.4	26.9 (IX)	19.5 (I-IV)
51.	Vrindaban	29,460	27.1	53.1 (IX)	17.1 (VII)
52.	Mughal Sarai	28,612	28.0	53.4 (VIII)	16.1 (VII)
53.	Konch	28,403	26.5	28.0 (IX)	25.9 (VII)
54.	Kannauj	28,187	28.2	31.7 (I-IV)	23.1 (IX)
55.	Chandpur	28,179	25.3	30.4 (V)	19.2 (I-IV)
56.	Bela Pratapgarh	27,909	28.5	35.7 (VII)	31.7 (IX)
57.	Sahaswan	27,266	26.5	45.5 (I-IV)	22.2 (IX)
58.	Tilhar	26,837	26.9	50.0 (V)	34.2 (I-IV)
59.	Mauranipur	25,651	24.2	31.0 (IX)	27.3 (V)
60.	Auraiya	25,517	24.9	29.1 (IX)	26.5 (VII)
61.	Rudrapur	25,173	29.1	39.8 (I-IV)	18.9 (IX)
62.	Nainital	25,167	27.9	63.0 (IX)	12.7 (VII)
63.	Kiratpur	25,147	26.6	29.1 (IX)	21.1 (V)
64.	Mawna	24,858	25.9	22.4 (I-IV)	20.6 (I-IV)
65.	Khatauli	24,495	25.9	28.2 (VII)	24.7 (V)
66.	Gangoh	24,300	26.7	25.4 (I-IV)	20.7 (VII)
67.	Pilkhuwa	23,941	26.6	40.3 (V)	22.5 (VII)
68.	Bhadohi	23,250	26.5	36.9 (V)	21.3 (I-IV)
69.	Rath	23,061	23.7	33.6 (IX)	26.4 (I-IV)
70.	Scohara	22,821	25.9	39.4 (I-IV)	22.5 (V)
71.	Dhampur	22,639	25.6	26.7 (VII)	24.9 (V)
72.	Sandila	22,365	28.3	25.2 (V)	21.4 (VII)
73.	Ujhani	22,140	27.2	24.8 (I-IV)	23.2 (VII)
74.	Sardhana	22,083	27.0	28.5 (V)	22.3 (I-IV)
75.	Hasanpur	22,063	27.3	25.3 (IX)	21.7 (V)
76.	Aonla	21,836	27.1	29.7 (I-IV)	22.4 (V)
77.	Gola Gokaran Nath	21,677	27.8	25.3 (IX)	21.7 (V)
78.	Jahangirabad	21,578	26.5	31.8 (I-IV)	21.3 (V)
79.	Kalpi	21,334	27.3	23.6 (VII)	22.8 (V)
80.	Mubarakpur	21,253	32.6	79.7 (V)	8.4 (VII)
81.	Baheri	21,094	26.2	33.1 (V)	19.7 (IX)
82.	Atrauli	20,980	26.6	32.9 (I-IV)	19.4 (IX)
83.	Almora	20,881	29.0	62.6 (IX)	16.8 (VII)
84.	Nehtaur	20,286	24.6	26.6 (V)	22.7 (IX)
85.	Laharpur	20,205	27.5	32.4 (V)	32.0 (I-IV)
86.	Kandhla	20,061	27.1	43.8 (I-IV)	14.5 (VII)

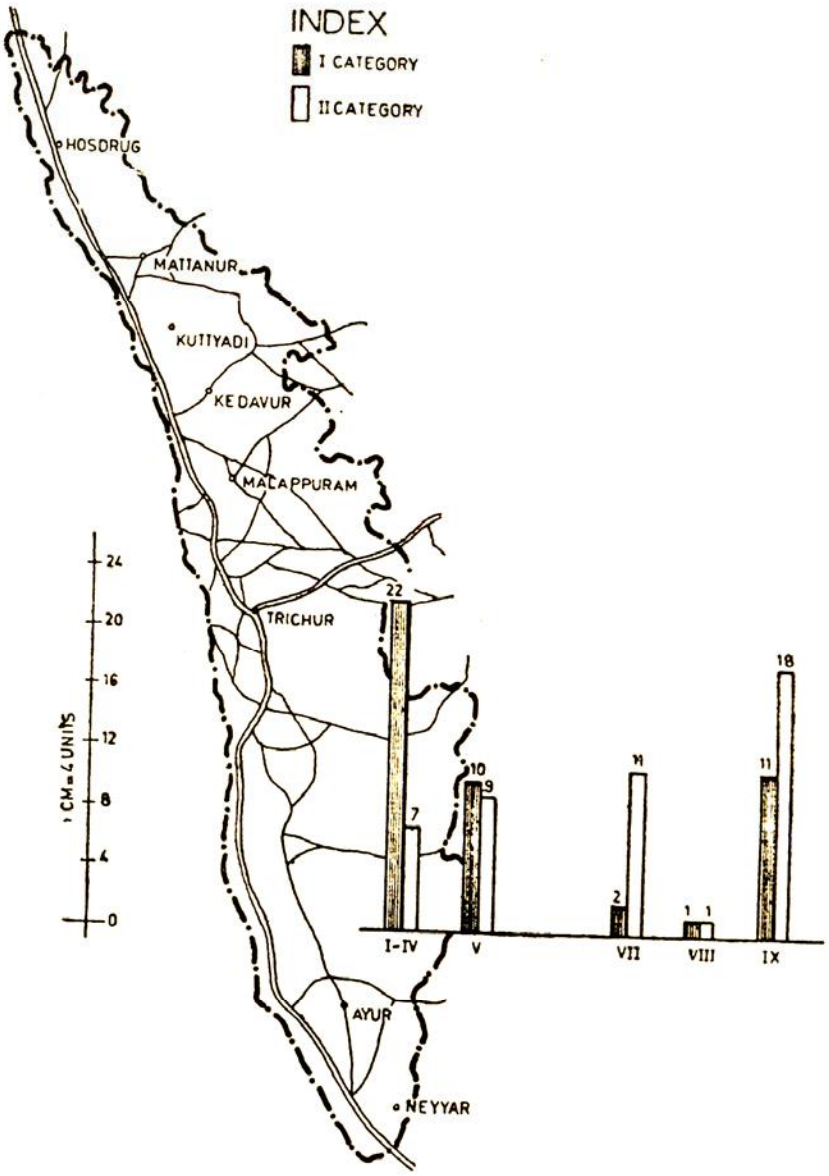
Number of towns in the first two categories according to importance (maximum number of workers working in that particular category)

Uttar Pradesh

SI. No.	***Category***	***Ist.***	***IInd.***
1.	I to IV	14	12
2.	V	19	19
3.	VII	12	41
4.	VIII	1	0
5.	IX	40	14

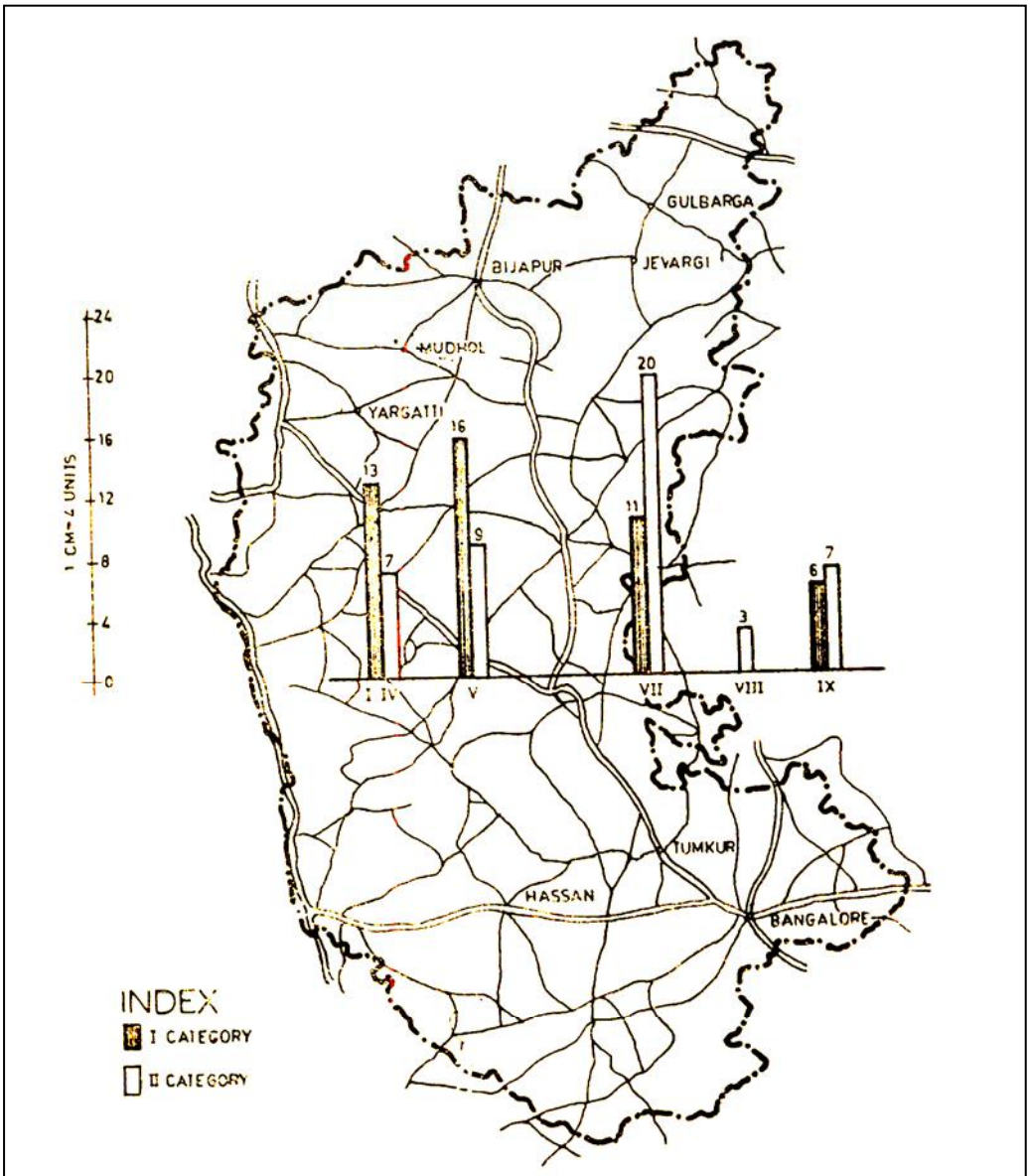


MAP 58: HARYANA
Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



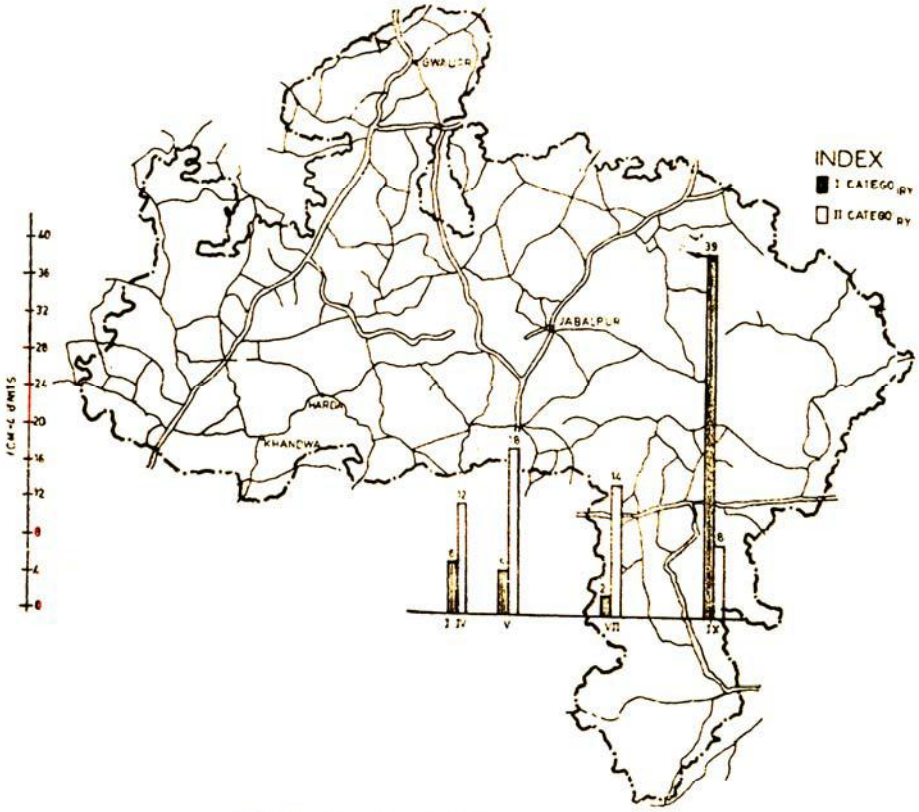
MAP 59: KERALA

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers

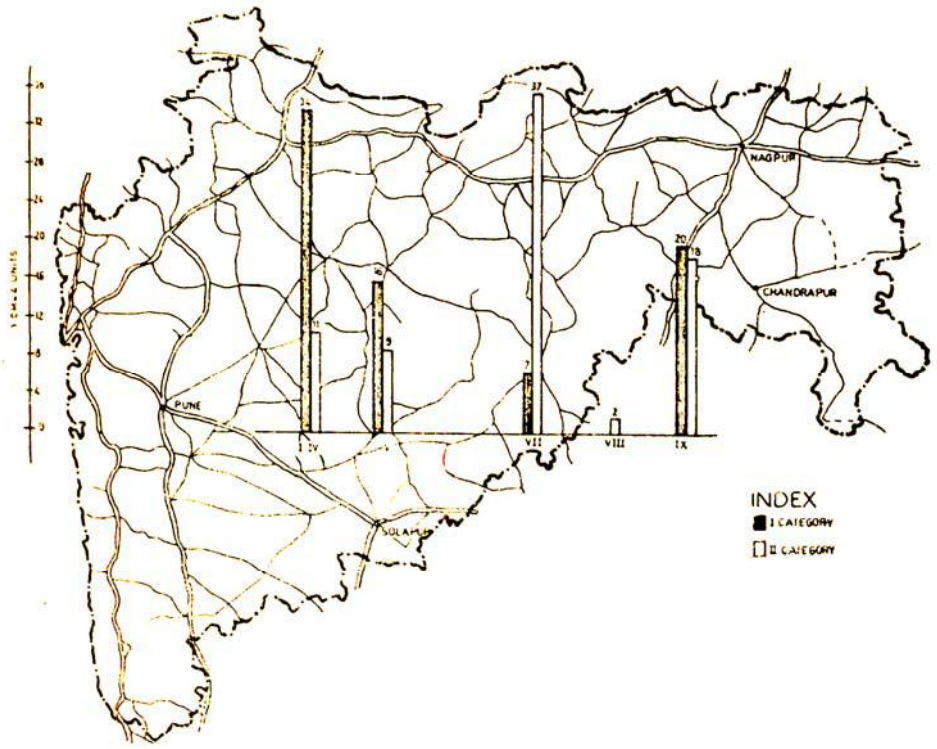


MAP 60: KARNATAKA

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.

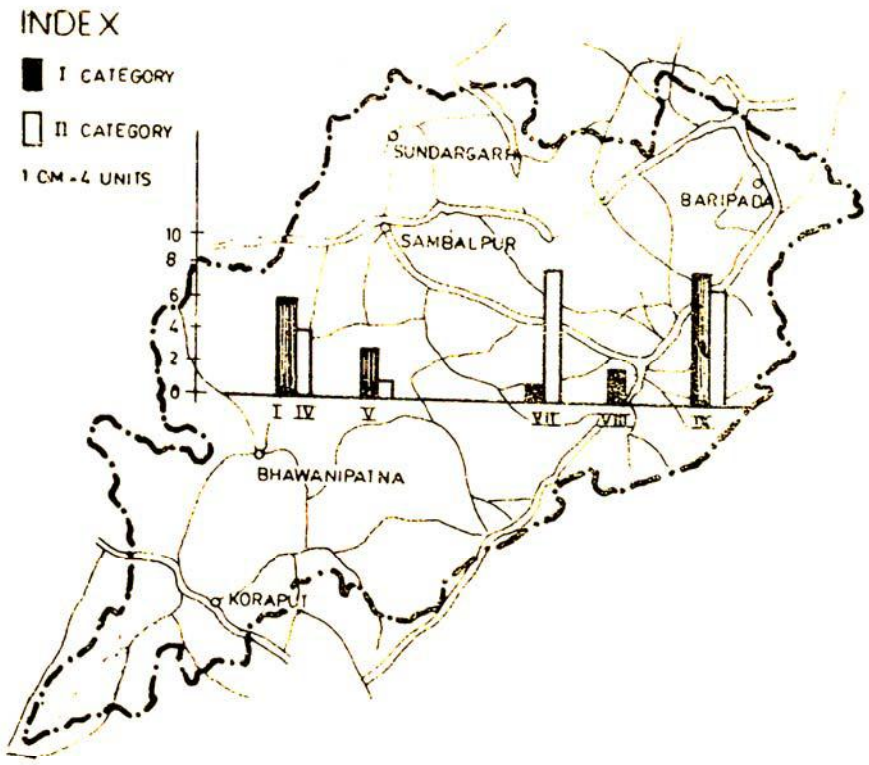


MAP 61: MADHYA PRADESH
Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



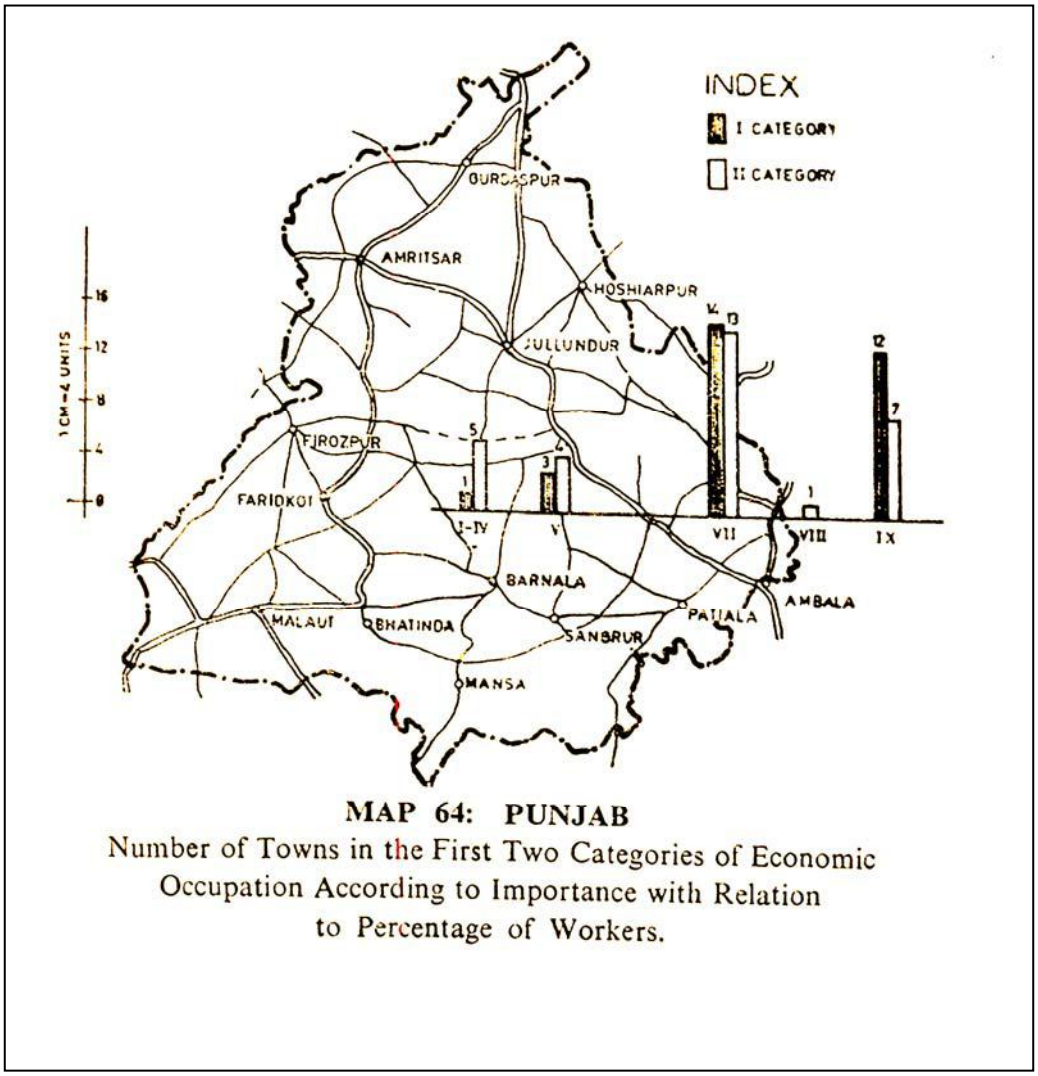
MAP 62: MAHARASHTRA

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



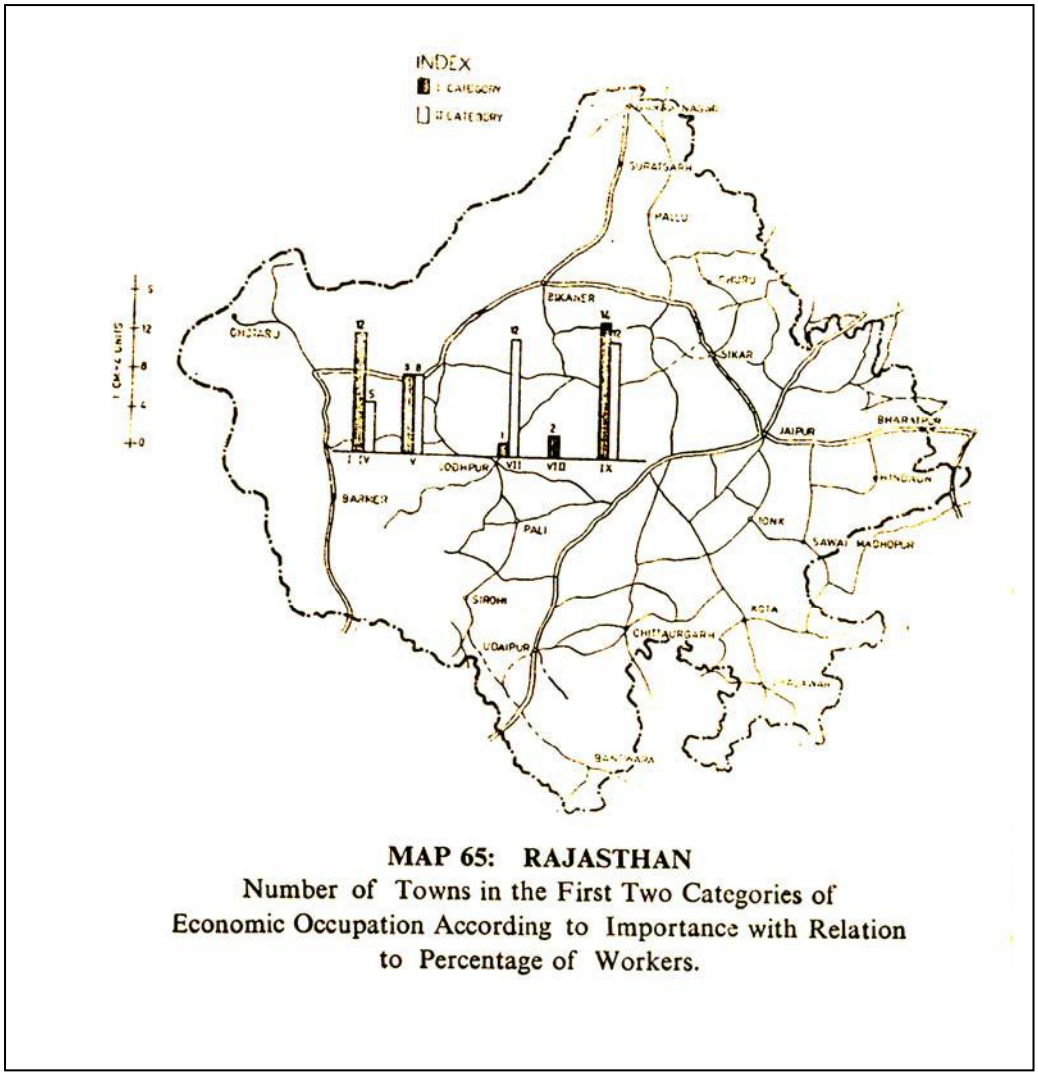
MAP 63: ORISSA

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



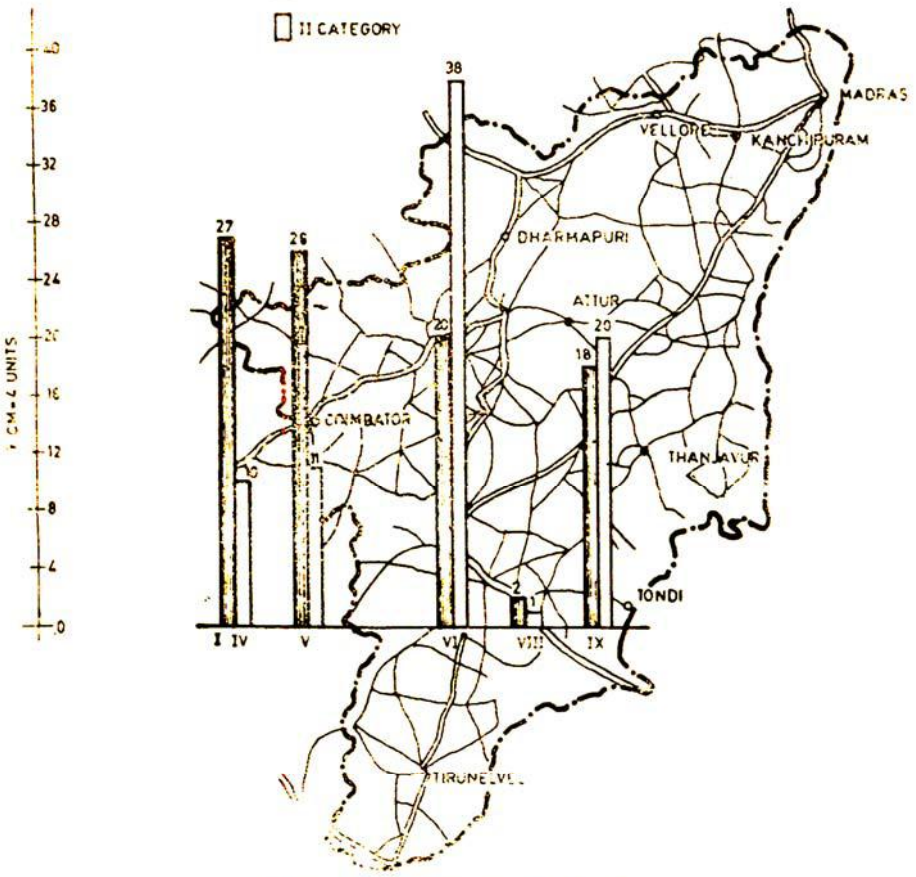
MAP 64: PUNJAB

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



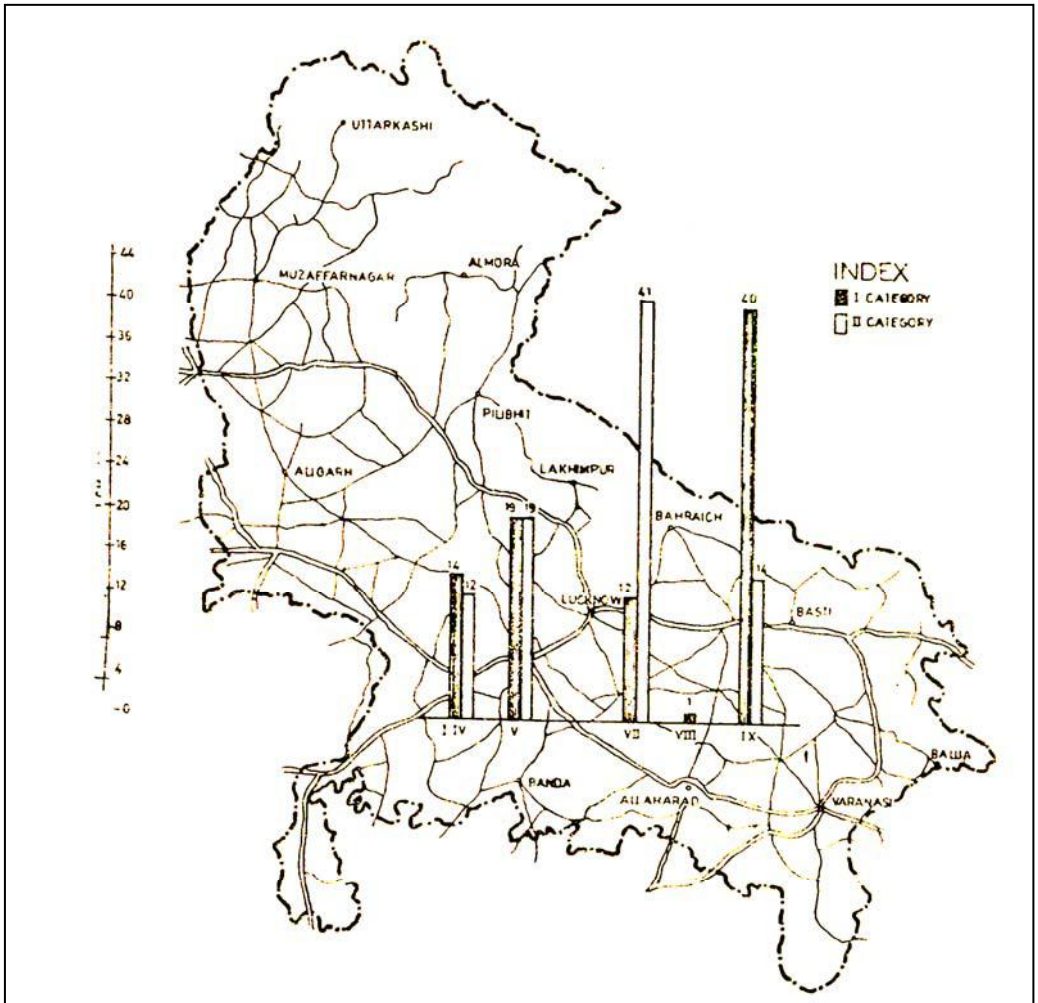
MAP 65: RAJASTHAN

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



MAP 66: TAMIL NADU

Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.



MAP 67: UTTAR PRADESH
Number of Towns in the First Two Categories of Economic Occupation According to Importance with Relation to Percentage of Workers.

CHAPTER 10

Provisions Made in the Various Five Year Plans of the Country

Development of a city/town is not only concerned with the outlay/provisions made in various Five Year Plans, on housing, urban development and water supply, but with other sectors too, like traffic and transportation, milk supply, communication and various other services.

Taking an example of Delhi which is developed from the Plan funds for water supply, sewage disposal, power, roads, industries, road transport, housing, urban development, various social services such as education, health, police facilities, social justice etc.; its development is also being shared by various corporation like-Delhi State Industrial Development Corporation, Delhi Tourism Development Corporation Delhi Agricultural Marketing Board, Civil Supplies Corporation, Delhi Milk Scheme, National Dairy Development Board, Railways, Telephone Department, Live Stock Products Processing Corporation etc., and each one is contributing towards the development of Delhi.

To quote an example, the DTC alone suffered a loss of Rs. 38.28 crore in the year 1980-81 with a cumulative loss of Rs. 158.27 crore. This means, a subsidy of Rs. 50 per year per capita in bus service alone. This figure of Rs. 50 per year per capita is more than the total expenditure incurred per head in Meerut, a city of about 6 lakh population , or much more than Pillukhwa, a town of about 50,000 population.

Provision Made in Various Five Year Plans of the Country

First and Second Plan

In the First and Second Five Year Plans during the period 1951-61, no attention was paid in this direction, as the main emphasis was laid towards development of agriculture and industrial sector.

Third Plan

The Third Five Year Plan during the period 1961-66 aimed at securing a balanced self-sustaining growth in the economy, and as such, no attention was paid on the subject of town planning; except that directions were given to control urban land values through public acquisition of land, appropriate fiscal policies, laying down of minimum and maximum space standards for housing, utilities, services, community facilities and preparation of various Master Plans.

Fourth Plan

The Fourth Five Year Plan during the period 1969-74 stressed the need for the balanced spatial distribution of economic activities. Emphasis was laid on improving conditions of less privileged and weaker sections of the society. Major objectives of the Plan were:

(i) Need for a National Urban Land Policy:
(ii) Regional and spatial approach to solve the problem of urban development;
(iii) To safeguard the interest of the poor and less privileged members of society, programme of environmental improvement in slum areas.
(iv) Development of Calcutta Metropolitan Development area, and development of some other state capitals of the country.

Fifth Plan

The Fifth Five year Plan during the period 1974-79 recommended a national programme of minimum needs to be extended to all the sections of the society and for this, special emphasis was laid on the development and carrying out of environmental improvement in slum areas. Need for planning on regional basis was also emphasized and during this period studies were undertaken for a plan of National Capital Region. Regional studies of Calcutta, Bombay, Madras, Nagpur, Bangalore, Hyderabad, Trivandrum, and Rajasthan Canal were also undertaken. Studies of backward regions of Gorakhpur, Deoria and Mirzapur-Rihand were also started.

The following were the main objective of this plan

(i) To augment civic services in urban centres as far as possible and to make them fit up to a reasonable level.
(ii) To make efforts to tackle the problems of metropolitan cities on a more comprehensive and regional basis.
(iii) To promote the development of smaller towns and new urban centres to bear the pressure of increasing urbanisation.
(iv) To assist in the implementation of projects of national importance related to metropolitan cities or interstate projects.
(v) To provide necessary support for the enlargement of the scope and functions of the industrial townships undertaken by the Central Government. Undertakings, so as to make them self- contained.

In the last 30 years, a total of Rs. 15,803 crore was incurred in public and private sector with a break-up of Rs. 1810 crore in Government sector and Rs. 1253 crore by various undertakings and grant-in-aid institutions; and rs. 12740 crore in private sector.

Housing

Scheme	*Rupees in Crores*	
	Fifth Plan 1974-79 (Outlays)	*Sixth Plan 1980-85 (Outlays)*
1	*2*	*3*
A. ***States and Union Territories***		
1. Rural House Site-cum-House Construction Scheme (MNP)	55.00	353.50
2. Social Housing Scheme	455.56	837.37
Total : States and Union Territories.	505.56	1190.87
B. ***Central Sector***		
3. Housing and Urban Development Corporation (HUDCO)	14.00	50.00
4. National Buildings Organisation (NBO)	1.68	2.00
5. Hindustan Prefab Ltd.	0.15	0.05
6. General Pool Office and Residential Accommodation.	51.12	142.00
	5.00	10.00
7. Subsidised Housing Scheme for Plantation Workers.	0.26	0.20
8. Housing Scheme for Dock Labour.	-	93.25
9. House Building Advance to Govt. Employees.	-	2.00
10. Science and Technology.	23.00	-
11. Police Housing Scheme.	0.15	-
12. National Building Materials Corpn.	-	0.50
13. Training Institute for CPWD	95.35	30.00
Total: Central Sector	**600.92**	**1492.87**
Grand total:		

If these targets are fulfilled, then there would be a construction of following number of dwelling units.

-1,910,000 dwelling units for E.W.S. of the society.

-1,64,000 dwelling units for Low Income Group of the society.

-65,000 ,, ,, ,, ,, Middle Income Group ,, ,,

-18,000 ,, ,, ,, High Income Group ,, ,,

-3,670,000 ,, ,, ,, rural population ,, ,, ,,

There is also a provision of development of 60 lakh housing sites in rural areas and construction of 70,000 houses for government employees.

Urban Development

The major emphasis has been laid on the following.

-Instead of massive relocation of slums, the greater emphasis would be on environment improvement. By 1985, the magnitude of such population, who need environmental improvement would be 33.1 million, out of which 6.8 million has been covered and 10 million would be covered under the Sixth Five Year Plan with a total expenditure of Rs. 151.45 crore @ Rs. 150 per capita.

-Rs. 96 crore has been kept in the Central Sector for the development of small and medium towns; along with a matching assistance from the State Government.

-Rs. 423 crore would be spent by the State Government in urban development, in various continuing and new projects.

-Rs. 10 crore in the planning and development of N.C.R.

-Rs. 1.7 crore in different research programmes. In brief, the picture would be as follows.

		Rupees in Crores	
Scheme		***Fifth Plan 1974-79 (Outlays)***	***Sixth Plan 1980-85 (Outlays)***
1		***2***	***3***
A.	***States and Union Territories***		
	-Environmental Improvement of Slums	50.00	151.45
	-C.M.D.A. and State Capital	156.73	422.83
	Projects.	143.92	313.25
	Sub –total:	350.65	887.53
B.	***Central Sector***		
	-Integrated Development of Small and Medium Towns.	-	96.00
	-National Capital Region	5.09	10.00
	-Research and Development	0.21	1.70
	-Integrated Urban Development Project	149.51	-

-Development of Displaced Persons Colony		0.05
-Removal of Cattle in Calcutta		2.35
Sub-total	153.81	110.35
Ground Total	**505.46**	**997.53**

Latest Decision

As per news which appeared in the Hindustan Times on 12th. November and 7th. December, 1981 respectively, 231 towns/cities would be developed in the Sixth Five Year Plan with a total investment of Rs. 231 crore. The news has been repeated here:

"Two hundred and thirty-one cities would be taken up for development under a centrally sponsored scheme for the integrated development of small and medium towns during the Sixth Plan period.

The objective of the scheme is to reduce the rate of migration to large and metropolitan cities to subser5ve the rural hinterland and to improve the living conditions of the urban poor, according to official sources.

The scheme seeks to provide Central loans for selected items of development to State Governments and Union Territories on a matching basis. The scheme is applicable to small and medium towns with a population of one lakh and below as per 1971 census.

The loan assistance is available for (i) Land acquisition and development for residential schemes, (ii) Traffic and transportation schemes including construction and improvement of roads, but excluding purchase of motor vehicles.

(iii) Development of *mandis*/markets, provision of industrial estates and provision of facilities for the benefit of agricultural and rural development.

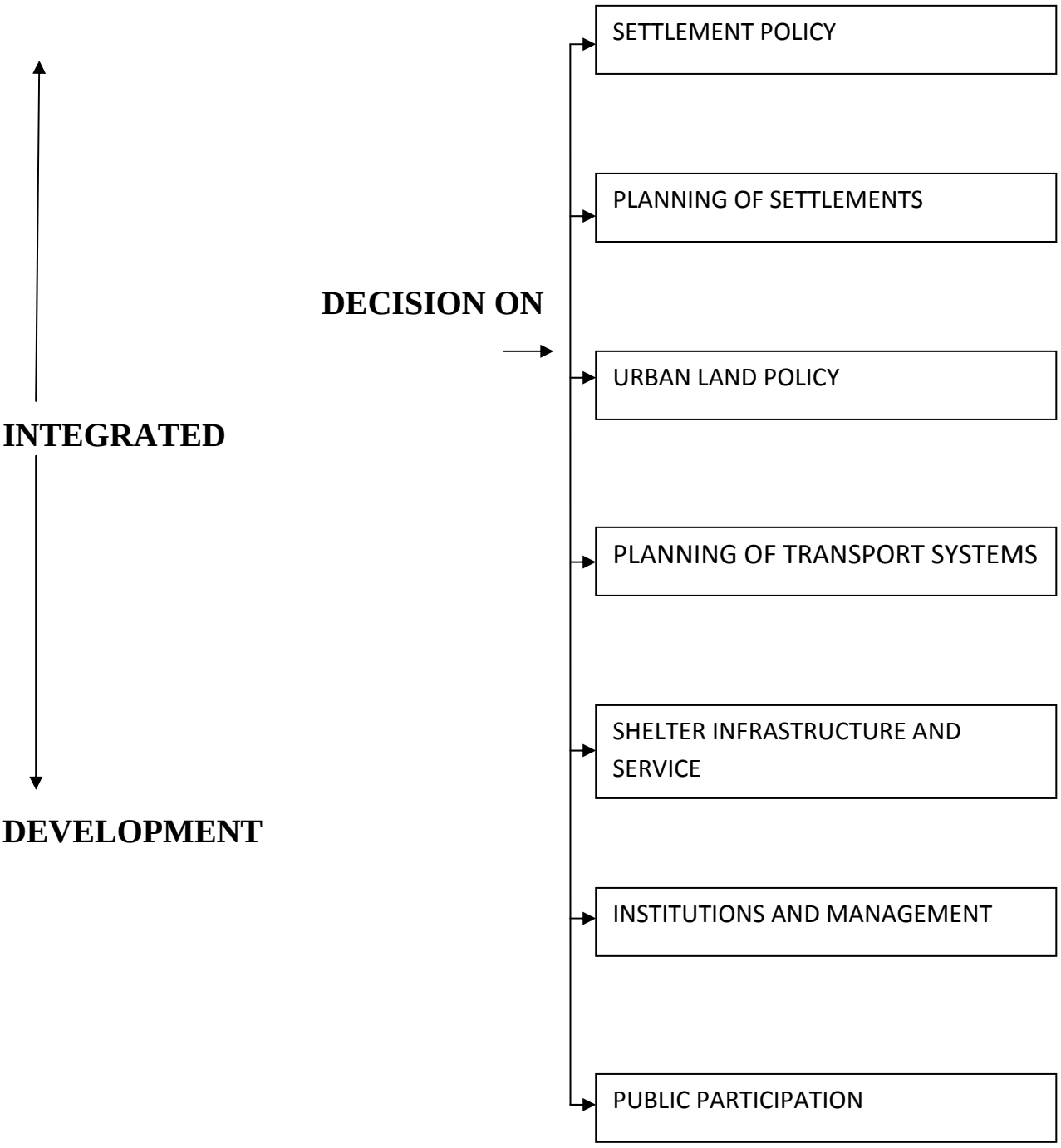
The State Government are also expected to take up from their own resources schemes relating to slum improvement urban removal, water supply, sewerage and sanitation, preventive medical facilities, parks and playgrounds etc., as part of the integrated development scheme.

The project cost of each town will not exceed Rs. 1 crore. Central loan assistance is sanctioned for approved schemes up to 50 per cent of the cost of the project, subject to a ceiling of Rs. 40 lakh, and the balance cost is expected to be met by the State Government and the implementing agencies."

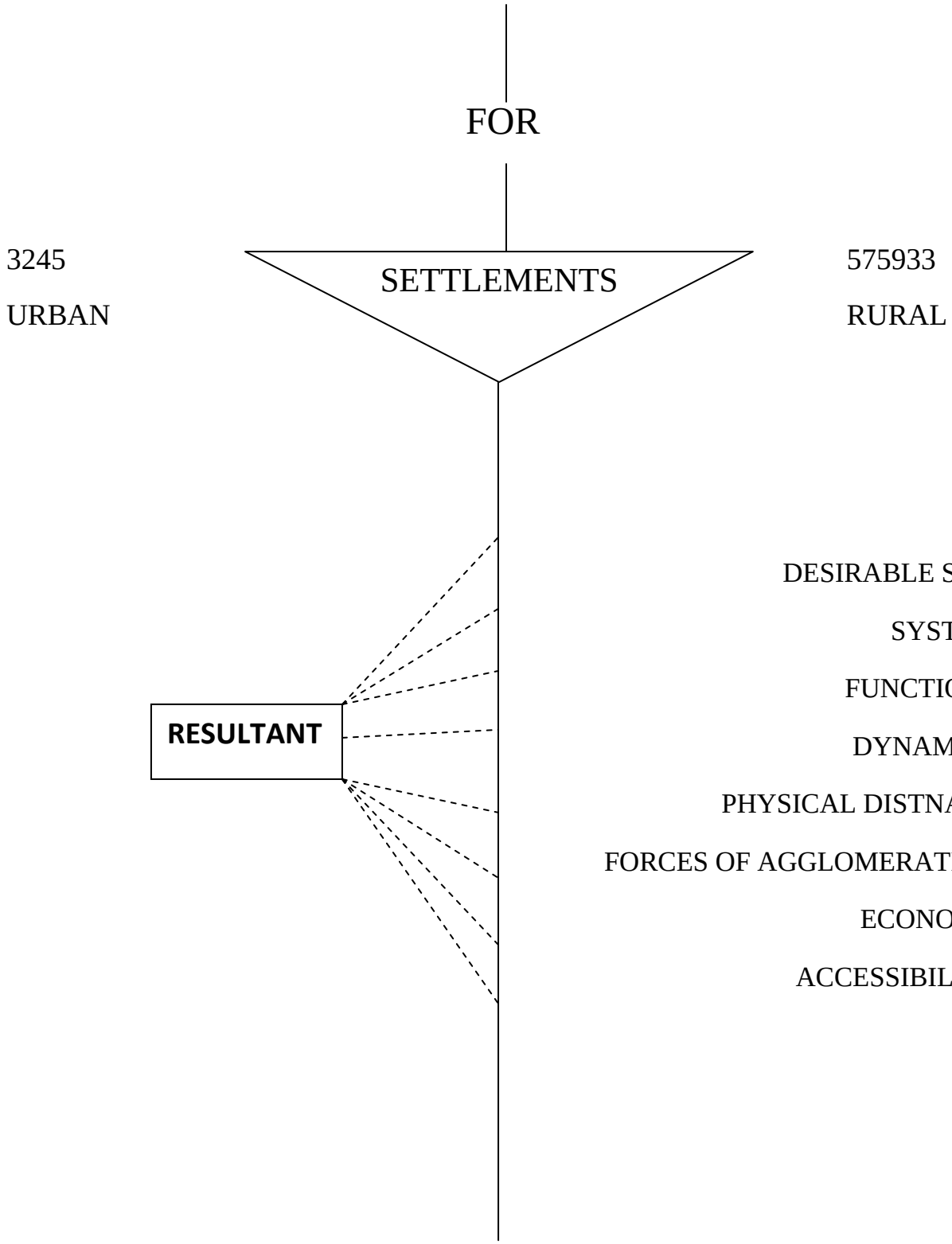
PART-THREE

INTERGRATED PLANNING AND DEVELOPMENT

PLANNING


INTEGRATED
DEVELOPMENT
DECISION ON
SETTLEMENT POLICY
PLANNING OF SETTLEMENTS
URBAN LAND POLICY
PLANNING OF TRANSPORT SYSTEMS
SHELTER INFRASTRUCTURE AND SERVICE
INSTITUTIONS AND MANAGEMENT
PUBLIC PARTICIPATION

SETTLEMENT POLICY



CHAPTER 11

Settlement Policy

Introduction

All the urban and rural settlements have to be planned and developed sooner or later, otherwise there is every possibility of unplanned, uncoordinated and uncontrolled growth which would cause lop-sided development of the society and environment; means the very purpose of planned development of different settlements would be defeated. During the last 30 years, no serious effort has been made for the development of urban or rural settlements, except in metropolitan cities, where some action has been taken.

As per 1981 provisional census there are 3245 urban settlements and 575,933 rural settlements. Planning and development of 579,179, or say 0.6 m settlements is a colossal task, till a system is established and policy formulate4d at different levels. In this book, it has been assumed that over a period of 30 to 40 years, no rural settlement with a population of less than 500 and no urban settlement with a population of less than 5000 would remain in existence.

Based on the above criteria, 168,561, rural settlements each having a population between 200 and 500; 150, 072 rural settlements each with a population of less than 200, and 230 urban settlements each with a population of less than 5000 would disappear for the purpose of planning and development. This would leave only 3015 urban settlements and 2,57,300 rural settlements to be planned and developed. Policies about the planning and development of these centres have been given in this chapter.

(2) Recommendations by the United Nations Conference

In the report of Habitat, United Nations Conference3 on Human Settlements, June, 1976, the following points are given for a national settlement policy:

- All the report of Habitat, United Nations Conference on Human Settlements, June, 1976, the following points are given for a national settlement policy:

1. Provisional Census does not include the States of Assam and Jammu and Kashmir and related economic and social activities,
   - A national policy for human settlements and the environment should be an integral part of any national economic and social development policy.
   - Human settlement policies should aim to improve the condition of human settlements particularly by promoting a move equitable distribution of the benefits of

development among regions; and by making such benefits and public services equally accessible to all groups.

- National human settlements strategies must be explicit, comprehensive and flexible.
- The improvement of quality of life in human settlements must receive higher priority in the allocation of conventional resources, which ought to be carefully distributed between the various components of human settlements; it also requires the planned use of scarce resources and the mobilization of new resources, in particular human capacities.
- Governments should report publicly on a continuous evaluation of human settlements conditions.
- A national human settlement policy should concentrate on key issues and provide basic directions for action.

(3) Planning and Development of Rural Settlement

These have been divided into the following three categories:

(i) Growth Centres
(ii) Growth Points
(iii) Basic Villages.

Assuming that one growth centre would control 20 growth points and 400 basic villages, in terms of various functions, then there would be 600 growth centres, 12,000 growth points and 2,44,700 basic villages. Details of these three types of centres are given as follows.

(i) Growth Centre

A growth centre will service an area 200 and 300 sq km and 1.5 lakh to 2 lakh population. These centres being of higher order will naturally perform higher order functions and activities, mainly of non-agricultural nature, with all centralised amenities and facilities in the field of education, medical, public health, wholesale and retail shopping's, civic, cultural and recreational facilities including organized industrial estates. These centres should have the following facilities:

- Shopping on a bigger scale, *mandi (*collecting and distributing centre);
- Post Office with telegraph facilities;
- Dispensary/hospital;
- Administrative office of the block development officer;
- Office of P.W.D. irrigation department, state governments and municipalities;
- Police station or police pose;
- Banks;
- Cinema/community hall with auditorium;
- Library with reading room facilities/clubs;
- Parks/playgrounds

- Storage for pesticides/insecticides/fertilisers etc;
- Parks/playgrounds;
- Storage for pesticides/insecticides/fertilizers etc;
- Veterinary hospital
- Potable water supply
- Domestic and industrial power;
- Industrial estates;
- Bus terminals connecting the growth points, and district centre with major roads;

Type of Industries: Small machine shops, workshop for welding, electro-plating, small-scale hosiery goods, cotton spinning and weaving, dyeing, trunk and suitcase making, tailoring and ready-made garments, fruit and vegetable storage and canning, earthen pottery, footwear, *dari* and carpets; wire products, paper envelopes, cardboards, buttons, combs, hair, clips, dairy and its products.

(ii) GROWTH POINT

It will serve a radius of 3 to 4 km, with an area of about 50 to 80 sq. km, and a projected population between 20,000 and 40,000. All the growth points will have a mixed primary and secondary economy and will provide following service facilities for the basic villages:

- Shopping on a medium scale;
- Post/telegraph office;
- Primary, middle and higher secondary schools;
- Library/club/adult education centre;
- Seed/grain/fertilized storage;
- Cooperative societies management office;
- Police post/police station;
- Veterinary centre/veterinary hospital;
- Community workshop for repair and household industries and work centre;
- Primary health centre/dispensary;
- Access roads from the growth points to the basic villages;
- Playgrounds/gathering places/religious places;
- Electricity;

Type of Industry: *Atta Chaki, oil kohlu,* dal processing, manufacturing of Khandsari, wooden toys, blacksmithy, tinsmithy, rope making, repair shops, basket making, bullock-cart, wire products and earthen pottery.

(III) BASIC VILLAGE

This would serve to the existing abadi area, with 8 to 10 shops, one primary school, one sub-post office, one punchayat ghar, one adult reading room, one small gathering place, on park, playground and open space, community water hydrants, community latrines and electricity. No industry of any type should be allowed in these centres, except *atta chaki, oil kohlu and* very small household industries.

(4) Cost of Development of Rural Settlements

For this, following assumptions about cost have been made:

- Cost of development of a Growth Centre = Rs. 20 lac
- Cost of development of a Growth Point = Rs. 2 lac
- Cost of development of a Basic Village = Rs. 50,000

(5) Planning and Development of Urban Settlements

For the first time, the Government of India in its Sixth Five Year Plan, has allocated a sum of Rs. 96 crore in the Central Sector for the development of small and medium towns and the matching amount in the State Sector. Recently, a decision has been taken to develop 231 centres.

One of our main recommendations is that no town having a population of less than 5000 should be developed and in due course of time either adjoining one. In this category, there are 230 settlements, each with a population of less than 5000. The number of remaining centres for which priority has to be fixed is 2799.

Taking 231 centres in the Sixth Five Year Plan and the remaining 2568 centres in the Seventh, Eighth, Ninth and Tenth Five Year Plans, most of the centres would be developed , at least to some acceptable standard of infrastructure and necessary means of communication. Break-up of 2568 centres in the next four Five Year Plans can be 400, 600, 768 and 800 in the Seventh, Eighth, Ninth and Tenth Five Year Plans respectively. The entire process would be over in a period of 25 years, i.e., up to 2005 A.D.

The National Settlement Policy would depend upon the following factors;

(a) Desirable size of a settlement.
(b) Existing and predicting system at the national and provincial level.
(c) Number of existing and proposed functions.
(d) Rate of growth of a settlement, i.e., declining, static, normal, dynamic and extraordinary.
(e) Physical distance between different orders of settlements.
(f) Forces of agglomeration.
(g) Type of economy.

(h) Accessibility to the settlements by roads and railways.
(i) Superimposition of various factors to get the resultant.

DESIRABLE SIZE OF A SETTLEMENT

From socio-economic point of view, no settlement should be of more than 10 million population and less than 5000 population. In both the cases, cost of infrastructure and major roads per capita would be more than tolerable and acceptable to the society.

EXISTING AND PREDICTED SYSTEM AT NATIONAL AND PROVINCIAL LEVEL

At the national level the existing system of urban settlements in India as per 1981 provisional census is as follows.

Size of the class	***Order of the settlement***	***No. of settlements***	***Population (in millions)***
India (Map 68)			
More than 1 m	Ia	12	42.0
0.5 to 1m	Ib	28	18.7
0.2 to 0.5m	Ic	62	18.6
0.1 to 0.2m	Id	114	15.0
50,000 to 0.1m	II	270	18.2
20,000 to 50,000	III	739	22.4
10,000 to 20,000	IV	1048	14.9
5,000 to 10,000	V	742	5.6
Less than 5,000	VI	230	0.8
Total		**3245**	**156.2**

A new system has been proposed, based on rank size theory.

Size of the class	***Order of the settlement***	***No. of settlements***	***Population (in millions)***
India (Map 68)			
More than 1 m	Ia	20	120.0
0.5 to 1m	Ib	40	30.0
0.2 to 0.5m	Ic	80	28.0
0.1 to 0.2m	Id	160	24.0
50,000 to 0.1m	II	320	24.0
20,000 to 50,000	III	1280	41.8
10,000 to 20,000	IV	1280	41.8
5,000 to 10,000	V	1280	19.2
Less than 5,000	VI	2560	25.6
Total		**5740**	**315.6**

At the provisional level system for different provinces has been proposed on a rank size distribution, mainly on the ratio of 1:2:4:8:16 etc. In some cases, the ratio has been changed to 1:3. Settlements of VIth. Order have been dropped assuming that there won't be any urban settlement having a population of less than 5000. Systems of some of the states have been given below.

Size of the class	***Order of the settlement***	***Existing system, 1981***	***Proposed system, 2001***
1	***2***	***3***	***4***
Andhra Pradesh (Map 69)			
More than 1 m	Ia	1	1
0.5 to 1m	Ib	2	3
0.2 to 0.5m	Ic	6	6
0.1 to 0.2m	Id	11	12
50,000 to 0.1m	II	30	36
20,000 to 50,000	III	88	72
10,000 to 20,000	IV	64	72
5,000 to 10,000	V	28	108
Less than 5,000	VI	4	0
Total		**234**	**310**

Size of the class	***Order of the settlement***	***Existing system, 1981***	***Proposed system, 2001***
1	***2***	***3***	***4***
Bihar (Map 70)			
More than 1 m	Ia	0	1
0.5 to 1m	Ib	4	2
0.2 to 0.5m	Ic	3	4
0.1 to 0.2m	Id	9	8
50,000 to 0.1m	II	19	24
20,000 to 50,000	III	57	72
10,000 to 20,000	IV	59	72
5,000 to 10,000	V	23	128
Less than 5,000	VI	5	0
Total		**179**	**311**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Gujarat (Map 71)			
More than 1 m	Ia	1	1
0.5 to 1m	Ib	2	2
0.2 to 0.5m	Ic	3	4
0.1 to 0.2m	Id	7	8
50,000 to 0.1m	II	23	24
20,000 to 50,000	III	46	48
10,000 to 20,000	IV	76	96
5,000 to 10,000	V	76	96
Less than 5,000	VI	9	0
Total		**220**	**311**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Haryana (Map 72)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	1
0.2 to 0.5m	Ic	1	1
0.1 to 0.2m	Id	10	8
50,000 to 0.1m	II	5	8
20,000 to 50,000	III	13	16
10,000 to 20,000	IV	24	32
5,000 to 10,000	V	22	64
Less than 5,000	VI	2	0
Total		**77**	**131**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Himachal Pradesh (Map 73)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	0
0.2 to 0.5m	Ic	0	1
0.1 to 0.2m	Id	0	2
50,000 to 0.1m	II	1	4
20,000 to 50,000	III	2	8
10,000 to 20,000	IV	5	16
5,000 to 10,000	V	9	32
Less than 5,000	VI	29	0
Total		**46**	**63**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Karnataka (Map 74)			
More than 1 m	Ia	1	1
0.5 to 1m	Ib	1	2
0.2 to 0.5m	Ic	5	6
0.1 to 0.2m	Id	10	12
50,000 to 0.1m	II	11	24
20,000 to 50,000	III	64	72
10,000 to 20,000	IV	100	96
5,000 to 10,000	V	42	96
Less than 5,000	VI	16	0
Total		**250**	**309**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Kerala (Map 75)			
More than 1 m	Ia	0	1
0.5 to 1m	Ib	3	2
0.2 to 0.5m	Ic	0	4
0.1 to 0.2m	Id	5	8
50,000 to 0.1m	II	7	8
20,000 to 50,000	III	49	32
10,000 to 20,000	IV	17	32
5,000 to 10,000	V	4	64
Less than 5,000	VI	0	0
Total		**85**	**151**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Madhya Pradesh (Map 76)			
More than 1 m	Ia	0	1
0.5 to 0.1m	Ib	4	3
0.2 to 0.5m	Ic	4	6
0.1 to 0.2m	Id	6	12
50,000 to 0.1m	II	28	24
20,000 to 50,000	III	41	48
10,000 to 20,000	IV	113	96
5,000 to 10,000	V	104	192
Less than 5,000	VI	3	0
Total		**303**	**382**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Maharashtra (Map 76)			
More than 1 m	Ia	3	3
0.5 to 1m	Ib	2	3
0.2 to 0.5m	Ic	9	12
0.1 to 0.2m	Id	11	12
50,000 to 0.1m	II	20	24
20,000 to 50,000	III	81	96
10,000 to 20,000	IV	91	96
5,000 to 10,000	V	41	96
Less than 5,000	VI	16	0
Total		**276**	**342**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Manipur (Map 78)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	0
0.2 to 0.5m	Ic	0	1
0.1 to 0.2m	Id	1	2
50,000 to 0.1m	II	0	4
20,000 to 50,000	III	2	8
10,000 to 20,000	IV	4	8
5,000 to 10,000	V	9	16
Less than 5,000	VI	16	0
Total		**32**	**39**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Meghalaya (Map 79)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	0
0.2 to 0.5m	Ic	0	0
0.1 to 0.2m	Id	1	1
50,000 to 0.1m	II	0	2
20,000 to 50,000	III	1	2
10,000 to 20,000	IV	1	4
5,000 to 10,000	V	1	8
Less than 5,000	VI	3	0
Total		**7**	**17**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Nagaland (Map 80)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	0
0.2 to 0.5m	Ic	0	0
0.1 to 0.2m	Id	0	0
50,000 to 0.1m	II	0	0
20,000 to 50,000	III	2	2
10,000 to 20,000	IV	2	4
5,000 to 10,000	V	3	4
Less than 5,000	VI	0	0
Total		**7**	**10**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Maharashtra (Map 76)			
More than 1 m	Ia	3	3
0.5 to 1m	Ib	2	3
0.2 to 0.5m	Ic	9	12
0.1 to 0.2m	Id	11	12
50,000 to 0.1m	II	20	24
20,000 to 50,000	III	81	96
10,000 to 20,000	IV	91	96
5,000 to 10,000	V	41	96
Less than 5,000	VI	16	0
Total		**276**	**342**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Orissa (Map 81)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	1
0.2 to 0.5m	Ic	3	3
0.1 to 0.2m	Id	3	6
50,000 to 0.1m	II	7	12
20,000 to 50,000	III	23	24
10,000 to 20,000	IV	29	24
5,000 to 10,000	V	25	48
Less than 5,000	VI	3	0
Total		**103**	**142**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Punjab (Map 82)			
More than 1 m	Ia	0	1
0.5 to 1m	Ib	2	2
0.2 to 0.5m	Ic	2	4
0.1 to 0.2m	Id	3	8
50,000 to 0.1m	II	9	16
20,000 to 50,000	III	28	32
10,000 to 20,000	IV	35	64
5,000 to 10,000	V	41	64
Less than 5,000	VI	14	0
Total		**134**	**191**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Rajasthan (Map 83)			
More than 1 m	Ia	1	1
0.5 to 1m	Ib	0	2
0.2 to 0.5m	Ic	5	4
0.1 to 0.2m	Id	5	8
50,000 to 0.1m	II	11	16
20,000 to 50,000	III	52	48
10,000 to 20,000	IV	98	96
5,000 to 10,000	V	22	128
Less than 5,000	VI	1	0
Total		**195**	**303**

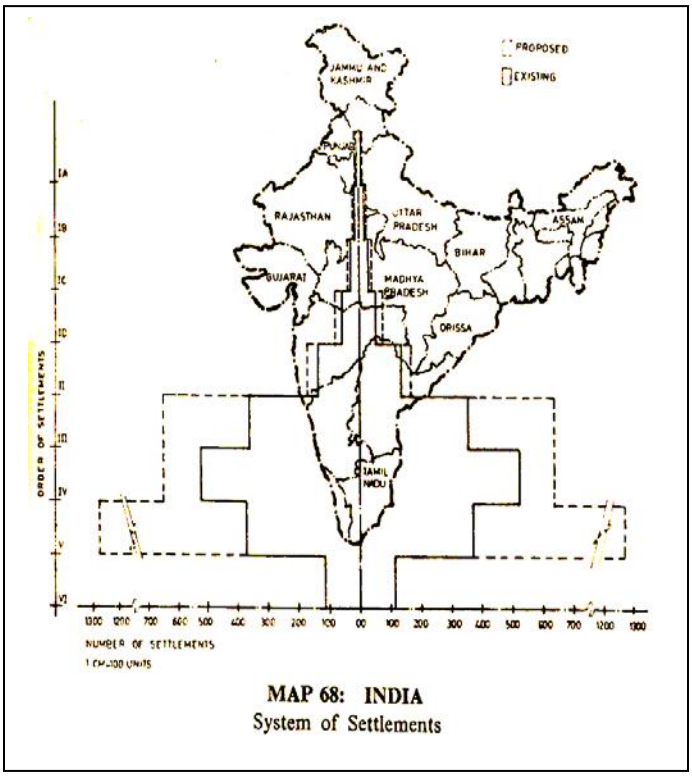
Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Sikkim (Map 84)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	0
0.2 to 0.5m	Ic	0	0
0.1 to 0.2m	Id	0	0
50,000 to 0.1m	II	0	0
20,000 to 50,000	III	1	1
10,000 to 20,000	IV	0	2
5,000 to 10,000	V	0	6
Less than 5,000	VI	7	0
Total		**8**	**9**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Tamil Nadu (Map 85)			
More than 1 m	Ia	1	1
0.5 to 1m	Ib	4	3
0.2 to 0.5m	Ic	5	6
0.1 to 0.2m	Id	10	12
50,000 to 0.1m	II	37	36
20,000 to 50,000	III	63	72
10,000 to 20,000	IV	82	96
5,000 to 10,000	V	37	96
Less than 5,000	VI	6	0
Total		**245**	**322**

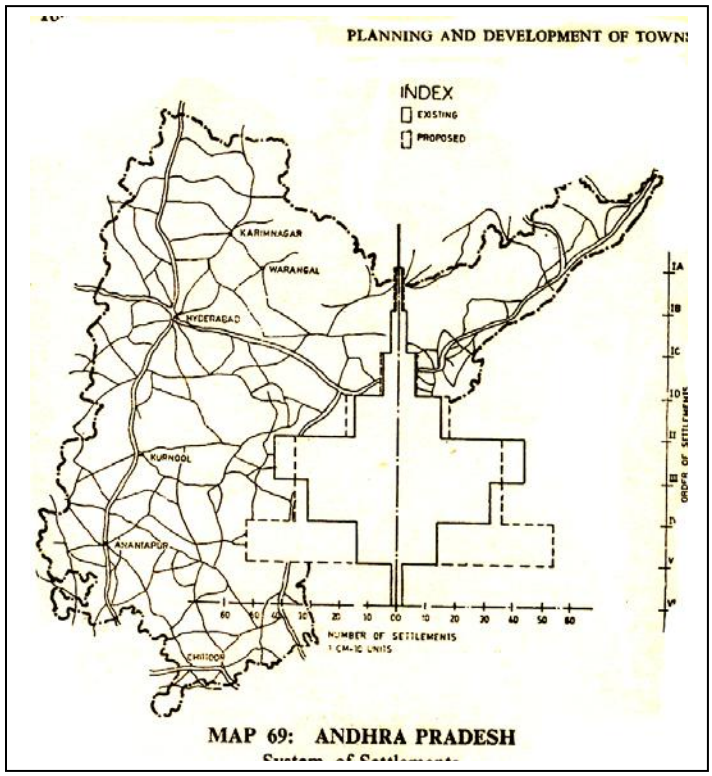
Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Tripura (Map 86)			
More than 1 m	Ia	0	0
0.5 to 1m	Ib	0	0
0.2 to 0.5m	Ic	0	0
0.1 to 0.2m	Id	1	1
50,000 to 0.1m	II	0	1
20,000 to 50,000	III	1	2
10,000 to 20,000	IV	4	4
5,000 to 10,000	V	2	8
Less than 5,000	VI	2	0
Total		**10**	**16**

Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Maharashtra (Map 76)			
More than 1 m	Ia	2	2
0.5 to 1m	Ib	4	4
0.2 to 0.5m	Ic	11	12
0.1 to 0.2m	Id	13	24
50,000 to 0.1m	II	37	48
20,000 to 50,000	III	85	96
10,000 to 20,000	IV	194	192
5,000 to 10,000	V	231	384
Less than 5,000	VI	82	0
Total		**659**	**762**

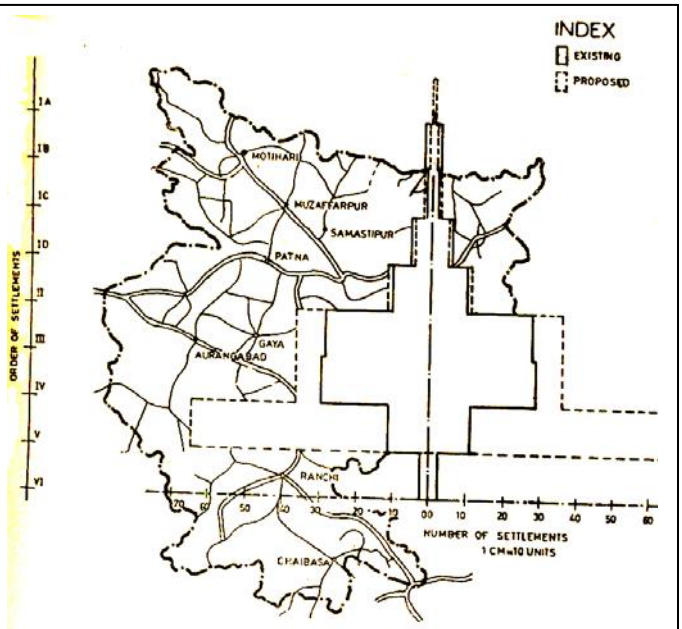
Size of the class	*Order of the settlement*	*Existing system, 1981*	*Proposed system, 2001*
1	*2*	*3*	*4*
Maharashtra (Map 76)			
More than 1 m	Ia	1	1
0.5 to 1m	Ib	0	2
0.2 to 0.5m	Ic	3	4
0.1 to 0.2m	Id	8	8
50,000 to 0.1m	II	21	24
20,000 to 50,000	III	36	48
10,000 to 20,000	IV	34	64
5,000 to 10,000	V	20	64
Less than 5,000	VI	7	0
Total		**130**	**215**



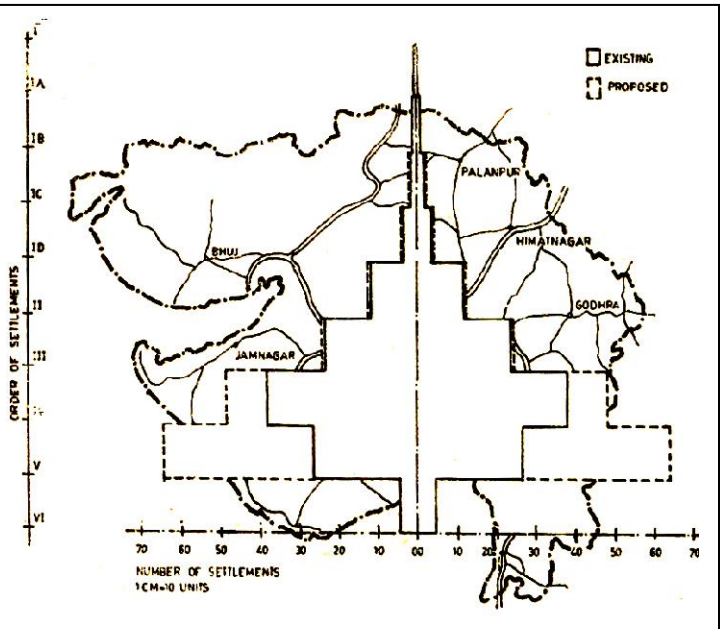
MAP 68: INDIA
System of Settlements



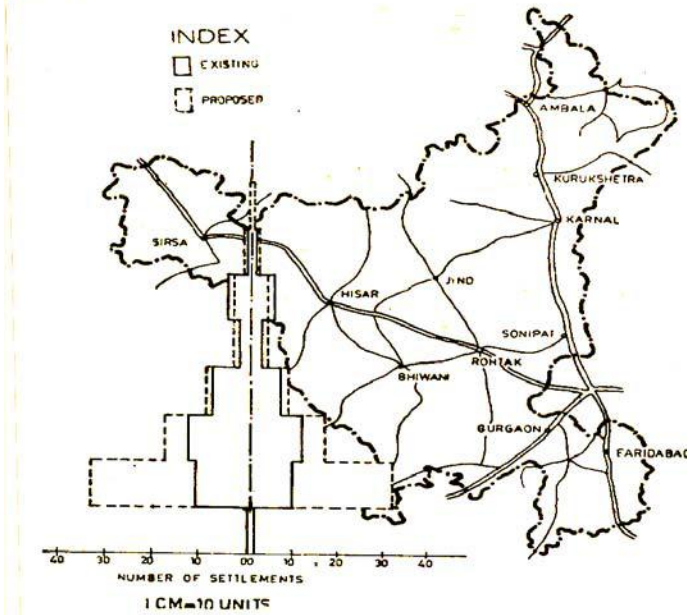
MAP 69: ANDHRA PRADESH



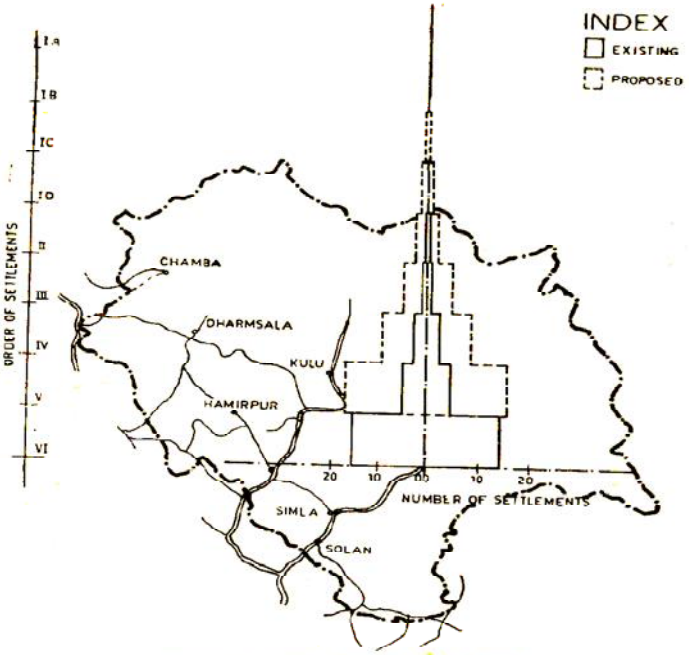
MAP 70: BIHAR
System of Settlements



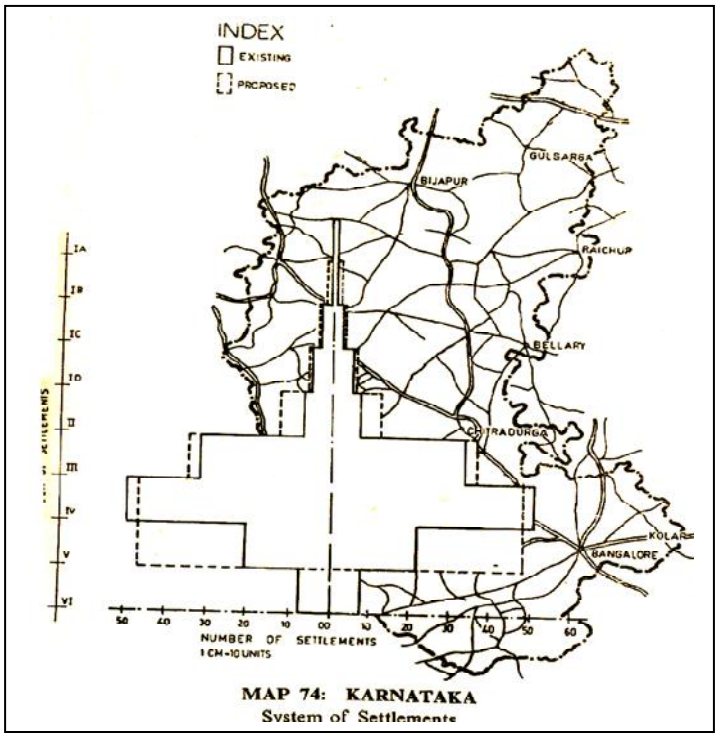
MAP 71: GUJARAT
System of Settlements



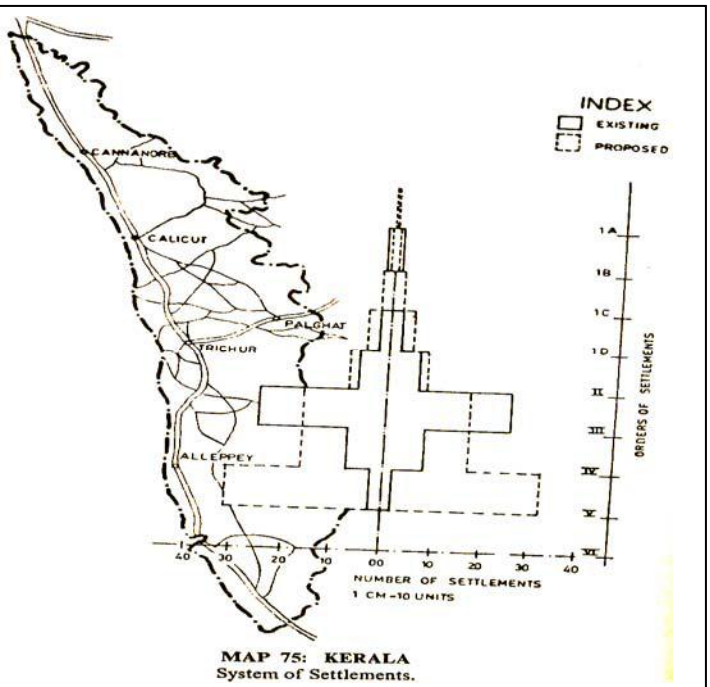
MAP 72: HARYANA
System of Settlements



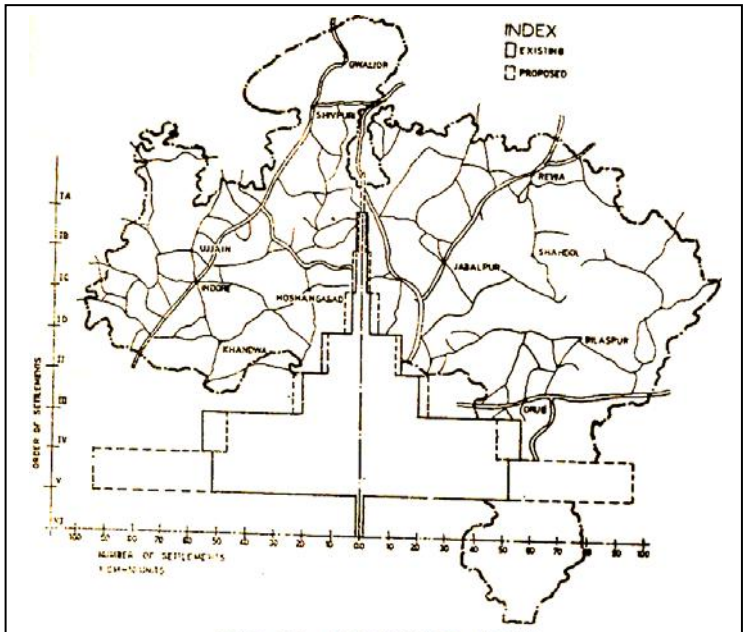
MAP 73: HIMACHAL PRADESH
System of Settlements



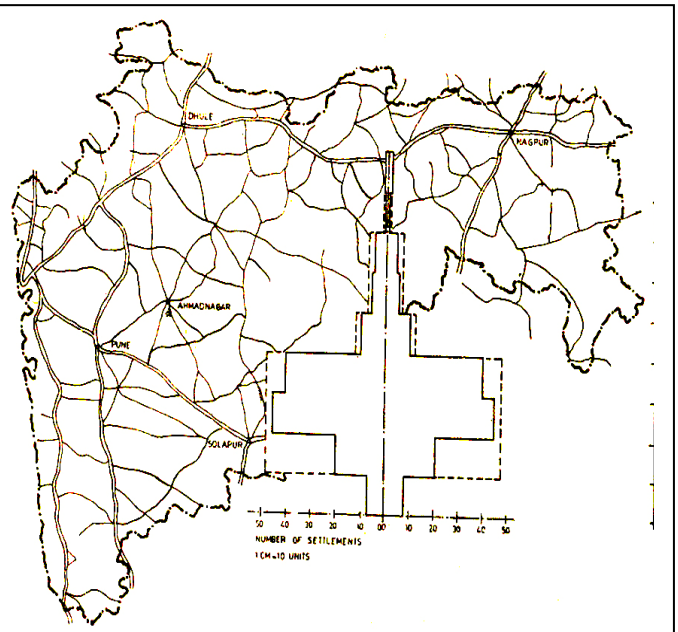
MAP 74: KARNATAKA
System of Settlements



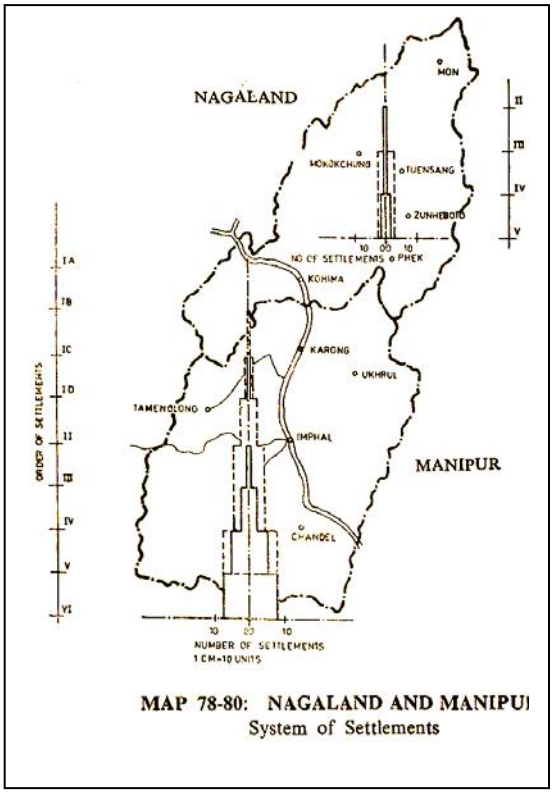
MAP 75: KERALA
System of Settlements.



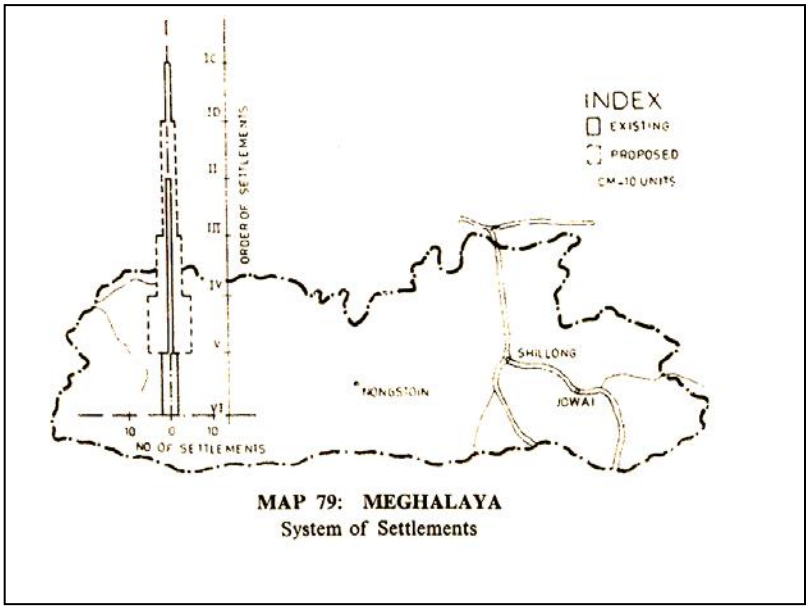
MAP 76: MADHYA PRADESH
System of Settlements



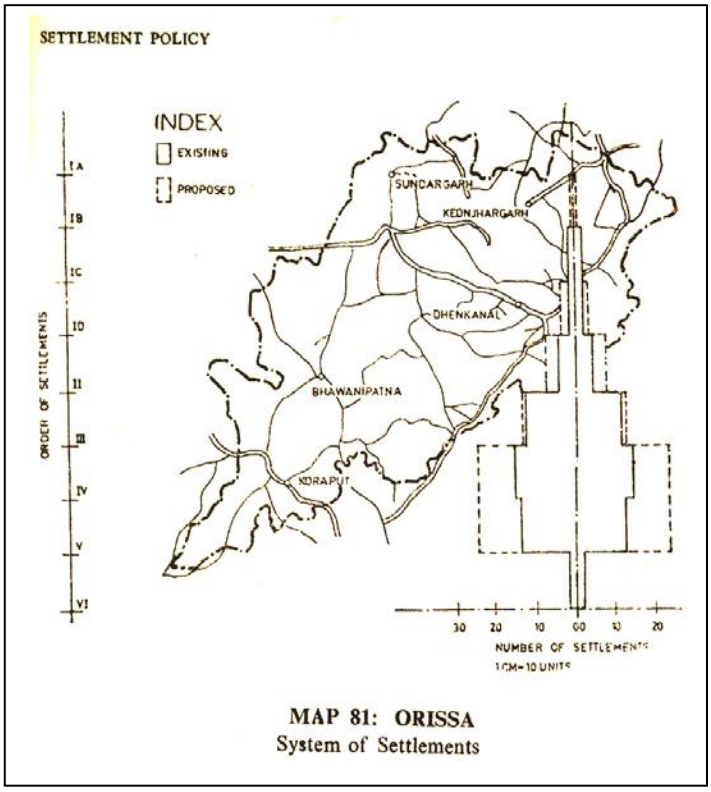
MAP 77: MAHARASHTRA
System of Settlements



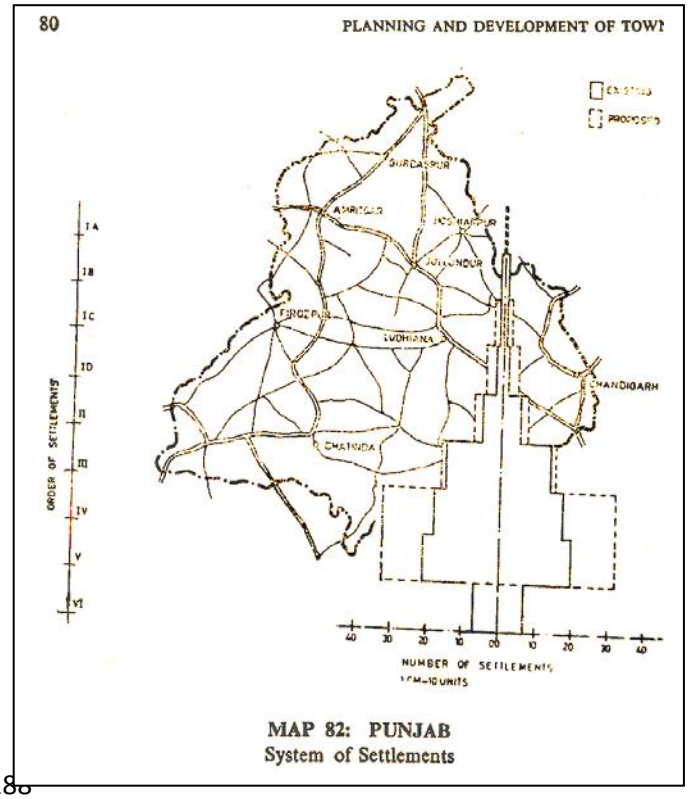
MAP 78-80: NAGALAND AND MANIPUI
System of Settlements



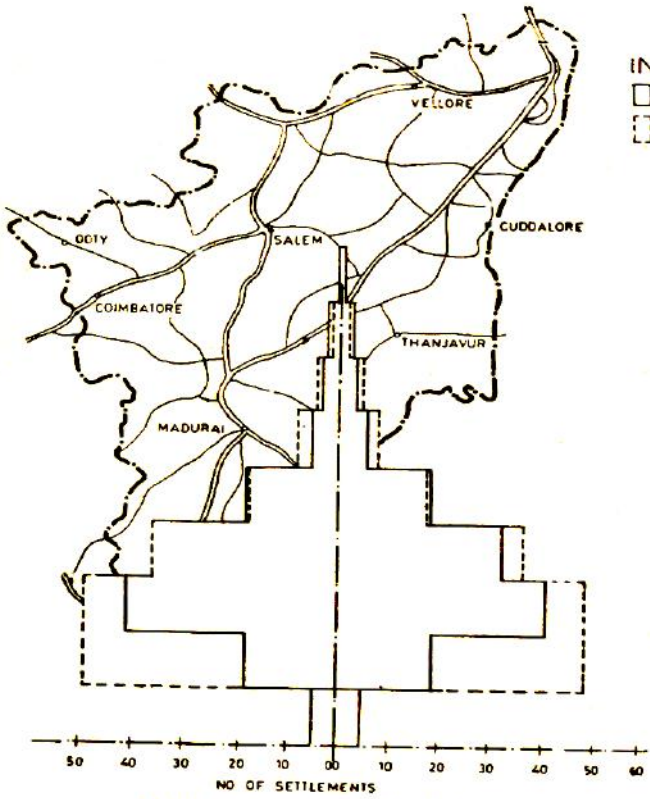
MAP 79: MEGHALAYA
System of Settlements



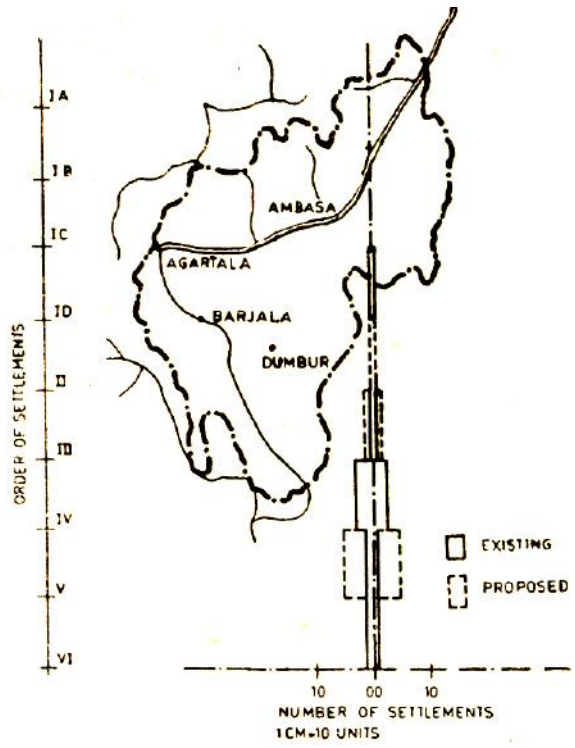
MAP 81: ORISSA
System of Settlements



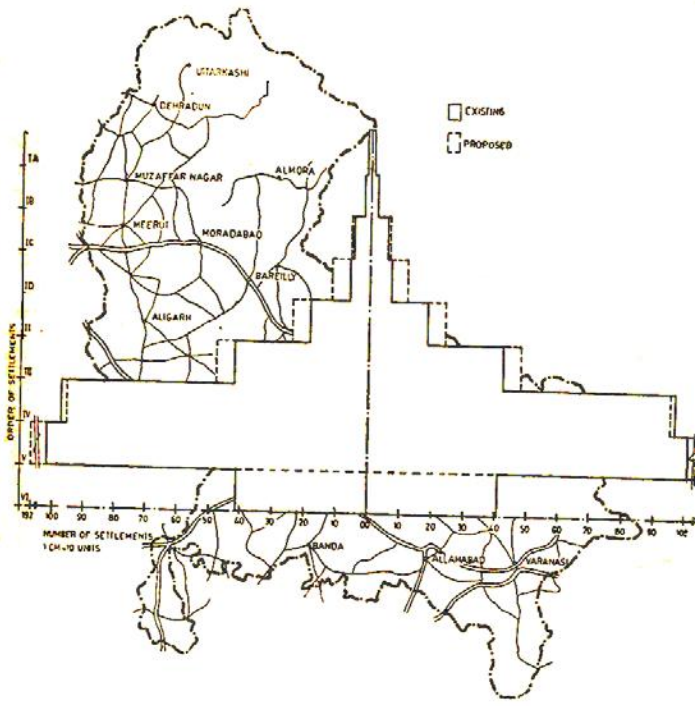
MAP 82: PUNJAB
System of Settlements



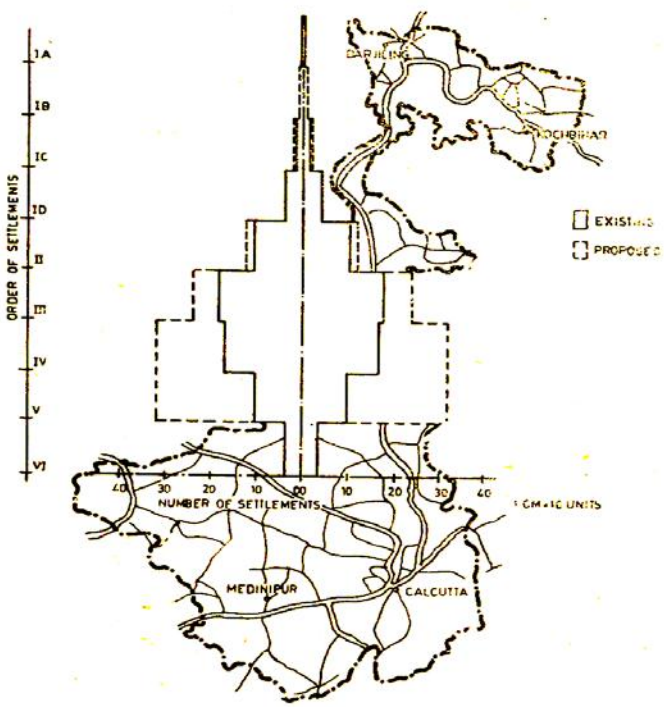
MAP 85: TAMIL NADU
System of Settlements



MAP 86: TRIPURA
System of Settlements



MAP 87: UTTAR PRADESH
System of Settlements



MAP 88: WEST BENGAL
System of Settlements

NUMBER OF EXISTING AND PROPOSED FUNCTIONS

There can be 12 main and 56 sub-functions of urban nature. Number and intensity of these functions vary from settlement to settlement. A settlement of higher order would have more functions of higher intensity, while a settlement of lower order would have less functions and of lower intensity. In the following table a proposal has been worked out about number of main and sub-functions of different orders of settlements. It is also clarified that intensity of these functions would vary and different weightage would be attached with reference to location, status, population and economy. In the table, the following orde4r of settlement has been adopted. The first order of settlements has been divided into four parts, i.e., Ia, Ib, Ic, and Id.

(i) Settlement of first order would have a population of 100,000 and above.
(ii) Settlement of second order would have a population between 50,000 and 100,000.
(iii) Settlement of third order would have a population between 20,000 and 50,000.
(iv) Settlement of fourth order would have a population between 10,000 and 20,000.
(v) Settlement of fifth order would have a population between 5,000 and 10,000.

SI. No.	*Urban Functions*	*Settlements of different orders*			
		I	II	III	IV & V
(1)	*Education*	√	√	√	√
	-Research Institution	√	-	-	-
	-University	√	-	-	-
	-College	√	√	-	-
	-Higher Secondary School	√	√	√	√
	-Primary School	√	√	√	√
	-Nursery and Day Care Centre	√	√	-	-
	Sub-total	**6**	**4**	**2**	**2**

SI. No.	*Urban Functions*	*Settlements of different orders*

		I	II	III	IV & V
(2)	*Health*	√	√	√	√
	-Special Hospital	√	-	-	-
	-General Hospital	√	√	-	-
	-100-Bed Hospital	√	√	√	-
	-Maternity and Child Welfare Centre	√	√	√	√
	-Clinic	√	√	√	√
	-Dispensary	√	√	√	√
	Sub-total	**6**	**5**	**4**	**3**

(3)	*Recreation*	√	√	√	√
	-Artificial Lake	√	√	-	-
	-Swimming Pool	√	-	-	-
	-Gymnasium	√	√	-	-
	-District Parks, Playgrounds and Open Spaces	√	√	√	-
	-Tree Plantation	√	√	√	√
	-Water Front Development	√	√	-	-
	Sub-total	**6**	**5**	**2**	**1**

(4)	*Social Security*	√	--	-	-
	-Police Lines	√	-	-	-
	-Police Station	√	√	-	-
	-Police Post	√	√	√	√
	Sub-total	**3**	**2**	**1**	**1**

(5)	*Social Justice*	√	√	√	√
	-Police Lines	√	√	-	-
	-Police Station	-	-	√	√
	Sub-total	**1**	**1**	**1**	**1**

SI. No.	*Urban Functions*	*Settlements of different orders*

		I	II	III	IV & V
(6)	*Utilities and Services*	√	√	√	√
	-Potable Water	√	√	-	-
	-Sewerage	√	√	-	-
	Storm Water Drains	√	√	√	-
	Power	√	√	√	√
	Telephone	√	√	-	-
	Milk Supply	√	√	-	-
	Post Office	√	√	√	√
	Garbage Collection and Disposal Centre	√	√	√	√
	Sub-Total	**8**	**8**	**5**	**4**

(7)	*City Bus Services*	√	√	-	-
	-Bus Depot	√	-	-	-
	-Bus Terminal	√	√	-	-
	-Bus Queue Shelter	√	√	-	-
	Sub-total	**3**	**2**	**-**	**-**

(8)	*Places of Parking*	√	-	-	-
	-Taxi Parking	√	√	-	-
	-Slow Vehicle Parking	√	√	√	√
	-Cycle Parking	√	√	√	√
	Sub-total	**3**	**3**	**2**	**2**

(9)	*Commercial Centres*	√	√	√	√
	-Central Business District	√	-	-	-
	-Sub-central Business District	√	-	-	-
	-District Centre	√	√	-	-
	-Sub-District Centre	√	√	-	-
	-Community Centre	√	√	√	√
	-Local Shopping Centre	√	√	√	√
	-Convenient Shopping Centre	√	√	√	√
	Sub-total	**7**	**5**	**3**	**2**

SI. No.	*Urban Functions*	*Settlements of different orders*			
		I	II	III	IV & V
(10)	*Improvement in Slum Areas*	√	√	√	√
	-Brick Paving	√	√	√	√
	-Conversion of Dry Latrines into Flush	√	√	-	-
	Construction of Community Hall, Library and Barat ghar	√	√	√	√
	Sub-total	**3**	**3**	**2**	**2**

(11)	*Development of Resettlement Colonies*	√	-	-	-
	-Community Latrines	√	-	-	-
	-Community Water Supply	√	-	-	-
	-Power	√	-	-	-
	-Roads	√	-	-	-
	-Library-cum-*Barat-ghar*	√	-	-	-
	-T.V. Centre	√	-	-	-
	Sub-total	**6**	-	-	-

(12)	*Decentralisation of Economic Activities*	√	√	√	√
	-Industry	√	√	-	-
	-Commercial Offices	√	√	-	-
	-Government Offices	√	-	-	-
	Sub-total	**3**	**2**	-	-
	Grand Total (Main)	**12**	**10**	**8**	**8**
	-Grand Total (Sub)	**55**	**48**	**22**	**18**

Number of main and sub-functions in different orders of settlements would be as follows:

Order of the settlement	Size of the class	Number of functions	
I	More than 100,000	12	55
II	50,000-100,000	10	48
III	20,000-50,000	8	22
IV	10,000-20,000	8	18
V	5,000-10,000	8	18

A new settlement policy should be formulated with reference to the following two propositions:

(1) Whenever a new settlement is located, the number of urban function in that centre should be as per computations made above.
(2) Number of urban functions, if less or more in a settlement, should be increased or decreased by adding or lessening the functions.

Rate of Growth of a settlement, I.E. Declining, Static, Normal, Dynamic and Extraordinary.

Dynamics of settlements, as details given in Chapter-8 of Part Two of the book, data about 2346 settlements was available and these were classified into the following five categories:

1) Declining settlements: where the rate of growth is less than 1.5% per annum.
2) Static settlements: where the rate of growth is between 1.5% and 2.5% per annum.
3) Normal settlements: where the rate of growth is between 2.5% and 3.5% per annum.
4) Dynamic settlements: where the rate of growth is between 3.5% to 5% per annum.
5) Extraordinary settlements: where the rate of growth is more than 5% per annum.

Out of 2346 settlements, 284 are declining, 474 static, 600 normal, settlements should be worked out with reference to a general approach as well as specific study of each.

Out of total 284 declining settlements, there are only two settlements which have a population of more than 100,000, otherwise most of them are falling in the population range group of 10,000 to 50,000 with a break-up of 21.1% in the population range of 20,000 to 50,000; 41.5% in the range of 10,000 to 20,000; 20.8% in the range of 5000 to 10,000. Similar is the position about static settlements. Only 4% of the numbers of static settlements are in the population range of 100,000 and above, otherwise 27% are in the range of 20,000 to 50,000; 38.9% in the range of 10,000 to 20,000 and 19.6% in the range of 5,000 at 10,000. All these figures prove that smaller settlements are generally declining and static.

On the other hand dynamic and extraordinary settlements should be studied carefully. Out of 2346 settlements, 554 are dynamic and 437 extraordinary. This makes a total of 991 i.e., about 40% of the total number of settlements, which have been studies. Out of 216 settlements of Class-I order, 129, i.e., more than 50% are in this category of dynamic and extraordinary. If we see only metropolitan cities, then we will find that out of 12, nine fall in this category. This shows that we should work out disincentives so that the growth in metropolitan centres is reduced and brought to a level of 3.5% per annum.

Physical Distance between Different Orders of Settlements

Following distances are proposed as optimum between different orders of settlements:

(A)	Physical distance between Ia order and Ib order	=	1000km.
	-Ia order to Ib order	=	500 km.

	-Ia order to Ic order	=	250 km.
	-Ia order to Id order	=	120 km.
	-Ia order to IInd order	=	60 km.
	-Ia order to IIIrd order	=	30 km.
	-Ia order to IVth. Order	=	15 km.
	-Ia order to Vth. Order	=	8 km.
(B)	Physical distance between Ib order and Ic order	=	250 km.
	-Ib order to Id order	=	120 km.
	-Ib order to IInd order	=	60 km.
	-Ib order to IIIrd order	=	30 km.
	-Ib order to IVth order	=	15 km.
	-Ib order to Vth order	=	8 km.
(C)	Distance between Ic order and Id order	=	120 km.
	-Ic order to IInd order	=	60 km.
	-Ic order to IIIrd order	=	30 km.
	-Ic order to IVth order	=	15 km.
	-Ic order to Vth order	=	8 km.
(D)	Distance between Id order and IInd order	=	60 km.
	-Id order to IIIrd order	=	30 km.
	-Id order to IVth order	=	15 km.
	-Id order to Vth order	=	8 km.
(E)	Distance between IInd order to IIIrd order	=	30 km.
	-IInd order to IVth order	=	15 km.
	-IInd order to Vth order	=	8 km.
(F)	Distance between IIIrd order and IVth order	=	15 km.
	-IIIrd order to Vth order	=	8 km.
(G)	Distance between IVth order and Vth order	=	8 km.
(H)	Distance between Vth order and Vth order.	=	8 km.

These various distances would be subject to physical features like mountains, rivers, canals, deserts, lakes, sea etc., while planning and locating new settlements.

FORCES OF AGGLOMERATION

If physical distance between different orders of settlements is less than suggested in the previous table, forces of agglomeration will come up and in a decade or so, metropolitan area will start amalgamating with adjoining settlements. For example Ghaziabad, Mohan Nagar, Sahibabad, Faridabad, Ballabhgarh, and Narela are being amalgamated with Delhi and one day this would become a compact urban mass. And if the physical distance between different orders of settlements is more than suggested, then also problems will arise and create the necessity of location of a new settlement to fulfill the functions lacking there.

TYPE OF ECONOMY

In Chapter 9 (Part Two) of the book, many settlements, ranging between a population of 20,000 and I lakh have been studies and percentage of workers working in the first two livelihoods has been given.

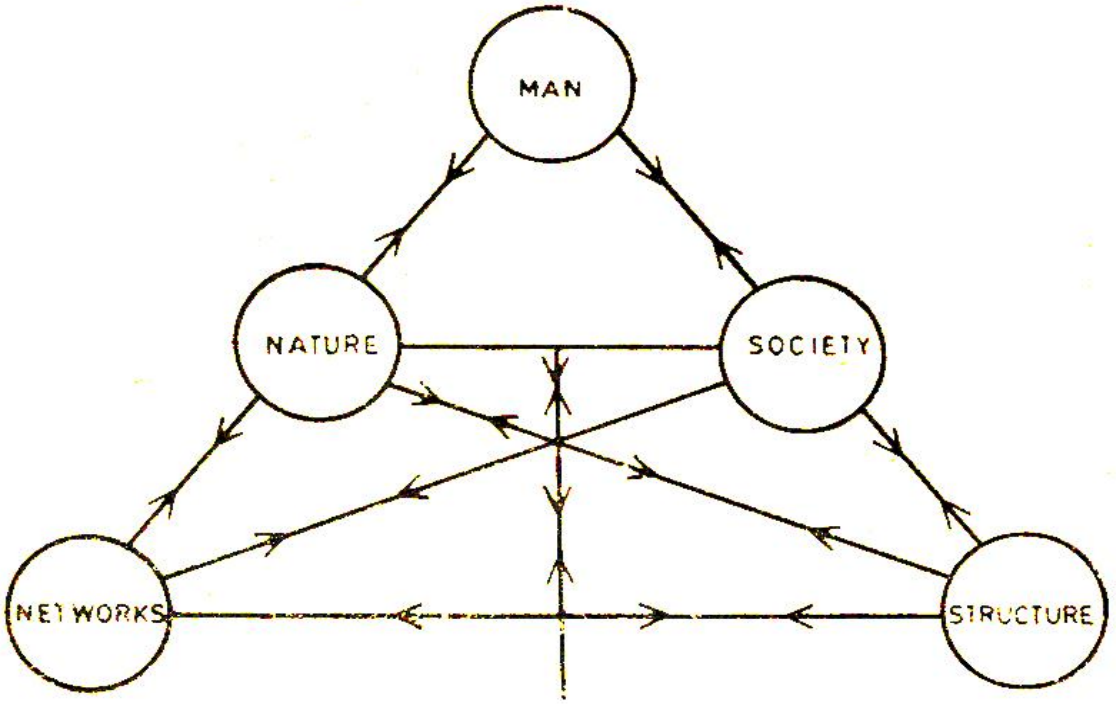
ACCESSIBILITY TO THE SETTLEMENTS BY ROADS AND RAILWAYS

One survey sheets in a scale of 1 : 20,000 lines at a distance of 5 km. would be earmarked on either side of National Highways, State Highways, major district roads and all the railway lines whether broad gauge, metre gauge or narrow gauge. In this way, there would be many pockets which neither have an access from a road or a railway route. A distance of 5 km. has been assumed as a desirable limit to have proper access for a settlement.

SUPERIMPOSITION OF VARIOUS FACTORS TO GET THE RESULTANT

All the preceding eight factors would be superimposed on a map to find the areas which have a potentiality of development. This map would show settlements, their dynamics, potentiality, and the type of economy to be adopted.

PLANNING OF SETTLEMENTS



STUDIES AT NATIONAL REGIONAL LOCAL LEVEL

EXISTING

- SURVEYS
- ANALYSIS
- PREDICTION
- SPACE STANDARDS
- ZONING REGULATIONS
- TRANSFORMATION OF AREAS

PROPOSED

- ALTERNATE MODELS OF SPATIAL PLAN
- ECONOMIC PLAN
- PUBLIC PARTICIPATION
- APPROVAL OF THE PLAN
- IMPLEMENTATION

CHAPTER 12
PLANNING OF SETTLEMENTS

Planning of a settlement involves five basic elements, i.e., man, nature, society, net-works and structures; to be planned, at the national, regional and local levels; for long term, medium term and short term, i.e., for a period of 20 years, 5 years and annually; by experts in different disciplines, namely-engineering. Architecture, landscape architecture, economics, sociology, public health engineering, traffic engineering, and planning legislation etc. The plan has to be prepared within the existing and predicted physic-socio-economic and political resources.

One it is decided that a particular settlement has to be planned and developed according to the settlement policy as detailed out in Chapter 11 then further exercise has to be carried out for the detailed studies and surveys within the framework of national and regional policies. The following fourteen steps have to be followed. Some of them have also been detailed out.

(1) Studies at the national, regional and local level
(2) Surveys; physical, land use, socio-economic, shifting of industries, traffic surveys, survey of informal sector, survey of sub-standard areas, surveys of utilities and services, etc.
(3) Tabulation and analysis of various surveys.
(4) Predictions for 20 years, 5 years and each year.
(5) Formulation of space standards for different activities.
(6) Decisions on zoning regulations and building bye-laws.
(7) Transformation of requirements in areas in terms of hectares.
(8) Preparation of different alternate models of land-use, for selecting the best one.
(9) Preparation of 'Economic Plan', based on various surveys.
(10) Integration of the two plans, i.e., physical and economic, and then finalization of draft plan.
(11) Inviting objections and suggestions on the draft plan within a stipulated period, say one month.
(12) Screening and then taking of decisions on the draft plan by 'Statutory Board':
(13) Finalisation of the plan, and submission to the Government.
(14) Approval of the plan by the Government with or without modifications.

Recommendations Made in the United Nations' Conference

In the report of Habitat, United Nation's Conference on Human Settlements, May/June, 1976, following recommendations were made:

- Settlement and Environmental Planning and Development must occur within the framework of the economic and social planning process at the National, Regional and Local Levels.
- Settlement Planning should reflect national, regional and local priorities and use models based on indigenous values.
- Settlement Planning should be based on realistic assessment and management, of the resources actually and potentially available for development.

- Settlement Planning at the national level must be concerned with the co-ordination of those developments, activities and resources that have national significance of development of certain economic sectors, and certain infrastructure components.
- Planning for metropolitan regions should aim at an integrated approach over the territory affected by the metropolis, and include all major functions.
- Local planning must be concerned with social and economic factors, and the location of activities and the use of space over time.
- Settlements must be continuously improved. Renewal and rehabilitation of existing settlements must be oriented or improve living conditions, functional structures and environmental qualities. The process must respect the rights and aspirations of inhabitants, especially the least advantaged, and preserve the cultural and social values embodied in the existing fabric.
- Urban expansion should be planned within a regional framework, and co-ordination with urban renewal to achieve comparable living conditions in old and new areas.
- New settlements should be planned within a regional framework, to achieve national settlement strategies and development objectives.
- Planning for the improvement of individual rural settlements should take into account the present and expected structure of rural occupations, and of appropriate distribution of employment opportunities, services and facilities.
- Neighbourhood planning should give special attention to the social qualities and provision of facilities, services, and amenities required for the daily life of the inhabitants.
- Planning for temporary human settlements should provide for community needs, and the integration of such settlements, where appropriate, into the permanent network of settlements.
- Planning for human settlements should avoid known hazards which could lead t5o natural disaster. The planning of reconstruction after natural or man-made disasters should be used as an opportunity to improve the quality of the whole settlement, its functional and spatial pattern and environment.
- The special, social, economic and cultural needs of mobile groups must receive special planning attention at local, as well as regional and national levels.
- Planning at all scales must be a continuing process requiring co-ordination, monitoring, evaluation and review, both for different levels and functions as well as feedback from the affected people.

Studies at National, Regional and Local Level

(A) NATIONAL LEVEL

Studies of Urban Land Policy, suitable legislation to control interstate movement of goods and passengers, position and importance of this particular settlement with reference to national and the State. Type of economic activities to be concentrated and various parameters to be decided for this settlement.

(B) REGIONAL OR PROVINCIAL LEVEL

If already a regional plan or a provincial physical plan is in existence, exercise for this particular settlement is not required, otherwise, the entire study has to be undertaken at this level. Details are given in the following paragraphs:

(1) Aerial surveys of the entire region on a scale of 1 : 20,000 or 1:10,000, depending upon the availability of maps and size of the region.
(2) Mapping of the following physical and socio-economic resources:

(a) Physical Resources

- Climatological characteristics;
- Type of soil; nature of the terrain, steep grounds;
- Flora and fauna, forests and type of vegetation;
- Water resources, rivers, canals, lakes and sea;
- Mountains and rocky areas;
- Causes and points of environmental pollution;
- Traffic and transportation; roads, railways, waterways and air-ways;

(b) Social Resources

- Population, age composition, rate of growth of total , urban and rural population, migration, sex composition and marital status.
- Educational characteristics;
- Public Health;
- Employment; employed, unemployed and under-employed;
- Occupational characteristics;
- Recreational facilities;
- Facilities about social securities and social justice.

(c) Economic Resources

- Details of different type of products in terms of quantity and quality, concerning to agriculture, livestock, mining, quarrying, manufacturing, trade and commerce, transportation, construction and other services.
- Movement of goods, passengers and credit facilities from one centre to another by roads, railways, waterways, airways and other means of communication.
- Establishment of centre and periphery relations;
- Delineation of areas, fit for development;
- Establishment of a system, sub-system and sub-sub-system, and on the basis of this, parameters for different settlements would be decided.

(C) LOCAL LEVEL

Different types of detailed physical, landuse, socio-economic, traffic and transportation and other surveys should be conducted in accordance with details given under the next heading.

Surveys

a) Physical Surveys. On a base map, on a scale of 1 : 5000 showing details of existing infrastructure, roads, service roads, properties built up and under construction, plots lying vacant or with compound walls, levels of the grounds, local pits, bearing capacity of the soil etc.

b) Land Ownership. Free-hold, lease-hold, ownership of the Government. Power of Attorney, Sale-deed, under acquisition and areas covered under Urban Land Ceiling Act.

c) Land Use Surveys. Residential, industrial, commercial, public and semi-public buildings, circulation, recreational and Government use. Number of storeys of structures, use on different floors, type of structure viz., pucka, semi-pucka and kutcha, availability of utilities and services in the structure. Existence of a separate bathroom, kitchen and W.C.

d) Socio-economic Surveys. Population, composition of population, age group, sex ratio, marital status, density in terms of persons per hectare, number of DU's per hectare and persons per room.

- Income of the family per month;
- Expenditure pattern of the family on food, clothing, health, shelter, transportation, education, recreation and other miscellaneous items,
- *Means of conveyance:* bicycles, scooters etc.;
- Position of community facilities which served the families;
- Details of employment;
- Occupational classification, viz. scientific, technical, teachers, artists, writers, craftsmen, service and labourers;
- Livelihood classification: agriculture, livestock, mining, quarrying, manufacturing, construction, trade and commerce, transport and other services.

e) Surveys of the industries giving details of type of industry, nature of industry, status of industry, sanctioned power load, raw materials used, number of vehicles to be parked at a time, classification of non-conforming industries, name of the industries which have to be spot zoned.

f) *Traffic surveys;* Volume of different important intersections, passenger trips in different modes of transportation, cordon surveys, orgin and destination surveys, surveys for model split, surveys of parking areas.

g) Surveys of informal sector, commercial and residential.

h) Surveys of sub-standard areas, unauthorized colonies, *jhuggi* clusters, resettlement colonies, slum areas, urban and rural villages.

i) Surveys of utilities and services, i.e., water supply, sewerage drainage, power etc.

Predictions of 20 Years, 5 Years and Each Year

Predictions should be made of the following indicators:

(i) Population; its composition into different age groups;
(ii) Composition of population in different sectors of economy;
(iii) Composition of population in different income groups;
(iv) Prediction of the economy in terms of GDP, income per capita, expenditure pattern.

Space Standards for Different Activities

- Areas for different types of houses for different income groups;
- Minimum and maximum size of plots for residential, industrial, commercial, institutional, parks, playgrounds and open spaces, R/W of roads, service roads;
- Built-up accommodation for different types of educational, and health buildings, police post, police station, etc.
- Modal split; bus, rail, cycles, private vehicles;
- Prediction of traffic at important intersections.

Zoning Regulations and Building Bye-laws

- Uses permitted in an ordinary way;
- Uses permissible under special appeal;
- Uses not to be permitted;
- Ground floor coverage for different uses;
- FAR for different uses;
- Density for different uses;
- Density of population for different uses;
- Building bye-laws for different uses.

URBAN LAND POLICY

REQUIRES STUDIES

OF

LAW OF THE LAND

PLANNING AND DEVELOPMENT

DISPERSAL

CONTROL OF LAND USE

RECAPTURING PLUS VALUES

MANAGEMENT

MAINTENANCE

CHAPTER 13
URBAN LAND POLICY

Introduction

In accordance with the prevailing trends and the normal growth rate, the population of the world is expected to reach about 4,000 millions by the end of the century. Taking an overall average density of 125 persons per hectare, the population of the entire world may easily be expected to be accommodated in a small area of the country like U.K. or West Germany. Out of an area of 32.8 lakh sq. kms. Of our country, only 12.81 per cent is under settlements and the rest is under agriculture, forestry, mining, water courses etc.

Land is a natural resource gifted from the nature, as such, it is to be shared by all living on its surface irrespective of caste, colour and creed. Hence, the Government is the only agency to ensure a balanced development and distribution of land amongst the people. The Government must have a complete control over all the lands available in a country. The land can thus easily be put to the social, economic and political welfare of the nation through socialization and rational distribution measures. The Government should, therefore, exert controls over planning, development, disposal, management and the pricing system of land.

There is a big diversification in prices of lands. In Delhi, it is sold at different prices varying from Rs. 50 per sq. mt. reserved rate for residential plots EWS and LIG varies between Rs. 80 and 120 sq. mt.; for MIG Rs. 200 per sq. mt.; auction rate for HIG Rs. 2,000 per sq. mt.; for commercial plots in a district centre Rs. 10,000 per sq. mt.; allotment of land for parks and playgrounds at the rate of Re. 1 per annum; for educational institutions Rs. 12,000 per hectare.

It is a fact that developed land at cheaper rate is required for the extension and improvement of existing settlements, preservation and improvement of historical sites, monuments, and other areas of unique and aesthetic social and cultural values; protection and enhancement of environment along the river fronts, in pilgrimage centres and tourist centres.

In most of the towns land should be developed at cheaper rates and should also be made available at the same rate to the society at large Supply of land should be subject to demand and time.

Developed Land

The development of land includes leveling, dressing, laying of internal infrastructure, viz., water supply, sewerage, drainage, electricity, gas lines; construction of roads and service roads, bus-stops, dustbins, mild booths, development of parks, playgrounds and open spaces, development of sites for various community facilities, laying of trunk infrastructure, viz., water lines, sewer lines, drains, electric lines, telephone lines, gas lines, construction of Master Plan roads, over-bridges, under-bridges, flyovers; bus terminals; street furniture; sites for various community facilities of higher order viz.- colleges, general hospitals, research institutions; sources of potable water by way of construction of treatment plants, systems of sewage disposal, generation of

power etc. Development of any land is a time-consuming process; the colonies, of which the development was started nearly six to eight years back, are not completely developed hitherto.

In order to foster balanced development in a co-ordinated and integrated manner in any urban or rural settlement, formulation of an appropriate Urban Land Policy along with finances for acquisition, development, dispersal, management, maintenance supplemented with a comprehensive Town and Country Planning Legislation is a must.

Urban Land Policy

This should have the following seven components;

1) Law of the land and modificat5ions in various Acts;
2) Planning and development;
3) Dispersal;
4) Control of land use;
5) Recapturing plus values of land;
6) Land management; and;
7) Maintenance of land.

(1) LAW OF THE LAND – MODIFICATIONS IN VAROULS ACTS.

Proposed Modifications in Land Acquisition Act, 1984

-There should be a reasonable time gap between Section 4 (Intention of acquisition), Section 6 (Declaration of intending acquisition), Section 9 (Notices to persons interested in the land) and Section 16 (Power to take possession of land) of the Land Acquisition Act. The entire process should not take more than three years in general and routine cases, but in special cases time should be curtailed to six months. Otherwise affected people are harassed and schemes are not implemented in time. In many cases land is squatted and encroached upon.

-Whenever there is a case of acquisition of land for trunk services/infrastructure, i.e., water supply, sewerage, drainage, power, telephone lines, major roads, rail lines, flyovers, road over and under-bridges, water treatment plants, sewage disposal plant etc., the following steps should be followed.

(a) Section 4, 6 and 17 of Land Acquisition Act should be applicable at a time irrespective of whether the area is lying vacant, have built-up structures of fake religious buildings.

(b) In such cases, the entire process of survey, planning, Sections 4,6 and 17 of Land Acquisition Act, taking over possessions of the land and payment of compensation etc., should not take more than six months.

(c) Once a plan of trunk infrastructure/important facilities is finalized and approved, then these services should be demarcated on the site with stone pillars. Due publicity should be made with the help of location plans, announcements, public notices, radio and TV, so that the public is apprised of the situation and does not squat/encroach the land earmarked for these facilities. It has been that many of the unauthorised colonies have come up in green areas or in the pockets required for trunk infrastructure due to non-availability of information to the public. It is suggested that there should be active public participation.

(d) Alternate allotments, may be in terms of developed plots or built-up flats should be made to the affected families whose lands are being acquired, within a period of six months from the date of notification of Sections 4, 6 and 17 of Land Acquisition Act.

(e) Amount of compensation to be paid to the party should be adjusted in the alternate allotment of plot/built-up tenements to be made.

(f) Alternate allotment should be made to the tenents also, subject to other necessary conditions.

(g) Cost of alternate allotment of developed plots or built-up flats should be charged to the project of laying trunk infrastructure.

-There should be a legal provision in the Act regarding allotment of alternate accommodation, may be in terms of developed plots or built-up flats in all the cases of land acquisition, so that people are not uprooted and harassed. These allotments would be subject to the condition that he/she or his/her dependents do not have any other property in the Union Territory of Delhi, and other administrative measures.

-Stay orders should be granted only is genuine cases. It has been experienced that in the garb of stay orders people encroach public lands.

-There should be some syste4m for allotment of alternate accommodation to the tenents also, subject to other conditions.

-Planned development of Delhi should be well-defined in terms of write ups and maps.

Proposed Modifications in Slum Clearance and Improvement Scheme

A brief description of the Slum Areas Improvement and Clearance Act, 1956.

-Chapter II (Section 3) deals with the declaration of slum areas.
-Chapter III (Sections 4, 5, 6, 7 and 8) explains how a particular area can be improved.
-Chapter IV (Sections 9, 10 and 11) deals with the declaration of a slum area as clearance area, and them how to pass slum clearance orders in order to get the area cleared and then redeveloped.

-Chapter V (Sections 12 to 18) deals with the acquisition of land/property in slum areas, on the basis of five years gross rent or three years net rent of the property in question.

Suggested modifications in the Scheme.
As per 1971 census 2.97 lakh families were living in 2170 hectare designated as slum areas, So far in the last two decades, no substantial acquisition of land/property has been made. Only a few pockets have been declared as Clearance Areas and we have been successful to get them cleared only where Government properties were in existence. The idea of acquiring land under this Act is completely impractical, as such, should be modified.

After studying the details of improvements made in slum areas of Delhi by the authority during the last two decades. The following conclusions come to light. These conclusions should be considered at the time of modifying the Act of Slum Areas Improvements and Clearance.

-The entire area of 2170 hectare designated as Slum Area under the Clearance and Improvement Act, 1956 should be declared as development area of the Authority under Section 12 (1) of Delhi Development Act.

-Responsibility of planning, developing, redeveloping, clearing and rebuilding the entire area of 2170 hectare which is bounded by Boulevard Road, Roshanara Road, Road No. 40, meter-gauge line near Patel Nagar, Ranjit Nagar, Shadipur, Khampur, Pusa Road, Punchkuin Marg, Railway Line from Tilak Bridge to Minto Bridge, Bahadurshah Zaffar marg and Mahatma Gandhi Road should be with the Slum Department of the Authority, irrespective of nature of the area, land use and type of the project, whether remunerative or non-remunerative.

-All the lands acquired for slum schemes should be the property of the Slum Department, Expenditure and receipts should be debited/credited in the account of the scheme. There should be a clearcut policy that profits from the commercial projects which are part of slum areas would be credited in the account of the scheme.

-It is also recommended that whenever any action in slum areas is taken, it should be for the entire system, or sub-system. So far, more than 16,000 tenements under slum scheme have been constructed without taking care of other components, i.e., for their place of work and enjoyment. The result being that all the quarters have not been occupied by the families who were living in slum areas. This is mainly due to the reason that no comprehensive proposals at any stage for the entire system or sub-systems have been worked out. People are generally reluctant to shift till their place of work and enjoyment are also made available at the new places.

-Besides these positive points, the following steps are also to be taken as measures to check further deterioration in environment. This is with regard to the walled city of Delhi.

-Till the entire scheme is planned and implemented in the true sense, no further residential/commercial activity should be permitted, except repairs, and that also of minor nature.

-Traffic regulations should be enforced including parking of vehicles, one-way traffic on congested roads and time limit5s to permit the entry of heavy vehicles.

-Unauthorised construction or squatting, wherever it exists should be removed immediately.

-Building bye-laws should be enforced strictly.

-Maintenance of services, viz., water supply sewerage, drainage, sanitation, electricity, roads, service roads, parks and playgrounds should always remain with the local authorities i.e., MCD.

-All the capital works as listed below should be with the development authority like the DDA.

-Construction of tenements for the rehabilitation of families to be shifted from the slum areas.

-Structural improvements in *Katras* including their rebuildings, if possible

-Rebuilding of Government properties/evacuee properties.
-Clearance of slum areas and their rebuilding.
-Improvements in slum areas.
-Development/construction of remunerative projects in slum areas.

-Allotment of build-up flats should be on the basis of hire
-purchase system and not on the basis of rental, as being followed now-a-days.

Proposed Modifications in the Delhi Development Act, 1957

(a) Section 6 (Objects of the Authority) should be well defined, and as follows.

-Preparation, monitoring, review and implementation of the Master Plan;
-Enforcement of land use controls as envisaged in Delhi Development Act;

-The acquisition and development of land of various activities of the planned development of Delhi;

-Making developed lands available to various agencies in the public, cooperative and private sectors for house-building activity;

-The promotion of a sufficiently dynamic housing programme.
-Development of industrial commercial and ancillary centres of work.

-In exercise of its role as custodian of the Master Plan, the DDA has to coordinate the activities of either specialised agencies, such as DESU, MCD, NDMC, CPWD, PWD, D. ADMN., DTC, WS & SDU, DSIDC, DTDC, DLPPC, MTPR etc, who are also concerned with the planned development of Delhi.

-Development of any other project necessary for the planned development of Delhi;
-DDA shall be responsible for all the works concerned with the capital works of the city. In no case, she would enter into the service functions of the local bodies.

(b) Section 8 (Preparation of Zonal Development Plan) should be modified as most of the zonal plan prepared in Delhi are incomplete, inaccurate and have taken more than 10 to 15 years. This section should be completely modified.

(c) Section 24 (Budget of the Authority) should be revised completely and may be as follows.

-There should be a Perspective Plan of short terms and long term projection of financial requirements based on physical targets, correlated with land acquisition, planning, development and availability of building materials.
-There should not be adhocism in price fixation.
-A proper planning and programming of financial resources should be done every year before they are included in the budget.
-There should be a system of performance budget or annual plan with a close coordination between physical and fiscal achievements.

(d) Sections 37, 38 and 40 (Power of the Authority to levy betterment charges, assessment and collection). As per these sections, betterment charges can be collected after a work is done in any area. In Delhi, there are more than 600 unauthorised colonies spread-out in an area of about 3000 hectare with a population of about one million. It is not possible, first to develop these colonies and then to collect betterment or development charges. As such, there should be a modification in the Act that development charges can be collected simultaneously with the development works and if these are not paid, then they can be taken as areas of land revenue.

The Urban Land (Ceiling and Regulations) Act, 1976

The Act is meant to prevent concentration of urban property in the hands of a few persons, to bring socialization of urban land and to discourage construction of luxurious buildings/houses. The Act is applicable to all the urban lands, irrespective land use, viz., residential industrial, commercial, institutional etc.

PROPOSED MODIFICATIONS

(a) Section 6 (Persons holding vacant land in excess of ceiling limit to file statement). The following categories should be exempted:

-All the uses except residential, as shown in the approved plan of a city;
-Plots taken from a public authority on lease, with a ground rent.

(b) Section 10 (Acquisition of vacant land in excess of ceiling limit). After excluding the above two categories, excess land should vest with the Government automatically, subject to the payment of compensation, with-out going into other formalities.

(c) Section 11 (Payment of amount for vacant land acquired). Rs.10 per sq. mt. seems to be too less. Amount of compensation should be related to:

-the time when it is paid.
-not less than whatsoever the owner has invested on the excess land with a normal rate of interest.

(d) Section 23 (Disposal of vacant land acquired under the Act). In the Act, there is a provision of allotment of excess land 'to any person for any purpose related to or in connection with any industry, business, trade etc. The provision is very vague. In Delhi we have not been able to achieve much. The Government should first prepare a comprehensive plan, then take the excess land to use it for planned development of the city.

Land Acquisition and Development Scheme, 1959

Land Acquisition and Development Scheme for the grant of loans to state government for bulk acquisition and development of land for house building and connected purposes, came into enforcement on October 20, 1959 with the following features.

-Financial assistance under the scheme will be provided to the state governments in the shape of loans with a rate of interest of 4% per annum, to be repayable in 10 annual equated installments, with a moratorium period of five years.

-The loan would be used for acquisition and development of land for different purposes.

-While making allotment, preference would be given to those who are eligible for aid under the various housing and slum clearance schemes in the order of priority noted below;

-Slum Clearance Scheme;

-Subsidised Industrial Housing Scheme;

-Low Income Group Housing Scheme;

-Middle Income Group Housing Scheme;

-Rental Housing Scheme for State Government Employees.

-Plots intended for commercial or commercial-cum-residential purposes shall be sold by public auction or open tender except for the above five categories. Other plots can be disposed of on the pattern as the state government may think it appropriate.

-The state government shall, however, ensure that there is no loss to the project and the entire profit gained by the sale of land for commercial purpose of reducing the price of land to be utilized for public housing for people falling in the group of LIG and below.

Other conditions would be as under:

-Not more than one plot to an individual.

-The land would be given on leasehold basis.

-Building should come up within a reasonable period.

-Avoid speculation in land.

-Prohibit misuse of the land.

-Prevent the transfer or resale of plot/house to persona not eligible for the benefits of the scheme.
-Discourage transfer or resale of plots/houses.

Control of Land Values in the Urban Areas of Delhi; Acquisition, Development and Disposal of Land Vide No. F. 37/16/-Delhi (1), Govt. of India, Ministry of Home Affairs dated 2.5.61.

-Private investment in housing should be facilitated.

-Setting up of colonies by private developers should be discouraged.

-No allotment should be made to any of the institutions till it serves the interest of Delhi.

-Developed land should be provided to various institutions.

-All the land acquired under the scheme will be nazul land and will vest in the President of India and will be given out in his name only on lease-hold basis to local bodies and private parties including cooperative house building societies, industrialists, individuals and institutions etc.

-As a general policy, disposal of developed land should be made by public auction except in the following cases.

-Alternate allotment of land;

-Shifting of non-conforming industries;

-To low income group people;

-To cooperative house building societies.

-Ground rent should be charged at a nominal rate of Re. 1 per annum per plot for the first five years. Thereafter the annual ground rent shall be payable at 2.5 per cent of the premium originally paid. The rate of ground rent will be subject to revision after every 30 years.

-The following conditions shall govern the allotment of land whether by auction or otherwise.

-One plot for one family in the entire Union Territory of Delhi, Except in case of persons living in a congested locality.

-The structure on the allotted land should be completed within two years.

-The plot cannot be transferred before 10 years from the date of allotment, that also after payment of 50 per cent of the unearned increase of the value of the plot.

-It was decided that the entire responsibility for the acquisition, development and disposal of land under the scheme should be of that of the Chief Commissioner, Delhi (Now Lt. Governor, Delhi).

(a) The Government of India modified the scheme of 'Large Scale Acquisition, Development and Disposal of Land' on 18-7-67. The scope of the scheme was increased and the following activities were added;

-Flatted Factories;
-Single-storeyed sheds for group industries;
-Warehouses;
-Bus Terminals;
-Parking sites for idle trucks;
-Car parking;
-Development of districts, community, local and convenient shopping centres.
-Construction of special markets, as cycle market, vegetable market etc.
-Acquisition and development of land in Narela.

(b) The scope of "Large Scale Acquisition, Development and Disposal of Land" was further enhanced vide government order of December 18, 1969, to the extent that any other development project which the Lt. Governor, Delhi considers essential for the implementation of the Master Plan of Delhi and the zonal plans, subject to the condition that such projects are self-financing, and can be undertaken.

(c) The Ministry of Works and Housing further modified the scheme vide its order for February 5, 1970, to the extent as given under.

-Allotment of residential plots to persons belonging to LIG, and MIG with a decision on size of plots, income category and reservation of plots for members of Parliament, Councilors of Metropolitan Council/MCD, salaried classes, scheduled castes/tribes etc.

-Registration of new co-operative house building societies on group housing pattern.

-Allotment of land to owners and tenents of properties in areas which have been declared as clearance areas under the Slum Areas Improvement & Clearance Act.

-Allotment of plots to persons owning houses /plots in congested localities.

-Realisation of premium/price of plots in installments according to the stage of development.

(d) The scheme was further considered and modified vide order of 3.5.74. In this order, premium to be charged on a plot earmarked for college purposes in Dhaula Kuan was considered and it was decided that a rate of Re. 1 per sq. yd. may be charged irrespective of whether the plot forms a part of "General Development Scheme" or an individual case.

(e) Lastly, the Government vide its order dated April 29, 1976 decided to modify the scheme for the allotment of land for the construction of 862 sheds by DSIDC.

Jhuggi Jhompari Removal Scheme-1960

The scheme was initiated long back in 1958, approved by the Cabinet on January 4, 1960 and modified by the Cabinet on November 12, 1962. Since then, the scheme has been modified from time to time depending upon the magnitude of the problem and demand of the time. The scheme again needs modifications and revision. Proposed modifications and revisions are mentioned below:

-Size of the plot initially, about 5000 plots each of 67 sq. mt. were developed. Now about 2 lakh plots each of 21 sq. mt. have been planned/developed. A study should be made whether the size of 21 sq. mt. should be decreased or increased. In Rohini Township, which is being developed by DDA, minimum size of regular residential plots has been kept as 26 mt.

-So far, the scheme is based on services and infrastructure on community basis, i.e., hand pumps/water taps, latrine blocks at suitable locations and street lights etc.

It has to be decided whether individual water-supply, power and electric connections should be made as part of the JJR Scheme. Now DDA has already given individual electric connections in many of the colonies, and there is a scheme for providing individual water connections too. This is a major policy decision and if approved would require a huge investment.

-Minimum width of roads is 5 mt. which is good enough and should not be increased, till a study is made.

-A decision has to be taken about the quantum of supply of water per capita per day. Whether it should be 50 gallons, as being done in colonies developed by the DDA or only 25 gallons per day per capita.

The standard of 25 gallons per day per capita should be adopted, not only in laying internal lines, but for trunk lines too. If this is accepted then sewage disposal would also be reduced from the rate of 40 gallons per day per capita to 20 gallons per day per capita.

-When the scheme was initiated, cost of development of one plot including acquisition of land was only Rs. 800. This was increased to Rs. 1250 in 1972; and again the government, vide its order of September 5, 1980, increased it to Rs. 1860.

The present cost of development of one plot would not be less than Rs. 4000, i.e., approximately at a rate of Rs. 200 per sq. mt.

A line has to be drawn somewhere about the upper ceiling of the investment to be made per plot. The higher investment per plot has made the people take more and more plots by some illegal means. Here a policy has to be devised.

-Maintenance of services in these colonies has become a gigantic problem. Ten lac people, i.e., 16% of the Delhi's population is living in these colonies, without paying a single penny as property tax. The result being that MCD is not maintaining services in these colonies.

Should DDA then continue this job which is not only resource-consuming, but an activity not suitable to any of the development authority? In any urban area, development functions should be completely separated from service functions, otherwise there is a likelihood of misutilisation of resources.

-There are more than 40% of the plots which have already changed hands. These 40% of the plots which would be 80,000 in number should be allotted outright to the persons who are in actual occupation, after charging Rs. 5000 from each as a lumpsum premium or in installments.

-Other plots which would be about 1,20,000 in number should be allotted on hire-purchase system on the following formula:

-Rs. 500 may be taken initially.

-The balance (actual cost of development incurred so far is Rs. 5000) in 10 equal half-yearly installments.

-Ground rent at the rate of 2.5% should also be charged.

-Commercial sites which are 8960 in number in various convenient, local and community centres should be disposed off, partly auctioned and the balance should be given for allotment to genuine needy persons of this category.

-All the land acquired for the scheme already used or to be used should be the property of the department. Expenditure and receipts for the development and disposal should be debited and credited in the account of JJR. There should be a clear-cut policy, that, profits from commercial schemes which are part of JJR, would be credited to the account of the scheme.

-A material bank for the supply of cheap building material should be created in all the major colonies.

-DDA should act as a co-ordinator to all the authorities who are responsible for the maintenance of the services, plying of buses, supply of milk and other services like telephone booths etc.

Government Housing Schemes

The Government of India approved some other schemes which are not directly concerned with urban land policy. These scheme are as follows.

-Central Scheme for Environment Improvement
-Middle Income Group Housing Scheme.
-Village Housing Project Scheme.

Large-scale acquisition of land: Unless this policy is acceptable and adopted in towns, it would be difficult to undertake appropriate programmes of planning and development of areas of different uses at a reasonable cost and time. Large-scale acquisition of land within the urbanisable limits should, therefore, be resorted to by the public authorities in various towns. In case the Master Plan for a town is not available, area within one kilometer of radius around municipal limits of the concerned town may be notified for acquisition or it can be as per Interim General Plan. Once ample land is acquired, then only different schemes for public purposes can be implemented.

PLANNING AND DEVELOPMENT

This has already been dealt with in detail in Chapter 12.

(3) DISPERSAL

A sound Urban Land Policy should have dispersal of land by the public authority on some scientific basis with rules and regulations. Land should be dispersed after its full development, and if it is not possible then where the bulk of land has to be allotted to Government bodies like PWD, LIC, or State Housing Boards, Even in such cases also, it should be ensured that development conforms to the prescribed norms, standards and period.

Calculation of actual price of a developed land should be done after taking the following components into consideration.

-Cost of acquisition of land;
-Cost of internal infrastructure;
-Cost of internal roads;
-Cost of development of parks, playgrounds and open spaces-sites for various public facilities at neighbourhood level;

-50% of the cost of trunk infrastructure;
-50% of the cost of major roads except National Highways, State Highways and district roads;
-50% of the cost of public and semi-public buildings;
-50% of the cost of beautification of the town.

Rational distribution of price of land for different uses.

-An example has been quoted here. Assuming that cost of land on the basis of the formula stated at (a) is X, then percentage of cost of land for different uses can be as under. But the value of X (developed land) would vary from location to location, depending upon the status of the town etc.

-For EWS, 50% of X;
-For LIG, 75% of X;
-For MIG, X;

-For HIG, 2X;
-For district parks, playgrounds and open spaces, 5% of X;
-Sites for educational and health facilities, 10% of X;
-Sites for other social and cultural institutions, 50% of X;
-Sites for commercial use, 20X;
-For shifting of non-conforming industrial units, 75% of X;
-For new industries, 4X;
-For informal sector, X;

- Only applicable in case of metropolitan and rich town/cities.

A Case Study

To work out economics of a neighbourhood of 15,000 population. Different activities have been divided into following three heads:

(1) Activities concerning to subsidized sector;
(2) Activities concerning to no profit no loss sector;
(3) Activities concerning to profitable sector.

The entire system has been worked out in such a way that the Government finances are not strained too much. A neighbourhood having 15,000 population with all the essential infrastructure, roads and buildings for community facilities and houses for different income groups would cost Rs. 1491 lac, with a break-up of:

-Rs. 782.95 lac in subsidized sector;
-Rs. 316.5 lac in no profit no loss sector;
-Rs. 391.3 lac in profitable sector;

Financial position would be as under:

-Loss from subsidized sector	=	Rs. 141.0 lac
-Profit from profitable sector	=	Rs. 112.5 lac
-Income from ground rent per year	=	Rs. 7.5 lac

Part of the loss can be covered by auctioning some of the residential plots for high income groups.

Different dispersal systems for residential and non-residential uses. For residential use:

-For EWS including Community Service Personal; land may be leased out on a fixed price on hire purchase basis. In this case, maximum size of a plot should be 30 sq. mt.

-For LIG and MIG; this should also be leased out on fixed price, on hire purchase basis. Maximum size of a plot should not be more than 80 sq. mt. for LIG and 150 sq. mt. for MIG.

-For HIG; land should be made available on competitive basis, either by inviting sealed tenders or through public auction. However, it must be ensured that only one plot for a family is given, and that only to those who do not have any plot in that particular town or city. In this case, maximum size of a residential plot should not be more than 500 sq. mt.

For non-residential use:
-For educational and health facilities-on hire purchase basis.7
-For social and cultural institutions-on hire purchase basis.
-For shifting of non-conforming industrial use-on hire purchase basis.
-For new industries-plots should be auctioned.
-For commercial use-plots should be auctioned.
-For informal sector-on hire purchase basis.

(4) CONTROL OF LAND USE

The control of land use can be exercised through:

-Zoning and land use planning;

-Direct intervention, i.e., by creating land banks, development of land, and its disposal.

-Legal controls-e.g., compulsory registration, changes in administrative boundaries, development and building permits.

-Fiscal controls e.g., property taxes, tax penalities, and tax incentives.

(5) RECAPTURING PLUS VALUES OF LAND

The unearned values, resulting from change in use of land or change in ownership of land, must be subject to appropriate recapture by public bodies. This can be done in the following ways:

-Levy of appropriate taxes, e.g., capital gains, land taxes, betterment charges, development charges and particularly taxes on unused or underutilised land.

-Periodic and frequent assessment of land values in and around cities and determination of the rise in such values after every five years, and then to collect a part of this increased value as incremental land tax after every five years.

-Instituting development fee, permit fee or building fee on all developments.

-Leasing out the land in such a way that part of the future incremental value, which is not due to the efforts of the users, is kept by the community, e.g., public authority, at the time of transfer of land or change of use.

(6) LAND MANAGEMENT

(i) The entire land should be disposed off only on lease-hold basis.

(ii) The Government or the Development Authority should have the power to resume the land for the implementation of the Master Plan and also to receive part of the unearned income.

(iii) The land should be allotted on perpetual lease, but the term of lease should provide for revision of amount of ground rent at periodic intervals which should be long enough to enable the lessee to make proper use of the land, so allotted. A period of 30 to 40 years is appropriate for this.

(iv) No sale or transfer of the lease hold right should be permissible during the first five years, so that land is not taken by those who do not require it for immediate use. After five years, sales and transfers may be permitted on the basis that a substantial part of the unearned income comes to the government or to the Development Authority, to further use it for the purpose of development or any similar activity.

(v) Resumption of land should be provided in case of misuse of land, or breach of any of the terms of lease conditions.

(vi) Calculation of ground rent: In Delhi it is 2.5% and now is being considered as excessive and unreasonable. There should be an upper limit of the ground rent also, otherwise a plot of land for residential use sold at a rate of Rs. 2,000 per sq. mt. would carry a ground rent at the rate of Rs. 50 per sq. mt. per annum, which seems to be on much higher side. The upper limit can be 10% of the actual price of land of that time when the plot was auctioned/disposed off.

(vii) Calculation of reserve price at the time of action: This should be based on the following factors;

-Actual cost of the plot as defined in this chapter.
-Prescribed use of the land;
-FAR;
-Relative importance of the locality/town or status of the area.
-Any special site advantage, e.g. close to a landscape feature, water course, lake etc.
-Cost of management;

(7) MAINTENANCE OF LAND

Problem of maintenance of land starts when a colony is planned, developed and inhabited. System of maintenance of a colony depends on municipality, its structure and resources available with them. Maintenance of a colony includes maintenance of parks, playgrounds, open spaces, scavenging of roads/service roads, drains, collection and disposal of garbage, to maintain continuous supply of water, power and disposal of sewage etc. To give an idea about cost of maintenance, the DDA is incurring an expenditure of Rs. 4 crore per annum for the maintenance

of only resettlement colonies. Total cost of maintenance of Delhi may be about Rs. 15 to 20 crores per annum.

To bear the cost of maintenance, municipalities are empowered to collect property tax, scavenging tax, fire tax, and general taxes. Rate of taxes for different uses is different. Since small municipalities have meager resources they are not capable of spending the money for the maintenance of different type of services under their jurisdiction.

APPENDIX

ECONOMICS OF A NEIGHBOURHOOD OF 15,000 POPULATION AT 1982 PRICE LEVEL

Introduction

Economic activities concerning development of a neighbourhood can be divided into three parts:

(i) No Profit, No Loss Sector: Houses for EWS and low income groups, nursery, primary and higher secondary schools, parks, playgrounds and open spaces.

(ii) No Profit, no Loss Sector: Houses for middle income group, community facilities, viz., health centre, police stations, police posts, religious buildings, community halls and libraries.

(iii) Profitable Sectors: Houses for upper middle and higher income group, community centres including site of cinema, local shopping centres, convenient shopping centres etc.

In the calculation of the economics of the neighbourhood, the following cost of construction has been assumed based on the experience of Delhi Development Authority, and 1982 price level.

Assumptions

(A) RATE OF DEVEKIONEBT

i)	Acquisition of land	=	Rs. 20 per sq. mt.
ii)	Development of gross residential land including cost of land	=	Rs. 80 per sq. mt.
iii)	Development of gross commercial land including cost of land	=	Rs. 150 per sq. mt.

(B) COST OF CONSTRUCTION OF A DWELLING UNIT INCLUDING COST OF LAND AND OTHER CHARGES

i)	EWS	=	Rs. 25,000
ii)	LIG	=	Rs. 40,000
iii)	MIG	=	Rs. 80,000

iv)	Upper MIG	=	Rs. 1,20,000
v)	HIG	=	Rs. 2,00,000

(C) COST OF CONSTRUCTION OF SHOPS

i)	Construction cost of one shop in community centre	=	Rs. 15,000
ii)	Construction cost of one shop in local shopping centre	=	Rs. 12,000
iii)	Construction cost of one shop in convenient shopping centre	=	Rs. 8,000

(D) SUBSIDIES

i)	Subsidy for one dwelling unit for EWS/LIG	=	Rs. 2,000
ii)	Subsidy for schools	=	Rs. 8 lac per hect.
iii)	Zonal parks, playground and open spaces	=	Rs. 8 lac per hect.

(E) PROFITS

i)	Per unit from upper-middle income group	=	Rs. 20,000
ii)	Per unit from high income group	=	Rs. 30,000
iii)	Per unit from shop in community centre	=	Rs. 30,000
iv)	Per unit from shop in local shopping centre	=	Rs. 20,000
v)	Per unit from shop in convenient shopping Centre	=	Rs. 15,000
vi)	Profit from one plot of cinema	=	Rs. 80 lac

(F) GROUND RENT

Ground rent has been calculated at a rate of 2.5% per year of the total premium of land. For educational institutions, parks, playgrounds and open spaces the ground rent is negligible and as such has not been taken into account.

ECONOMICS OF VARIOUS SECTORS

Calculation for 3000 dwelling unit required for a population of 15000, along with other infrastructure and community facilities.

SUBSIDISED SECTOR

Description of unit	*No. of units*	*Area of each unit (in sq. mt.)*	*(Cost of one unit in Rs.)*	*Subsidy for one unit (in Rs.)*	*Total subsidy (in Rs.lac)*	*Total cost (in Rs. Lac)*
Houses for EWS (61.3%)	1839	20	25,000	2,000	36.78	459.75
Houses for LIG (19.2%)	576	35	40,000	2,000	11.52	230.40
Nursery school	10	0.2	1.6	1.60	16.0	16.0
Primary school @ one for 5000 persons	3	0.8	6.4	6.4	19.2	19.2
Higher Secondary school @ one for 7500	2	1.6 hect.	12.8 lac	12.8 lac	25.6	25.6
Zonal parks, playgrounds @ 4 hect. For 15000 persons	4.0	4.0	32.0	32.0	32.0	32.0
Total					**141.10**	**182.95**

NO PROFIT NO LOSS SECTOR

Description of unit	*No. of units*	*Area of each unit*	*Cost of one unit (in Rs.)*	*Total cost (in lac of Rs.)*
Houses for middle income group (12.5%)	375	65 sq.mt.	80,000	300.0
Health centres @ one for 22000	2/2	0.4 hect.	3.2 lac	2.1
Community halls and libraries @one for 1500	1	0.4 hect.	3.2 lac	3.2
Police stations @ one for 15000	1	1.2 hect.	9.6 lac	9.6
Buildings for religious purposes @ one for 15000	1	0.2 hect.	1.6 lac	1.6
Total				**316.5**

PROFITABLE SECTOR

Description of unit	No of units	Area of each unit (in sq. mt.)	Cost of one unit (in sq. mt.)	Profit from one unit (in Rs.)	Total profit (in lacs of Rs.)	Total cost (in Rs. Lac)
Houses for upper middle income group (3.8%)	115	105	1.2	20.000	23.0	138.0
Houses for high income group	96	160	2.0	30.000	28.8	192.0

(3.2%)						
Community centres each with 150 shops and to serve for 45000 persons	1/3	3.2	70.5	45.0 lac	15.0	23.5
Local shopping centre each with 50 shops to serve for 15000 persons	1	0.8 hect.	18.0	10.0 lac	10.0	18.0
Convenient shopping centre each with 20 shops to serve for 5000 persons	3	0.30 hect.	6.1	3.0 lac	9.0	18.3
Cinemas one for 45000	1/3	0.30 hect.	4.5	80.0 lac	26.7	1.5
Total					**112.5**	**391.3**

Total cost of three sectors = 782.95+316.5+391.3= 1490.75 lac. Or say Rs. 1500 lac.

INCOME FROM GROUND RENT

The entire programme is based on lease-hold system with a ground rent of 2.5% per year on the value of premium of land.

-Ground rent of 3000 Dwelling Unit: Taking average net density of 125 DUs per hect., an area of 24 hect. Will have to be developed to accommodate 3000 dwelling units at a cost of Rs. 192 lac at the development rate of Rs. 8 lac per hect. Ground rent on this will be Rs. 4.8 lac per year.

-Ground rent on educational institutions: negligible, as such has not been taken into account.

-Ground rent on zonal playground and open spaces. = Negligible

-Ground rent on community facilities = 2.5% of value of premium
= 2.5% of 17.6 lacs
Rs. 44,000 per year

-Ground rent on commercial sector, viz.
Community = 2.5% of 90.5 lac
= Rs. 2.26 lac per year
= 480,000+44,000+226,000
= Rs. 750,000

Total Profit and Loss (Financial Picture) in Rs. Lac

(A) Loss from Subsidised Sector = Rs. 141.50 lac
(B) Profit from Profitable Sector = Rs. 112.50 lac
(C) Loss = Rs. 28.50 lac

For the development of a complete neighbourhood costing about Rs. 1500 lac with sites of all types of community facilities the entire system can be developed with a loss of Rs. 28.50 lac, which is mainly due to provision of free land for the educational institutions, parks, playgrounds

and open spaces, Actually, on these alone the loss is of the magnitude of Rs. 92.8 lac. If, however, these facilities are dropped, then the entire programme can be made self-revolving and even yield a good profit; but ultimately this will be a loss to society and it will halt the improvement of human resources, which is the primary aim of the urban development programme. The loss of Rs. 28.50 lacs is covered by recurring annual income of Rs. 7.5 lacs per year.

In the development of any urban area there are 5 basic elements-man, nature, society, networks and structures. Of these five, man is the supreme one and deserves maximum importance. Hence, it is a must that all desirable educational/social facilities should be provided, which is possible only if developed land is allotted at very cheap rate. However, there are some other techniques to increase revenues and are given below.

(1) In the total housing schemes, if 6% to 8% land is developed with plots of 165 sq. mt. and above, and auctioned to high income groups it will yield a very good profit.

(2) Redevelopment/development of "Central Business Districts", "Sub-central Business Districts", "District Centres", "Sub-district Centres" various warehousing schemes as food and vegetable markets, warehousing of cold storages godowns for booking agencies. All these can be taken up and disposed of by way of auction. This will also yield a good profit.

(3) In any plan various pockets for service/light/extensive industries are also shown. Nearly 70% to 80% of the area may be used for the shifting of non-conforming existing industrial units; but the balance can be used for auction for the location of new industrial units. This also yields good revenue.

(4) Under Town Planning Acts, as in Delhi, there is a power to levy betterment charges on the areas, where in the opinion of the Authority, as a consequence of any development, if the value of any such property has increased or will increase, then the Authority is entitled to levy upon the owner of the property a betterment charge in respect of the increase in value of the property resulting from the development.

By all these methods, much more revenue can be earned and the development programme can be made a success without straining the Government finances too much.

VARIOUS TRANSPORT SYSTEMS

ROADS
RAILWAYS
WATERWAYS
AIRWAYS
DIFFERENT MODES

- DIESEL BUS
- ELECTRIC TROLLEY BUS
- BATTERY-POWERED BUS
- STREET CAR
- ELEVATED CORRIDOR (BUS OR TRAIN)
- UNDERGROUND TRAIN
- HOVERCRAFT

EXPRESS CYCLE TRACKS

INTERMEDIATE PUBLIC TRANSPORT

SLOW MOVING

PRIVATE MODE

GOODS CARRIERS

CHAPTER 14
Planning of Transport Systems

Transportation and Communication is an outcome of the basic instincts and needs of man. These needs and instincts create conditions to perform some activities which can be divided into three functions viz. living, working and enjoying.

In any society, there are more than two persons, even up to millions and billions. Everyone has to work to survive, live to protect, and enjoy to develop himself. Whenever two or more than two persons meet, they react and communicate. As there are more than two persons in a society and all the activities cannot be performed at one place and at one time, the result is that human beings have to travel from one point to another. Travelling can be in physical forms via road, rail, water and air or in the latent form with the help of wireless, radio, TV, telephone and telex. The latest development is communication via satellite.

In older days, when the number of people and the activities were limited, there were only a few demands. The entire settlement was within a wall with administrative activities in the centre, shopping on four sides and residences for the elite on the top in the first ring and lastly shelter for the poor on the outer periphery, but within the wall. All the people were to reach to the centre called agora, mostly on foot and sometimes by a limited number of vehicles. Even at the time of Mughal rule in India, in the absence of a vehicular system, messages were sent through pigeons and messengers on horses.

Gradually, as the civilization progressed and number and points of activities increased, the need of transport and communication was felt more and more. Now, the number of passenger trips are increasing in geometric progression in all the metropolitan cities.

We have started thinking about different modes of transportation, viz., diesel bus, electric trolley bus, battery-powered bus, liquefies natural gas powered bus, surface trains, underground trains, elevated corridors (bus and rail), express cycle tracks and hovercrafts etc. On one side, our concern is to produce electricity for electric traction; both the outputs are difficult. Over all the these, rate of mobility is increasing. Number of passenger trips increases more than the proportionate increase in population. In urban areas, in the next two decades, we have not only to increase the facilities of traffic and transportation by manifolds, not only due to prediction of double the urban population, but also due to more increase in the number of passenger trips.

Traffic and transportation schemes need a lot of investment. So far, there is no comprehensive plan prepared for the entire country. On the basis of Delhi, for which an outline plan of traffic and transportation was prepared, amounting to Rs. 2000 crores, some guess can be made. Like Delhi, there are three more super metropolitan and eight metropolitan cities besides more than 3000 urban settlements along with 5.75 lac rural settlements.

Planning at the National Level

So far only two plans each of 20 years perspective have been prepared by the government: the first is called Nagpur Plan while the second is Bombay Plan. Now a more comprehensive plan should be prepared as detailed out below.

Traffic and transportation for the country is linkages (road, rail, water and air) of different intensities and rights-of-way, between existing and proposed settlements and economic activities within the existing and predicted, socio-economic and physical resources and constraints.

The Plan should be for the traffic which exists today and expected to increase within the next 20 years, showing various modes of transportation, viz, diesel bus, electric trolley bus, battery-powered bus, street car, elevated corridors (bus or train) underground train (metro), hovercraft (air-cushion vehicle), and good carriers etc.

It should be a comprehensive one; showing short-term and long-term proposals; split up over various Five Year Plans in space and economy, integrating plans of all the States and Union Territories, prepared by team of experts namely, economist, civil engineer, landscape architect, town and country planner, architect, headed by a regional traffic and transportation planner; from an institute, may be called "National Institute of Traffic and Transportation Planning."

The Plan should show hierarchy of roads, i.e., express highways, national highways, state highways, district roads, other than district roads and rural roads, with proposed right or ways. This should show linkages between settlements of various orders-national capital, metropolitan cities state capitals; large, medium and small cities; large, medium and small towns; growth centres, growth points and basic villages. In other words, connections amongst all the settlements with a population of 500 and above. The Plan should also show location of various bridges on rivers, canals, railway lines on roads, cloverleafs etc. It should also vive location of transport nagars, terminals and depots.

The plan should be a legal one, but with sufficient flexibility to change it as per demand of the time and availability of resources. It should give details of coordination of various state governments with the centre and with other systems of transport, viz., rail, air and water.

The Traffic and Transportation Plan would have the following components;

1) Creation of a "National Institute of Traffic and Transportation Planning" at the Centre with legal powers of planning (physical and fiscal) of all aspects of traffic and transportation, of the entire country.
2) Formulation of goals and objective.
3) Data collection and creation of a Data Bank in the proposed Institute.
4) Analysis of data.
5) Forecasting of data.
6) Preparation of various maps:
    a) Macro land use showing settlements, forests, mountainous areas, water bodies, major natural and man-made resources.

b) Existing and proposed settlements with population composition.
c) Major economic activities in public and private sector like super power house, super cement plant, oil refineries etc.
d) Major routes, viz., express highways, national highways, state highways, districts roads, other than district roads and village roads.
e) Areas which are not within 3 km of radius from any of the road or rail routes.
f) Areas which have high potentiality for development.
g) Areas which are backward, depressed or empty.
h) Railway networks.

7) Standards and designs for different types of roads, zoning regulations along roads, street-furniture and wayside amenities.
8) Proposals in terms of physical, planning in space with the help of the above seven components.
9) Proposals in terms of economy, receipts and expenditure.
10) Integration of the two proposals and break-up into various Five Years Plans.
11) Changes in legal provisions-modifications to be made in the Land Acquisition Act, for quick and compulsory acquisition of land required for major roads.
12) Review, coordination and monitoring of the Plan.

Problems and Prospects

(1) On the map of the country, settlements look like stars of different intensities, with eight planets and four super planets. All the stars and planets are tied up with the help of traffic and transportation. If we classify these settlements into urban and rural population groups, the position would be as follows:

Population Group	Numbers	Population Group	Numbers
More than	12	10000 and above	1358
1 m	28	5000 to 10000	4974
0.5 to 1 m	61	2000 to 5000	300005
0.2 to 0.2 m	114	1000 to 2000	81973
0.1 to 0.2 m	470	500 to 1000	132990
5000 to 20000 to 50000	738	200 to 500	168561
10000 to 20000	1408	Less than 200	150072
5000 to 10000	741		
Less than 5000	230		

The minimum size of a rural settlement should not be less than 500 and maximum size of an urban settlement not more than 10 million. On the basis of this hypothesis, 318633 settlements can be left out. Other settlements can be grouped into the following three categories.

Growth Centre	:	600
Growth Points	:	1200
Basic Centres	:	244700

(2) As per 1981 provisional census, urban population of the country was 156 million, out of a total population of 658 million. Urban population of the country would swell to 300 million by the end of the century. Great demographers and astrologers are predicting that within 30 to 40 years, urban population of the country may reach 500 million, i.e., the highest in the world. How will people be able to move, when the area will be so thickly populated?

(3) It is unfortunate that India does not have the following plans, even after 34 years of independence of the country. All these plans are very important and as such should be prepared by a team of experts.

-Urban land policy
-Policy of urbanization
-Location of economic activities.
-Spatial physical development plan
-Transport plans of all the cities with a population of one lac and above.

(4) Since 1973, due to the hike in petrol and diesel prices, operation of public and private transport has become a problem. In Delhi alone, the Delhi Transport Corporation suffered a loss of Rs. 30 crore in 1982.

(5) A major share of foreign exchange is being spent on purchasing HSD (High Speed Diesel).

Should Heavy Electricals Ltd., in its report has stated as follows.

“The surface transportation system in our country (bus and rail) is largely dependent on oil as per details given below.

Source of Energy	% age share
-Coal	13.3
-Oil	83.9
-Electricity	2.8

Over the last two decades, electric traction contribution for railways has increased from 3% to 22% and may increase to 50% up to 1990.

The picture in road transportation is, however, different as it entirely depends on oil. The following figures show the consumption pattern of HSD (High Speed Diesel):

Sector	***% age consumption***
- State transport including Municipal transport	10.9
- Other road transport, including Agriculture and retail trade	68.2
- Railways	9.2
- Bunkers	0.8
- Miscellaneous	10.9

All these figures warrant us that design of buses should be based on other forms of energy, i.e., electricity, gas or battery. It should also be borne in mind that generation of electricity is not very easy. For Delhi alone, up to the end of the century, we will be requiring 2500 MW of power against the present availability of 500 MW.

(6) Public mass transport has to be given due weightage not only in metropolitan cities but in other urban areas too. Modal split should be increased to 75%. This is necessary, as energy consumption per person in personal mode of transport is four times than in any public transport.

(7) There should be a study of Cost Benefit Analysis of different modes of public transport, as per details given on the following page.

Public Mass Transport System

Objectives	Origin and destination	Constraints	Elements
(1) Movement of passengers; to reach the destination; within a minimum possible time and resources, with safety and in a non-polluted environment.	Centres of living, working and recreation in a city and its region	Physical, socio-economic resources and affordability of the system by the users and the Govt.	(i) Roads; (ii) Railways; (iii) Waterways; (iv) Airways (v) Different modes of transport -Diesel bus; -Electric -Trolley bus; -Battery-powered bus;
(2) Various planning models:			-Chartered bus;

-For existing parts of city; -For extension of the city; -For new areas and its region for a period of 40-50 years, in such a way, so that the number of trips are minimized, may be by locating economic activities near transport routes, or by some other means.			-Dial-a-bus; -Mini bus; -Street car; -Elevated corridor-bus and train; -Hovercraft (air-cushioned vehicle) -Liquefied Natural gas (LNG) bus; (vi) Cycles; (vii) Intermediate public transport;

(8) Land use is a very important tool to control traffic and transportation. In the plan of New Bombay, a rapid transit route is proposed to run from the centre of each of the sectors. Each sector would have a population of 1 lac, and nobody has to walk more than $3/4^{th}$ of a kilometer to take rapid transit system from any corner of the sector. Due to non-rational planning of electric ring railway in Delhi, it will never take a load of more than 0.64 million passenger trips, against the total passenger trips of 20 million by the end of the century.

(9) Hierarchy of roads:

In the following hierarchy of roads, express highways should also be added:

-National highway
-State highway
-District Roads
-Other than district roads
-Rural roads.

Express highways should either bye-pass a town completely or if that is not possible due to physical constraints then they should be at a higher level. Lanes for regional traffic should be provided at a different level, from that of the local traffic. Lanes for regional traffic can be at +2M level, while for local traffic can be at +0 level.

(10) In the four metropolitan cities of India, underground railways may have to be started. The National Transport Policy Committee (NTPC) examined the economics of underground railways in the metropolitan cities and took a view that the traffic volumes warrant provision of a rapid mass transport rail system, subject to examination of techno-economic feasibility.

(11) Movement of goods is also a big problem. In Delhi alone, by the end of the century., there would be 80,000 goods carriers, small and big ranging from one ton capacity to 10 ton and even bigger constrainers with a various transport nagars. Assuming that 25% of the goods carriers would be parked idle, an area of 320 hect., is required for Delhi.

(12) In all the metropolitan cities, public mass transport has to be based on road as well as railway. It is strongly recommended that a unified single authority should be created for the purpose of coordination, integration, evaluation and monitoring of traffic and transportation of these two modes. The introduction of unified fare system would also favour the users.

(13) In our economy, cycles play an important role, not only in small and medium towns but in large and metropolitan cities too. In Delhi, 25% of passenger trips are performed by cycles.

Express cycle tracks should be planned and constructed on the basis of minimum distance between the point of living and working. This system should be based on safety. i.e., cycle tracks should be separate from vehicular traffic.

(14) Intermediate Public Transport (IPT) is very useful not only to small, medium and large towns, but even in the congested parts of large cities. It is high time that we should innovate our slow moving vehicles, i.e., rickshaws and tongas.

Hand pulled rickshaw or cycle rickshaw should be made semi-mechanised, but not for a speed of more than 15 km. per hour. In Bangla Desh, semi-mechanised rickshaw has already been started.

Bullock-carts and hand-carts should also be made semi-mechanised with a loading capacity of only ½ ton and maximum speed of not more than 8-10 km. per hour.

(15) Whatsoever standards have been formulated are based on western data. It is very necessary to conduct research on the following topics:

-Paying capacity of the user
-Average speed of slow vehicles
-Public mass transport system
-Unified fare system
-Bus terminals
-Trips behavior
-Rate of mobility
-Distribution of trips for various purposes
-Reduction of trip length.

(16) In all metropolitan cities, the amount of unintended growth is more than the quantum of intended growth.

-Why do we call them unintended growth?
-Are we supposed to call them?
-Should we not change our attitude?
-Why do people like informal sector?

All these questions are to be well thought of and then replied.

(17) The policy of traffic and transportation about small and medium towns should be formulated.

(18) Why is there more problem of traffic and transportation in less developed regions of the world? It is due to the reason that

-Rate of growth of total population is more;
-Present population is more;
-Rate of growth of urban population is more;
-Rate of growth of rural population is more
-Migration from rural areas is more than the accommodating capacity of urban areas.
-Urbanisation is proceeding ahead with more speed than industrialization;
-Lack of availability of data and less technical know-now.

(19) During 1971-76, there was no increase in area of arable land. The result was that additional employment could not be created to meet the increased population; as such the trend of migration from rural pockets to urban areas remained there.

(20) Traffic and transportation problem can be dealt with in the following two ways:
-Reduce the demand;
-Increase the supply;

Demand can be reduced by planning work centres near the living areas. This can be done at least in the new settlements.

-Build industries in outlying areas;
-More production closure to raw material;
-Development of ring towns, priority towns and counter-magnets;
-Raise the status of backward regions;
-Develop rural areas.

(21) Lack of preparation of comprehensive and integrated plan. Very few state governments have prepared detailed comprehensive plans of traffic and transportation, integrating various annual and five year plans into a 20- years perspective plans. In the Master Plans of most of the towns and cities, only one chapter is added for traffic and transportation, showing existing and proposed rights-of-way, centres of economic activities, transport centres etc.

At the central level, a comprehensive integrated plan should be prepared by National Institute of Traffic and Transportation (to be constituted).

(22) Lack of research institutions. In the country there are only a few research institution like Central Road Research Institute, India Road Congress etc., dealing with only a part of the problem. It is high time to start a research institute at the central level, which may be called "National Institute of Traffic and Transportation.

(23) While solving any traffic and transportation problem, the following four E's should be taken into account;

-Efficiency
-Energy
-Environment
-Equity

(24) To solve the problem of traffic and transportation, different sources of funds should be tackled. So far, we are depending upon Government funds. Beneficiaries and Development Agencies should also be tackled to meet the demand.

(25) Problems of public mass transport authorities are enormous. Some of these are mentioned below:

- Forty per cent of the total expenditure goes in the management of the staff.
- Since 1973, fuel price has increased manifolds, but fares are the same.
- Political instruments have become strong and many times buses are diverted as per their will.
- There is always lack of bus depots of bus terminals.
- Life of buses is also less due to more load.

(26) There should be modifications in the Land Acquisition Act. Whenever there is a case of acquisition of land for trunk services/infrastructure, i.e., water-supply, sewerage, drainage, power, telephone lines, major roads, rail lines, flyovers, roadovers and underbridges, water treatment plants, sewage disposal plant etc., the following steps should be followed.

(a) Section 4, 6 and 17 of Land Acquisition Act should be applicable at a time irrespective of whether the area is lying vacant, has built-up structures or fake religious buildings.

(b) In such cases, the entire process of survey planning, taking over possession of the land and payment of compensation etc., should not take more than six months.

(c) Once a plan of trunk infrastructure/important facilities is finalized and approved, then these services should be demarcated on the site with stone pillars. Due publicity should be given with the help of location plans, the situation and does not squat/encroach on the land earmarked for these facilities. It has been seen that many of the unauthorized colonies have come up in green areas or in pockets required for trunk infrastructure due to non-availability of information to the public. It is important that there is active public participation.

(d) Alternate allotment, may be in terms of developed plots or built-up flats, should be made to the affected families, whose lands are being acquired, within s period of six months from the date of notification of section 4, 6 and 17 of Land Acquisition Act.

(e) Amount of compensation to be paid to the party should be adjusted in the alternate allotment of plot/built-up tenements to be made.

(f) Alternate allotment should be made to the tenants also, subject to the other necessary conditions.

(g) Cost of alternate allotment of developed plots or built-up flats should be charged to the project of laying trunk infrastructure.

(27) There should be a proper co-ordination, integration, evaluation and monitoring with the authorities/organizations/departments concerned with the following subjects.

-Acquisition of land;
-Alternate allotment of land to the affected families;

-Protection of land;
-Planning of routes; alignment plans, intersection design, road-overbridge, road-under-bridge, cloverleaf,, ISBT, transport nagars, railways and various circulation plans.
-Construction of infrastructure;
-Inflow and outflow of resources;
-Shifting of services namely, water lines, sewer lines, drains, electric lines, telephone lines, gas lines.
-Shifting and replantation of trees;
-Arrangement of buses for special functions;
-Improvement of infrastructure;
-Maintenance of infrastructure;
-Design of street furniture;
-Enforcement of the traffic;
-Scientific study of feedback system.

PLANNING OF

SHELTER INFRASTRUCTURE AND SERVICES

SHOULD BE BASED ON

PHYSICAL INDICATORS

SOCIAL INDICATIORS

STATUUS OF THE AREA

SPACE STANDARDS

COST ASPECTS

OTHER MISCELLANEOUS FACTORS

CHAPTER 15

Shelter, Infrastructure and Services

Introduction

The standard of life may be measured by the availability of quantity and quality of shelter, infrastructure and services. One of the main objectives of settlement policy should be to make these facilities available up to an acceptable standard to the needy ones, within a reasonable span of time. In any country, social justice would depend upon the system of distribution of these facilities with regard to type, size, status and liking of the people. In any economy this is very important, as 60% to 70% of the total investment goes to the shelter, infrastructure and services.

The need for shelter, infrastructure and services is always more than the capacity of any public authority in any part of the country; and demand is always dominating the supply, the result being that a substantial part of population resorts to unauthorized construction and *Jhuggi Jhompries* and shares accommodation with others.

Recommendations Mode by the United Nations Conference in June, 1976

-Shelter, infrastructure, and services should be planned in an integrated way and provided in the sequence appropriate to circumstances.

-In meeting essential human needs the provision of shelter, infrastructure and services must be geared in achieving the over-all objects of National Development.

-Standards for shelter, infrastructure and services should be compatible with local resources, to be evolutionary, realistic, and sufficiently adaptable to local culture and conditions, and to be established by appropriate government bodies.

-The choice of designs and technologies for shelter, infrastructures and services should reflect present demands while being able to adapt to future needs and make the best use of local resources and skills and be capable of incremental improvement.

-The efficient utilization of energy and its various mixes, should be given special consideration in the choice of designs and technologies for human settlements, especially the relative location of work places and dwellings.

-In choosing alternatives for shelter, infrastructures and services account should be taken of their social, environmental and economic costs and benefits including that of future management, maintenance and operations and well as capital costs.

-The special importance of the construction industry should be recognized by every nation and the industry should be given the political, financial and technical support to attain the national objectives and the production targets required for human settlements.

-The informal sector should be supported in its efforts to provide shelter, infrastructure and services, especially for the less advantages.

-National housing policies must aim at providing adequate shelter and services to the lower income groups and distribution of available resources on the basis of greatest needs.

-A major part of housing policy efforts should consist of programmes and instruments which actively assist people in continuing to provide better quality housing for themselves, individually and collectively.

-Infrastructure policy should be geared to achieve greater equity in the provision of services and utilities, access to places of work and recreational areas, as well as to minimize adverse environmental impact.

-Safe water supply and hygienic waste disposal should receive priority with a view to achieving measurable qualitative and quantitative established by all nations and should be considered by the forthcoming United Nations Conference on Water.

-In the development of human settlement the quality of the environment must be preserved. Pollution should be prevented by minimizing the generation of wastes. Wastes which cannot be avoided should be effectively managed and whenever possible turned into a resource.

-Policies on transportation and communication should promote desired patterns of development to satisfy the needs of the majority of the population, to assume the distribution of activities to favour mass transportation and to reduce congestion and pollution by motor vehicles.

-The provision of health, nutrition, education, security, recreation and other essential services in all parts of the country should be geared to the needs of the community and

receive an effective priority in national and development planning and in the allocation of resources.

-Governments should develop new criteria for integrated rural planning to enable the greatest possible number of scattered and dispersed rural settlements to derive the benefit from basic services.

-Government should concentrate on the provision of services and on the physical and spatial reorganization of spontaneous settlements in ways that encourage community initiative and link "marginal" groups to the National Development process.

-National government should co-ordinate and co-operate with the efforts of local and regional authorities and organisations in the planning development and implementation of leisure and recreational facilities and programmes for the physical, mental and spiritual benefit of the people.

Planning of Shelter, Infrastructure and Services

Housing is a resultant of shelter, infrastructure and services. Housing does not mean only construction of houses for different income groups along with internal and external infrastructure; but development of parks, playgrounds, open spaces, buildings of various community facilities and shopping centres of different hierarchy are also part of it. In short, we can say that housing is complete system of a neighbourhood having all the facilities of day-to-day needs.

Levels of shelter, infrastructure and services are measured by the following components.

(1) Physical indicators
(2) Social indicators
(3) Status of an area
(4) Space standards for different indicators
(5) Cost aspects of the construction
(6) Other miscellaneous factors.

(1) PHYSICAL INDICATORS

i) Electrical poles, electric pylons, overhead electric wires, underground electric wires, traction system for electric trolley buses, electric trams and electric trains.
ii) Telephone poles, public telephone booths.

iii) Tree plantation along roadsides, landscaping of roundabouts, landscaping of channelisers, landscaping of footpaths along roadsides.
iv) Dustbins, *dhalaos*, garbage depots, vehicles for collection garbage and compost plants.
v) Bus queue shelters, bus depots, bus terminals,
vi) Street furniture, road sings, street numbering, hoardings, painting of roads, zebra crossing, neon signs, different types of advertisements on various parts of the structures.
vii) Street lighting on different roads of different intensity and special illuminations at different intersections.
viii) Milk bars and milk booths.
ix) Car parking, scooter parking, rickshaw parking, slow vehicle parking, taxi stands, including booth and fare boards.
x) Public toilets and conveniences.
xi) Covering of *nallahs*, design of railing.
xii) Control on noise pollution, smoke and vibration.
xiii) Control on nuisance of non-conforming and incompatible uses.
xiv) Speed breakers and their painting.
xv) Aesthetics of public buildings, including shopping centres.
xvi) Sculpture places at suitable locations along with water fountains, water boats and other attractive features.
xvii) Overhead tanks, underground water tanks, oxidation pounds, water treatment plant and sewage treatment plant.
xviii) Tree-guards.
xix) TV centres.
xx) Guide maps at different important places.
xxi) Cleanliness of surroundings of historical monuments.
xxii) Cleanliness of surroundings of historical monuments.
xxiii) Development of parks, playgrounds, open spaces along with beautiful railings, sitting benches, tree plantation etc.

(2) SOCIAL INDICATORS

Assuming population of a settlement as 100,000, the following number of facilities are required:

(i) 20,000 Dwelling units.
(ii) One college, 13 higher secondary schools, 20 primary schools 50 nursery school, 5 adult education centres, 2 library-cum-community halls, 2 TV centres.

(iii) One general hospital of 250 beds, 4 dispensaries, 1 maternity-cum-child welfare centre.
(iv) One police station and 4 police posts.
(v) One telephone exchange, 1 general post office and 2 small sub-post officers.
(vi) District courts.
(vii) Overhead tank of 50 lakh gallon capacity.
(viii) Sewage disposal plant of 40 lakh gallon capacity.
(ix) One town centre, 2 community centres, 7 local shopping centres, and 20 convenient shopping centres.
(x) Two clubs and one swimming pool.
(xi) A town park, 4 zonal parks and 12 local parks.
(xii) Electric power- 3 to 5 MW.
(xiii) Flood drains according to requirements.
(xiv) Six milk booths.
(xv) One compost plant, 4 garbage collection centres and 20 dhalaos.
(xvi) Fifty buses for mass transportation along with queue shelters and four bus terminals.
(xvii) Four petrol filling stations and 4 filling-cum-service stations.
(xviii) A small inter-state bus terminus.
(xix) A small transport centre.
(xx) A big ground for festivals, fairs and other public gatherings.
(xxi) A zoo, aquarium or an art gallery.

(3) STATUS OF AN AREA

(i) Unauthorised colony
(ii) Slum area
(iii) *Jhuggi* cluster
(iv) Resettlement colony
(v) Urban village
(vi) Rural village
(vii) Private housing
(viii) Public housing
(ix) Government staff colony

(4) SPACE STANDARDS FOR DIFFERENT INDICATORS

a) Built-up areas for different types of house:
-Community services personnel and EWS of the society = 18 sq. mt.

-LIG = 40 to 60 sq. mt.
-MIG = 70 to 100 sq. mt.
-HIG = 120 to 200 sq. mt.

b) Size for residential plots:

-Community service personal and economically weaker section of the society = 21 to 30 sq. mt.
-LIG = 30 to 90 sq. mt.
-MIG = 120 to 180 sq. mt.
-HIG = 200 to 500 sq. mt.

c) Size of different types of built-up shops viz. 10 sq. mt.; 15 sq. mt.; 20 sq. mt.; 30 sq. mt. and 60 sq.mt.

d) Size of plot for various community facilities:

-College	=	4 hect.
-Higher secondary school	=	1.5 to 2 hect.
-Primary school	=	0.6 to 0.8 hect.
-Nursery school	=	0.1 to 0.2 hect.
-General hospital	=	4 to 6 hect.
-Dispensary	=	0.5 to 1 hect.
-Police station	=	1 to 1.5 hect.
-Police post	=	0.2 to 0.4 hect.

e) Roads

-National highway	=	90 mt.
-Major arterial roads	=	75 mt.
-State highway and arterial roads	=	60 mt.
-Major roads	=	30 mt. and 45 mt.
-Sector roads	=	18 mt. and 24 mt.
-Approach roads	=	9 mt. and 13.5 mt.
-Pedestrain walk ways	=	3 mt. and 5 mt.

f) Services :

-Water supply at the rate of 15 gallons per day per capita to 80 gallon per day per capita.
-Sewage disposal 12 gallons per day per capital to 64 gallons per day per capita.
-Storm water drain would depend upon the local conditions.
-Power per day per capita, would depend upon the status of the town.
-Telephone connections – 10 connections per thousand population.

(5) COST ASPECTS

This would mostly depend upon the construction of houses for different income groups. A study of low cost housing was made in 1975 and details are given in the Appendix attached to the chapter. This study is based on 13 types of LIG houses; 16 types of EWS houses and five types of village houses. Data has been given in terms of following aspects.

(i) Sponsoring agency.
(ii) Plinth area of one DU in sq. mt.
(iii) Total cost of construction of a structure in rupees.
(iv) Cost of construction per sq., mt. in rupees.
(v) Cost reduction than in a normal traditional construction in terms of percentage.
(vi) Density in terms of dwelling units per hectare.
(vii) Cost of land per DU at the rate of Rs. 1 lakh per hectare.
(viii) Cost of development of land per DU at the rate of Rs. 2.5 lakh per acre.
(ix) Administrative/supervision charges at the rate of 10% of the total cost.
(x) Total cost of a dwelling unit in rupees.
(xi) Cost of a dwelling unit per sq. mt. including all expenditures in rupees.

(6) OTHER MISCELLANEOUS FACTORS

Assessment of building materials: One of the main constraints in the construction of a house is the availability of building materials, specially bricks, cement and steel, Government/public authorities should open building material banks for supplying the building materials to private individuals at low cost, in different localities of the settlements.

Technical knowhow: This is also ne of the main hurdles in the construction of private houses. Alternatives can be provided by supplying type designs, if not to everybody, at least for standard siz, namely, 21 sq. mt. , 30 sq. mt., 40 sq.mt., 60 sq.mt., 120 sq.mt., and 150 sq.mt. These designs should be made availableat a very cheap rate to the users, and permission should be given to construct houses as per these designs without going into formalities of sanction of building plans, D-Form C-Form and Completion Certificate etc.

Standard specifications should also be worked out by the government authorities and published from time to time for the use of beneficiaries. This would make the houses simpler, aesthetically better, easier in construction etc.

APPENDIX

COMPARATIVE STATEMENT OF LIG HOUSING CONSTRUCTED ON LOW COST DEMONSTRATION HOUSES AT BER SARAI; IN

Sponsoring agency	*Plinth area of one DU (in sq.mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. Per sq.mt. (in Rs.)*	*Cost reduction than in a normal traditional constn. (in % age)*
1	*2*	*3*	*4*	*5*

(1) Specifications:

-*Foundation and plinth*: Brick work in lime mortar over line.
-*Flooring*: 25 mm thick 1:2:4 cement concrete near cement finished.
-*Walling*: One brick thick and half brick thick walls with necessary.
-*Roofing*: Precast channel units and RCC slab, mud phuska and
-*Doors and windows*: (a) Angle iron frame for doors and windows.
-*Finishing*: (a) Inside cement lime plaster 1:2:9 only in walls, no
-*Staircase*: Open staircase with 75 mm thick precast slab and risers DDA (Main) City-

Plg. Unit. 37.58 10080 270 21.6

(2) Specifications:

-*Foundations*: 2nd class brick work in 1:1:2 (1 lime ; 1 flyash: 2
(1 *cement*: 2.5 flyash: 4 sand : 11 aggregate), the depth of founda-
-*Walling*: 23 cm thick 2nd class brick work in 1:1:2 (1 lineL1
-*Roofing*: Channel units, haunches filled with cement concrete.
Flooring: 25 mm thick cc floor over a bed of 100 mm sand and
-*Other items*: Flush pointing with lime surkhi mortar 1:2 on exter`-

NBO, New Delhi 41.5 11000 265 23.0

BY DIFFERENT ORGANISATIONS IN THE EXHIBITION HELD TERMS OF COST OF CONSTRUCTION DENSITY ETC., IN 1975

Density (DU's per hect.)	*Cost of dev. Of land per DU@ Rs. 2 lakh per acre (in Rs.)*	*Cost of land per DU @ Rs.1 lakh per hect. (in Rs.)*	*Administrative/ supervision charges @10% on dev. And constn. Per DU (in Rs.)*	*Total cost of a DU (3+7+8+9+10) in Rs.*	*Cost of DU. Per sq. mt. including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

Concrete bed.
Over a bed of lime concrete and sand filling.
Pillars in lime mortar.
Brick tile terracing.

(b) 2nd. Class battened and braced kail wood shutters for doors and glazed shutters for windows.
Plaster outside (b) While washing inside on walls and ceiling (c) Frames and shutters of doors and windows painted.
With brick masonry.

181 1390 533 147 13170 347

Sand) in foundation and plinth over a 15 cm bed of flyash concretion 1:2:5:4:11.
Being 500 mm and height of plinth 250 mm. flyash : 2 fine sand) in superstructure.
Brick tiles over mud and phuska over a bed of 100 mm sand and 75 mm lime concrete.
75 m lime concrete. Nal face and 12 mm thick lime sand plaster 1 :1:2 inside. Doors and windows of treated mango wood and painted.

89 2809 1124 336 15269 364

Sponsoring agency	*Plinth area of one DU (in sp. Mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. Per sq. mt. (in Rs.)*	*Cost reduction than in a normal traditional constn. (in % age)*
1	*2*	*3*	*4*	*5*

(3) Specifications:

-*Foundations :* 75 mm cement concrete 1:4:8 over hard core bed of
-*Walling :* 'Castone' Panels jointed with nuts and bolts with insula-
-*Flooring* : I.P.S. flooring 25 mm thick over 50 mm base of lean
-*Finishing* : Inside white wash, outside waterproof paint.
-*Doors and windows* : Secondary species of hard wood.

Bombay Chemicals Pvt. Ltd.	44.31	12846	281	18.6

(4) Specifications :

-*Foundations*: Lime concrete and brick work in lime mortar.
-*Walling*: Brick work in cement-flyash mortar. 12 cm. thick Z shaped
-*Roofing*: Doubly curved precast shells and cement concrete (1:2:4)
-*Flooring*: 20 mm thick cement concrete 1:2:4 over lime concrete.
-*Finishing*: inside and outside plastered with cement-flyash-sand.
-*Wood work*: Kail wood side frames, kail wood paneled shutters

Central Public Works Deptt., New Delhi	42.00	12050	288	16.5

(5) Specifications:

-*Foundations*: Lean concrete 1:8:16, Brick masonry to be laid in

-*Walling:*

Unit A (G. Floor) : Lime sand flyash hollow block masonry.
Unit B (F. Floor) : Lime sand flyash hollow block masonry.
Unit C (G. Floor) : Half brick wall with pilasters.
Unit D (F. Floor) : Half brick wall with pilasters.

Intermediate Floor / Roofing:
Unit A (G. Floor) : 40 mm thick cement concrete 1:2:4 laid over.

Density (DU's per hect.)	*Cost of dev. Of land per DU@ Rs. 2 lakh per acre (in Rs.)*	*Cost of land per DU@ Rs. 1 lakh per hect. (in Rs.)*	*Administrative/supervision charges @ 10% on dev. and constn. Per DU (in Rs.)*	*Total cost of a DU (3+7+8+9) in Rs.*	*Cost of DU per sq. mt. including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

Shingle and sand 75 mm thick with precast block masonry in concrete mortar (CM) 1:5.
tion blocks on ext. walls.
Con. 1:4:8
Concrete.

127.5 1961 116 1481 16404 373

Walls with pilasters.
Filling on top, bitumen painting, gobri plaster 25 mm and brick tiles.

Mortar.
And kail wood battened shutters (Machine made).

160 1688 839 1374 15971 380

CM 1:10.

Precast RCC channel units.

Sponsoring agency	*Plinth area of one DU (in sq. mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. per sq. mt. (in Rs.)*	*Cost reduction than in a normal traditional constn. (in %age)*
1	*2*	*3*	*4*	*5*

Unit B (F. Floor): Lime flyash cellular slab. Joints treated with
Unit C (G. Floor): 50 mm precast slab laid over RCC battens.
Unit D (F. Floor) : Foam concrete 1:3:6 (*vayutan*) slabs jointed
-Flooring: 25 mm thick cement concrete 1:2:4 over a base of dry

Hindustan Housing Factory.
Ltd. New Delhi. 38.46 11360 295 18.6

(6) Specifications:

-Foundations: As the vertical joints occur at every metre, bored at 1 m centres for foundations with a capping beam of 8 cm thick.
-Walling: 100 X 320 cm cel-con panels with vertical joints to be the pile reinforcement.
-Flooring: Brick jelly concrete in lime mortar with top layer of 2
-Roofing: Reinforced cel-con panels as for walling with 4 cm thick.
-Finishing: If the celcrete facing is placed, outside plastering can.
-Doors and windows: Conventional type, with frame to be cast Tamil Nadu Housing Board,
Madras 39.13 10430 267 22.5

(7) Specifications:

-Foundations and plinth: Brick work in lime mortar over lime con.
-Flooring: 25 mm cement concrete 1:2:4.
-Walling: Brick work in lime mortar.
-Roofing: RB Slab with mud phuska and brick tiles.
-Doors and windows:
(1) Angle iron frames for doors and windows.
(2) Second class kail wood battened and braced shutters for doors.
(3) Brick jail in bath and WC.
(4) No plaster outside, 15 mm thick cement lime plaster inside the DDA (Housing Wing)

46.00 15000 327 5.2

Density (DU's per hect.)	*Cost of dev. of land per DU@ Rs.2 lakh per acre (in Rs.)*	*Cost of land per DU @ Rs. 1 lakh per hect. (in Ks.)*	*Administrative/supervision charges @ 10% on dev. and constn. per DU (in Ks.)*	*Total cost of a DU (3+7+8+9) in Rs.*	*Cost of DU per sq. mt. including ail expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

Bitumen.
Resting on pilasters.
With 1:2:4 C.C.
Brick bats.

140 1643 342 1300.3 14645 385

Piles with normal reinforcement of 15 cm dia and 1.5 m depth are provided at ground level.
Filled in cement concrete with nominal reinforcement which is connected to
Cm thick in CM 1:4.
Of weathering course and a layer of brick tiles for water-proofing.
Be avoided.
Along with wall panels if necessary.

85 2941 1176 1337 15884 404

Crete bed.

And glazed shutters for windows.

Rooms.
150 1666 667 1500 18834 405

Sponsoring agency	*Plinth area of one DU (in sq.mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. per sq. mt. (in Rs.)*	*Cost reduction than in a normal traditional constn. (in % age)*
1	*2*	*3*	*4*	*5*

(8) Specifications:

-Foundations: 150 mm thick brick jelly concrete with 40% of lime being 800 mm and height of plinth 300 mm.
-Walling: 230 mm thick 2nd class brick masonry in lime surkhi
-Roofing: 4 cm thick precast RCC funicular shells with filling
-Flooring: 25 mm thick cement concrete over a base of 100 mm mortar 1:1:1 i.e., (1 lime : 1 flyash: 1 fine sand), 35 mm thick in
-Other works: Inside surfaces to be plastered and outside to be

National Building Construction Corporation Ltd.,
New Delhi 40.00 12430 311 9.5

(9) Specifications:

-Foundations: Brick jelly lime concrete 1:5:12.5 and brick masonry
-Walling: Brick work 23 cm thick in cement flyash mortar 1:1.25:5
-Flooring: 18 mm thick flyash cement mortar 1:1.25:5 finish, over
-Roofing: Reinforced concrete slab using waffle shells 2 cm thick cms thick level screen Weathering course using brick jelly lime
-Finishing: Plastering inside with cement flyash mortar 1:1.25:5,
-Doors and windows: M.S. Chowkhats, deodar wood with plywood

Structural Engineering Research Centre,
Madras 39.93 12740 330 7.0

(10) Specifications:

As per soil conditions, ordinarily nominal foundations foundation.
-Walling and roofing: Hollow clay blacks shell superstructure in or "Llyods" waterproofing compound over the external joints or
-Flooring: 75 mm thick cement concrete.
-Other items: Conventional, no plastering inside or outside is vided. Doors and windows are to traditional practice.

Shellcons, Madras 39.00 11340 291 15.7

Density (DU's per hect.)	*Cost of dev of land per DU@ Rs.2 lakh per acre (in Rs.)*	*cost of land per DU@ Rs. 1 Lakh per hect. (in Rs.)*	*Administrative/supervision charges @ 10% on dev. and constn. per DU (in Rs.)*	*Total cost of a DU (3+7+8+9) in Rs.*	*Cost of DU per sg. Mt. including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

Mortar 1:1:1 i.e., (1 lime putty: 1 flyash: 1 fine sand), depth of foundation mortar 1:1:6., (1 lime: 1 surkhi: 6 fine sand).
Haunches in RCC 1:2:4.
Fine sand and 15 mm lime concrete with brick ballast and 40% of lime bathrooms.
Painted both in lime surkhi mortar 1:1:6 with white washing inside and colour including painting.

72.5 1000 1369 1343 16142 407

In cement flyash mortar 1:1. 25:5. DPC 25 mm thick in CM 1:3.
(1 cement: 1.25 flyash: 5 and).
Brick jelly cement concrete 1:5:12.5.
In M 150 concrete (1 cement: 0.34 flyash: 2.40 sand: 5.1 aggregate) with 2.5 concrete with a layer of tiles.
Outside painting.
Panel shutters.

105 2381 952 1512 17585 426

Is sufficient. Height of plinth 300 mm brick masonry in CM 1:6 in cement mortar.
Waterproofing will be effected by the application of 'Jelsil' by laying leaf flat 'de-aired' tiles over the shell.

Required. Instead of wooden window hollow clay blocks jail can be pro-

72 3472 1389 380 16581 430

Sponsoring agency	Plinth area of one DU (in sq. mt.)	Cost of structure (in Rs.)	Cost of constn. per sq. mt. (in Rs.)	Cost reduction than in a normal traditional constn. (in %age)
1	2	3	4	5

(11) Specifications:

-Foundation: The foundation shell be with base concrete 1:8:16, crete. D.P.C. 12 mm thick in CM 1:4 painted with bitumen
-Walling: 23 cm thick 2nd class brick work and half brick walls in
-flooring: 25 cm thick cement concrete flooring 1:2:4 over a base channel units.
-Roofing: Precast RCC channel units, RCC solid planks, mud
-Finishing: Plastering and pointing in cement sand mortar 1:7, no
-Door and windows: Secondary species of timber for shutters. M.S. Central Building Research Institute,

Roorkee. 42.15 12690 301 12.8

(12) Specifications:

-Foundations: Open trench foundation over a bed of 300 mm thick
-Precast stone block masonry in lime mortar.
-Roofing: 75 mm thick stone slab roof with 90 mm lime tracing
-Flooring: 38 mm thick cement concrete flooring.
-Other Items: Window and door shutters in Novateak particle- 20 mm thick lime plaster and 25 mm thick lime sand plaster on Rajasthan Housing Board,
Jaipur 40.60 11100 274 20.5

(13) Specifications:

-Foundations: Lime concrete and brick w3ork in lime mortar.
-Walling: One brick and held brick thick walls in lime mortar.
-Roofing: 75 mm thick RC slabs reinforced with welded mesh and
-Flooring: 20 mm thick cement concrete 1:2:4 over 75 mm thick
-Finishing: Inside lime cement (1:2:9) plaster, outside no plaster.
-Wood work : Kail wood frames for doors windows. Battened and where.

Central Public
Works Department,
New Delhi 41.00 13340 325 6.00

Denesity (DU's per hect.)	*Cost of dev. of land per DU @ Rs. 2 lakh per acre (in Rs.)*	*Cost of Land per DU @ Ks.1, lakh per hect. (in Rs.)*	*Administrative/supervision changes @10% on dev. and constn. per DU (in Rs.)*	*Total cost of a DU (3+7+8+9) in Rs.)*	*Cost of DU per sq. mt including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

15 cm thick with second class burnt brick walls raised from the lean con-80/100.
1 cement: 7 sand.
Of lean conc. 1:8:16. The intermediate flooring to be directly over precast

Phuska with tiles.
Plastering on ceiling; white/colour washing and painting.
Angle iron frames. No frames for WC, bath and kitchen.

95 2532 1053 1532 17907 440

Lime concrete.

Over it.

Board with RCC frame. Exterior doors further have commercial veneer. Walls. Raised or cut pointing.

66 3788 1515 1489 17892 447

Laid to slope, with a coat of bitumen impregnated with sand. Bed of lime concrete.

Braced kail wood shutters in WC and bathroom. Pannelled shutters else-

85 2941 1176 1337 15884 404

RURAL

Sponsoring agency	*Plinth area of one DU (in sq. mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. per sq. mt. (in Rs.)*	*Density (DU's per hect.*
1	*2*	*3*	*4*	*5*

(1) Specifications:

-Foundations: Lime concrete in foundation 15 cm thick; depth of
-Walling: 230 mm thick burnt brick work in foundations and mortar.
-Roofing: Tiled roofing over bamboo rafters and split bamboo
-Flooring: Rammed earth with mud plaster and gobri leaping.
-Other items: Inside surface to be mud plastered with gobri leaping windows made of local wood (battened and braced).

Rural Housing Wing
West Bengal 22.00 2620 119 50

(2) Specifications:

-Foundations: Depth of foundation 300 mm and width 600 mm. only.
-Walling: 230 mm thick burnt brick masonry in mud mortar.
-Flooring: Mud-gobri leaping in floors over consolidated earth.
-Roofing: In rooms 40 mm thick stone slab roof in cement mortar roof for cooking verandah. Bath and WC are open to sky.

-Other items: 100 mm thick honey comb brick jail in window

Rural Housing Wing, New Delhi	24.60	3430	139	37

(3) Specifications:

-Foundations: Depth of foundation 600 mm and height of plinth
-Walling: 230 mm thick brick masonry in mud (Actually used)
-Flooring: Mud flooring with cow dung leaping.
-Roofing: Tiled roof over local wood and split bamoo battens.
-Other works: Both inside and outside surfaces to be pointed in been made for bath and /or WC.

Rural Housing Wing, Vallabh Vidya Nagar, Gujarat	25.12	3200	127	60

HOUSING

Cost of dev. of land per DU excluding land@ Rs. 1.25 lakh per hect.	*Cost of land per DU@ Rs. 2 lakh per hect. (in Rs.)*	*Administrative supervision charge @ 10% on dev. do constn. /per DU (in Rs.)*	*Total cost of a DU (3+6+7+8) in Rs.*	*Cost of DU per sq. mt. including all expenditure*
6	*7*	*8*	*9*	*10*

Foundation 600 mm; plinth 450 mm.
Plinth in mud mortar. Superstructure walls in split bamboo *jaffri* with mud

Battens.

And outside mud plastered with husk and white washing inside. Doors and

275	1000	287	4180	190

Base comprises of burnt brick bats in mud mortar. Height of plinth is 150 mm

1:4 over sal wood joists with provision for mud *phuska* and tiles. Thatched and mango wood shutters for doors without framework.

3716 1351 377 8874 240

300 mm; 150 mm of cement concrete 1:6:12 with brick ballast. Burnt bricks).

Concrete mortar (CM), wood work to be in local wood, no provision has

2293 833 352 6678 267

Sponsoring agency	Pliinth area of one DU (in sq. mt.)	Cost of structure (in Rs.)	Cost of constn. per sq.mt. (in Rs.)	Density (DUs) per hect.
1	2	3	4	5

(4) Specifications:

-Foundations: Economical foundation in boulder with sand filling (depth of foundation 450 mm), plinth 230 mm.
-Walling: Burnt bricks or stabilized soil bricks for external 230 mm (Actually used burnt bricks due to non-availability of sun-dried
-Flooring: Gravel bed plastered in cement mortar.
-Other works: Inside plastering with mud mortar and outside thick BS slab lintels.

Rural Housing Wing,
Bangalore 26.00 4580 176 34.5

(5) Specifications:

-Foundations: Second class brick work laid in mud mortar over a cast in situ at optimum moisture content.
-DPC: It consists of 2 layers of burnt bricks soaked in 2 per cent
-Walling: 230 mm thick second class burnt bricks laid in mud
-Flooring: Rammed earth with mud plaster and *gobri* leaping.
-Roofing: One layer of tiles 40 mm thick laid in CM 1:3 covered on top and supported on wooden battens and R.S.J. rafters.
-Finishing: All the external walls to be exposed brick with lime with 3 coats of white washing.
-Doors and windows: Doors to be of 25 mm thick local wood
Rural Housing Wing,
Chandigarh 24.00 3090 129 46

Note: (1) The cost of each house has been estimated on the basis.

(3) The cost included the cost of internal water supply,

Cost of dev. of land per DU excluding land @ Rs. 1.25 lakh per hect.	Cost of land per DU@ Rs. 2 lakh per hect. (in Rs.)	Administrative supervision Charge @ 10% on dev. & constn/per (DU Rs,)	Total cost of a DU (3+6+7+8) in Rs.	Cost of DU per sq. mt. including all expenditure
6	7	8	9	10

Up to ground level and one course of size stone in mud above ground level

Thick walls and for load bearing walls. Unburnt bricks for internal walls bricks in mud mortar).

Pointing with cement mortar 1:6, wood work with jungle wood with 100 mm

1000 1431 503 7554 290

Base of 230 mm thick stabilised soil containing 5 per cent lime as stabilizer soap solution laid in lime and mortar 1:2.

Mortar and partition walls to be 115 mm thick laid in lime sand mortar 1:2, with 10 cm mud and 12 mm non-erodable mud plaster on internal walls shutters braced and battened. Window openings to have brick *jail.*

2989 1087 340 7506 313

Of CPWD, Delhi Schedule of rates 1974 with 15% enhancement. Sanitation installation and internal electrifications.

ECONOMIC WEAKER

Sponsoring agency	*Plinth area of one DU (in sq.mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. per sq. mt. (in Rs.)*	*Cost reduction than in a normal traditional constn. (in %age)*
1	*2*	*3*	*4*	*5*

(1) Specifications

-Foundations: Cement lime sand and metal base with brick work.
-Walling: Brick work in combination mortar using rate trap bond
-Roofing: Brick shell vaulting with necessary reinforcement.
-Flooring: Brick paving.
-Finishing: No plastering. Brick facing finished side by side with
-Doors and windows: Slit opening in walls to serve as windows.

Government of Kerala 27.5 3790 164 52.00

(2) Specifications

-Foundations: Open trench foundation over a bed of 300 mm thick
-Walling: Precase stone blocks masonry in lime mortar.
-Roofing: 75 mm thick stone slab roof with 90 mm lime terracing
-Flooring: 25 mm thick cement concrete flooring over 10 cm soling
-Other Items: Windows in honey comb brick work. Doors shutters in cement sand mortar. Stone slab for lintels.

Rajasthan Housing Board,
Jaipur 22.70 3790 164 52.00

(3) Specifications

-Foundations: Brick work in lime mortar over lime concrete bed.
-Flooring: Brick on edge laid on sand filling (cement pointed).
-Walling: One brick thick cavity wall and half brick thick walls
-Roofing: (a) 2 units: 40 mm Agra stone slabs supported on RCC
(b) 2 units: precast RCC T. Sections laid to slope.
-Doors and windows: (a) Angle iron frame for doors 2nd. Class kail

(b) Glazed window shutters centre pivoted.

SECTION

Density (DU's per hect.)	*Cost of dev. of land per DU @ Rs. 2 lakh per acre (in Rs.)*	*Cost of land per DU @ Rs. 1 lakh per hect. (in Rs.)*	*Administrative/supervision charges @ 10% on dev. and constn. per DU (in Rs.)*	*Total cost of a DU (3+7+8+9) in Rs.)*	*Cost of DU per sq. mt. including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

And half brick walls.

Necessary work.
Minimum number of doors (frameless) with local timber. No internal doors.

10 2500 1000 309 69940 244

Lime concrete.

Over it topped with 50 mm CC 1:3:6.
With stone.
Of 2nd. Grade wood without frame work. Pointing on block stone masonry

117 2137 855 258 1740 251

With necessary pillars in lime mortar.
Precast joists with mud phuska and tiles.

Wood battened and braced door shutters.
Without frame.

Sponsoring agency	*Plinth area of one DU (ie sq. mt.)*	*Cost of structure (in Rs.)*	*Cost of constn. per sq. mt. (in Rs.)*	*Cost reduction than in a normal traditional constn. (in %age)*
1	*2*	*3*	*4*	*5*

-Finishing: (a) No Plastering for inside and outside except bath inside on walls only. (c) Frames and shutters of doors and DDA, (Main),

23.38	5760	(a)	247	(a)	28.5
		(b)	205	(b)	40.00

(4) Specifications

-Foundations: Stepped foundations in first class brick work in 1:6 plinth 300 mm.
-Walling: Prefabricated brick wall panels (unreinforced) in CM internal sun-dried brick wall leaving a cavity of 40 mm (actually.
-Roofing: Prefabricated reinforced brick panels (302 mm X 1050 precast joists and 2.5 cm thick deck concrete (1:2:4) laid over the crete as terracing.
-Flooring: 20 mm thick CC 1:2:4 land over 50 mm thick properly
-Other items: Plastering inside and outside in CM 1:6 and ceiling made of mango wood fixed with special type of fixtures.

(5) Specifications

-Foundations: As per soil conditions ordinarily nominal foundation.
-Walling and roofing: Hollow clay blocks shell super structure in or 'Lloyds' water-proofing compound over the external joints or
-Flooring: 75 mm thick cement concrete.
-Other items: Conventional. No plastering inside or outside is vided. Doors and windows are as per traditional practices.

Shellcons, Madras	24	5930	247	28.5

(6) Specifications

-Foundations: Brick jelly lime concrete and brick masonry in

Density (DU's per hect.)	*Cost of dev of land per DU@ Rs. 2 lakh per acre (in Rs.)*	*Cost of land per DU @ Rs. 1 lakh per hect. (in Rs.)*	*Administrative/supervision charges @ 10% on dev. and constn. per DU (in Rs.)*	*Total cost of a DU (3+7+8+9) in Rs.*	*Cost of DU per sq. mt. including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

And WC from inside with cement lime plaster 1:2:9, (b) White-washing windows painted two coats.

162 1543 611 318 8232 358

CM over PCC (1:6:12), depth of foundation being 450 mm and height of
1:4. All external walls (75 mm thick) to be insulated thermally with an used burnt due to non-availability).
mm) in CM 1:4 or CC 1:2:4 reinforced with two 6 mm bars over partially panels after putting necessary negative reinforcement and 50 to 70 mm con-compacted bed of brick aggregate.
With CM 1:4. Frameless shutters for doors and windows 25 mm thick

64 3906 1562 870 11134 445

Is sufficient. Height of plinth 300 mm brick masonry in CM 1:6 in
Cement mortar. Water-proofing will be effected by the application of ‘Jelsil’ by laying leaf flat ‘de-aired’ tiles over the shell.

Is sufficient. Height of plinth 300 mm brick masonry in CM 1:6 in cement mortar. Water-proofing will be effected by the application of ‘Jelsil’ by laying leaf flat ‘de-aired’ tiles over the shell.

Required. Instead of wooden windows hollow clay blocks jail can be pro-

127 1969 787 790 9476 395

Cement mortar 1:5 with flyash DPC 25 mm thick in CM 1:3.

Sponsoring agency	Plinth area of one DU (in sq. mt.)	Cost of structure (in Rs.)	Cost of constn. per sq. mt. (in Rs.)	Cost reduction than in a normal traditional constn. (in % age)
1	2	3	4	5

-Walling: Brick work 23 cm thick in cement flyash mortar.
-Flooring : 18 mm thick flyash cement mortar 1:1.25:5 finish over
-Roofing: Funicular brick shell roof 7.5 cm thick of bricks laid flat finished with water-proof cement plaster 2.5 cm thick.
-Finishing: Plastering inside with cement flyash mortar 1:1.25:5

-Doors and windows: M.S. chowkhats. Deodar wood with plywood
Structural Engg.
Research Centre,
Madras 27.50 7640 278 19.4

(8) Specifications

-Foundations: Depth of foundation for main walls will be as per GL. Plinth height 230 mm. Base concrete 150 mm for main and ratio of 16:32:100.
-DPC: 12 mm thick in CM 1:3 (1 cement: 3 coarse sand) with
-Walling: 230 mm and 112 mm thick first class brick masonry in
-Roofing: RB roof in first class bricks laid in and finished with
-Flooring: Mud floors have been provided with cow-dung plaster co flooring is proposed.
-Other features: Outside and inside cement plaster 1:6 White in CM 1:3 (RCC jail actually provided). Doors will be without braced and battened with ordinary paint and chain system for U.P. Housing and
Development Board,
U.P. 19.3 4160 215 37.6

Density (DU's per hect.)	Cost of dev of land per DU@ Rs.2 lakh per acre (in Rs.)	Cost of land per DU @ Rs. 1 lakh per hect. (in Rs.)	Administrative/supervision charges @ 10% on dev. and constn. per DU (in Rs.)	Total cost of a DU (3+7+8+9) in Rs.	Cost of DU per sq.mt including all expenditure (in Rs.)
6	7	8	9	10	11

Brick jelly cement concrete 1:5:12.5.
And joints filled with flyash cement mortar and with RCC edge beam. Top

Outside pointing.
Panels for doors. Brick jail to serve as windows.

97 2577 357 1021 11595 414

Work in CM.

Masonry work.
Windows. Frameless doors using local wood. No internal doors.

70 3571 1429 362 11552 427

Design (450 mm considered in estimate) and for other walls 230 mm below 75 mm for other walls in white lime cinder and 40 mm brick ballast in the

On coat of maxphalt paint over it.
CM 1:8
Plaster in CM 1:3 (1 cement: 3 coarse sand).
Over it except in bathroom, latrine and *khura* in kitchen where 25 mm 1:2:4
Wash both outside and inside, windows in first class honeycomb brick work frame of 32 mm thick cheer wood or country wood tongued and grooved, locking.

100 2500 1000 666 8326 438

Sponsoring agency	*Plinth area of one DU (in sq. mt.)*	*Cost of structure (in Rs.)*	*Cost of const. per sq. mt. (in Rs.)*	*Cost reduction than in a normal traditional constn (in %age)*
1	*2*	*3*	*4*	*5*

(9) Specifications:

-Foundation: Precast concrete solid blocks.
-Walling: 10 cm thick precast concrete hollow blocks wall.
-Roofing: Precast concrete shed with precast concrete tiled roof
-Flooring: 25 mm thick 1:2:4 cement concrete flowing laid over
-Other items: Doors and window shutters with deodar wood with surface of walls.

Concrete Association
Of India,
(Bombay) 23.5 8060 343 0.58

(10) Specifications

-Foundations: Stepped foundations in first class brick work in 1:6 brick aggregate.
-Walling: Sun-dried brick work in super-structure in mud mortar non-availability).

-Roofing: Precast DC tiles 650X750 mm resting over RCC beams, ordinary lime concrete terracing over two coats of bitumen.
-Flooring: Flat brick flooring with 1:3 CM pointing.
-Other items: Mud plaster 18 mm thick inside and outside plaster doors and windows 25 mm thick made of mango wood fixed with and windows 75 mm thick and 40 mm thick RC planks for

Central Building Research
Institute, Roorkee 25.41 3906 189 45

(11) Specifications

-Foundations: Lean concrete 1:8:16, Brick masonry in CM 1:6.
-Walling: Ribbed concrete wall panels.
-Roofing: Ribbed concrete slab.
-Flooring: 25 mm thick cement concrete 1:2:4 laid over a base of
-Finishing: No plaster, only white or colour washing.

Density (DU's per hect.)	*Cost of dev. of land per DU@ Rs. 2 lakh per acre (in Rs.)*	*Cost land per DU@ Rs. 1 lakh per hect. (in Rs.)*	*Administrative/supervision charges @ 10% on dev. and constn. per DU (in Rs.)*	*Total Cost of a DU (3+7+8+9) in Rs.*	*Cost of DU per sq. mt. including all expenditure (in Rs.)*
6	*7*	*8*	*9*	*10*	*11*

With precast concrete posts, purlins and rafters.
Brick ballast and sand bedding.
Sal wood frame; white wash on inner surface and cement wash on external.

168 1488 595 398 10541 493

CM over 75 mm thick bed of cement concrete 1:6:12 with 40 mm size with bitumen spray on outside (actually used III class burnt bricks due to joists and hollow columms. Haunches filled with 5 cm CC 1:2:4, 5 cm thick

18 mm thick inside and outside plaster with CM 1:6. Frameless shutters for special type of fixture and painted with enamel paint, RCC lintels for doors chajjas.

64 3906 1562 870 11134 445

Dry packed brick bats.

Sponsoring agency	Plinth area of one DU (in sq.mt.)	Cost of structure (in Rs.)	Cost of constn. per sq. mt. (in Rs.)	Cost reduction than in a normal traditional constn. (in %age)
1	2	3	4	5

Hindustan Housing Factory,
Ltd., New Delhi 26.04 8290 318 8

(12) Specifications

-Foundations: 150 mm thick brick jelly concrete with 40 percent being 800 mm and height of plinth 300 mm.
-Walling: 230 mm thick 2nd. Class brick masonry in lime mortar.
-Roofing : 4 cm thick precast RCC funicular shells with filling in
-Flooring : 25 mm thick cement concrete over a base of 100 mm lime mortar 1:1:1 (1 lime: 1 flyash: 1 fine sand).
-Finishing: Inside surfaces to be plastered and outside to be outside.

NBCC Ltd., New Delhi 25.00 7820 313 9

Density (DU's per hect.)	Cost of dev of land per DU @ Rs. 2 lakh per acre (in Rs.)	Cost of land per DU @ Rs. 1 lakh per hect. (in Rs.)	Administrative/supervision charges @ 10% on dev. and constn. per DU (in Rs.)	Total cost of a DU (3+7+8+9) in Rs.	Cost of DU per sq. mt. including all expenditure (in Rs.)
6	7	8	9	10	11

128 1953 781 1024 12048 463

Of lime mortar 1:1:1 (1 lime putty : 1 flyash : 1 fine sand), depth o foundation 1:1:6 (1 lime : 1 surkhi: 6 fine sand).
Haunches with RCC 1:2:4, bitumen painting with sand on top.
Fine sand and 75 mm lime concrete with brick ballast and 40 per cent of

Pointed, both in lime mortar with white washing inside and colour washing

130 2083 833 990 11726 469

INSTITUTIOS ARE FOR

HOUSING

HEALTH

FOOD

CLOTHING	CAN BE	COORDINATION
RECREATION	MANAGED	INTEGRATION
SECURITY	WITH THE	EVALUATION
JUSTICE	HELP OF	MONITORING
FREEDOM		JURISDICTION
EDUCATION		TIME
COMMUNICATION		SKILLED
EMPLOYMENT		PERSONNEL

DISTRIBUTION

PLANNING

DEVELOPMENT

CONSTRUCTION

CHAPTER 16

Institution and Management

Introduction

Institutions are required for the management of different functions of an urban area. In Part One we have evolved a theory of land-use that there are five basic elements, viz., man, nature, structure, networks and society, for which planning is done at various levels, viz. Central, Regional and Local ; by various experts viz., architects, landscape architects, engineers, economists, sociologists, lawyers, public health engineers; within the existing and predicted resources. As the size of an urban area increases, number of functions and institutions also increases. For instance in Delhi, there would be more than 200 institutions, which are managing different functions of the metropolitan city. These institutions are at Central, Delhi Administration and Local Levels. Management and coordination of institutions become more complicated due to the present frequent changes in circumstances, political dynamism, clash in personalities, egos and skills. It is a fact that, in Delhi integration/co-ordination of various institutions is not well done. Following are some of the reasons.

1) Non-comprehensive planning.
2) Ambiguity in the extent of jurisdiction.
3) Non-delineation of functions.
4) Uncoordinated approach.
5) Improper evaluation and monitoring.
6) Non-availability of skilled personnels.
7) No time-bound programmes.

Institutions are required for all these elements for the management of:
-Man and society: Whether he is alone, in family or in society; working, enjoying or living; at the time of change in activity (i.e., when he goes from the place of living to place of work or place of enjoying; communication starts.

-Nature: To keep ecological balance; to check different types of pollutions namely, smoke, noise, vibration and untreated effluent.

-Networks: Water lines, sewer lines, electric lines, telephone lines, storm water drains, roads, railway lines, waterways, airways, gas lines etc.

-Structures for different land uses: Namely residential, commercial, industrial, public and semi-public buildings, government offices, recreational waterworks, sewage disposal plants, power generating stations, compost plants etc.

Various Urban Functions and Institutions in Delhi

Different types of functions are performed to keep the citizen happy and for each function, some type of institution is required as the following table shows.

Socio-economic functions	*Institutions*
1	*2*
(1) Housing	-DDA, MCD, NDMC, CPWD -Co-operative House Building Societies (plots and flats); -Various semi-government organizations -Bank, LIC -HUDCO -Various institutions for production and distribution of building materials, labour and capital
(2) Health	-Directorate of Central Health Scheme -Delhi Administration, MCD, NDMC -All India Institute of Medical Sciences. -Special hospitals for infectious diseases like TB -General hospitals. -Hospitals run by registered societies, trusts and welfare associations. -Child welfare and maternity centres, dispensaries, clinics etc. -Public health engineering services, viz., water, sewer, drainage, eradication of malaria, checking of water pollution -World Health Organisation
(3) Food Consumption and Nutrition	-Agricultural Marketing and Research Department, Pusa Institute. -Delhi Milk Scheme. -National Dairy Development Board -Departments to check food adulteration -Civil Supplies Corporation
(4) Clothing	-Mostly private institutions, except sometimes the government distributes the cloth on ration basis.
(5) Recreation	DDA, MCD, DTDC, NDMC -National Archives of Delhi -CPWD
(6) Social Security and Human Freedom	-Central Reserve Police, Delhi Armed Forces and Police. -Fire Fighting Department of MCD
(7) Social Justice	-Commission for Scheduled Casters and Scheduled Tribes Defence Services -Central Bureau of Investigation -Different types of Courts.

(8)	Education	-Ministry of Education -Department of Education of Delhi Administration, MCD and NDMC -Registered Societies and Trusts -Private Institutions -National Council of Educational Research and Training -Council of Scientific and Industrial Research -Indian Standards Institution -National Physical Laboratory -Delhi Public Library
(9)	Mass Communication	-All India Radio -Doordarshan -Director General of Posts and Telegraphs
(10)	Employment	-Employees Provident Fund Organisation. -Indian Institute of Labour Studies
(11)	Distribution (Traffic and Transportation)	-Ministry of Shipping and Transport, -PWD, Delhi Admn.; MCD; NDMC; Cantonment Board. -CRRI; DDA. -Traffic Police -Semi-Government Institutions like NATPAC and other private consultancy firms -City Bus Service-DTC -Electric Trains-Metropolitan Railway Transport Projects
(12)	Planning and Development	-Department of Land and Bldg., Delhi Adm.; Deptt. Of Land, DDA; L & DO, WAQF, Cantonment Board and Land Acquisition Collector -M/O Works and Housing -DDA, MCD, NDMC, Delhi Admn., Cantonment Board. -Water Supply and Sewage Disposal Undertaking -Delhi Electric Supply Undertaking -Traffic Police Department.

From the above, it is very clear that there are hundreds of institutions in Delhi for the management of different functions of man in society with the help of nature, structure and networks. How to manage and co-ordinate all these institutions, has been discussed in this chapter.

Recommendations by the United Nations Conference:

-There must be institutions at national, ministerial and other appropriate level of Government responsible for the formulation and implementation of settlement policies and strategies for national, regional and local development.

-Institutions for human settlements should be co-ordinated with those responsible for national economic and social development and environmental plans and policies, and interrelated on a multi-disciplinary basis.

-Institutions specially established to solve short-term settlement problems should not outlive their original purpose.

-Institutions should be designed to encourage and facilitate public participation in the decision-making process at all levels.

-Settlements must be improved by responsive and imaginative management of all resources.

-The development of research capabilities, and the acquisition and dissemination of knowledge and information on settlements, should receive high priority as an integral part of the settlements, should receive high priority as an integral part of the settlement development process.

-Separate financial institutions and adequate means are necessary to meet the requirements of human settlements.

-Institutions and procedures should be streamlined to ensure that intended beneficiaries receive the largest possible share of resources and benefits.

-Any framework for settlements legislation must establish clear and realistic direction and means for implementation of policies.

Elements of the Proposed Model for the Management of Various Institutions

There are five main elements with sub-elements, the details given as follows:

(1) CO-ORDINATION / INTEGRATION

-Formal and informal co-ordination:

Formal co-ordination have their roots in the constitution, status, regulations and long-established conventions; while informal co-ordinations are personal contct, telephone calls, conference, seminars, meetings, dinners, luncheons, visits with concerned officers etc. The effects of informal co-ordination largely depends on individual behavior.

-Internal and external c-ordination:

For internal co-ordination, there should be hierarchy in organisation, built on functional basis, delegation of powers, distribution of work, duty chart, office layout and equipment, certainly and clarity of procedure, simplicity of forms, proper paper work, efficient *dak* movement system, action-oriented programmes, frequent supervision and inspections; staff meetings etc.

It is also very essential to have external co-ordination with outside agencies; like DDA is supposed to co-ordinate the entire planning and development work of Delhi Administration, MCD, NDMC, Cantonment Boards, Semi-Government Organisations and Private Institutions.
-Horizontal, vertical and diagonal co-ordination:

(2) EXTENT OF JURISDICTION

For every institution, it is very necessary to define the extent of area in which it would function at the national, regional and local level. The boundary should be well defined over which its control would exist, other-wise there would be over-lapping, confusion, delay, wastages and works for cross purposes.

(3) DELINEATION OF FUNCTIONS

Many times functions of one institutions overlap or conflict with the functions of other which retard the speed of development create duplicacy in the work and increase the cost of activity. To overcome these, the functions of each institution should be well defined.

(4) TIME CONSIDERATION

Planning and development has a time dimensions, as such there should be long range, medium range and short range plans for a period of 20 years, 5 years and 1 years. In every institutions, there should be well established practice of evaluating the programmes of different activities after every year, five years and 20 years.

(5) AVAILABILITY OF SKILLED PERSONNEL

In any institution, there is a problem of supervision, cooperation, discipline, morale, directions, promotion, recruitment, job classification, merit list, division of different functions, training etc. There is every possibility of bringing eccentricity and bias in the decisions. Thus there should be skilled personnel in every sphere.

Structure and Function of National Capital Region (An Example)

To explain the entire system of “Institutions and Management”, and example has been given of National Capital Region. The entire system has been proposed at three levels; 1st level, 2nd. Level and the 3rd. level.

Structure and Functions of National Capital Region

Chairman-Hon'ble Prime Minister of India

↓

Members

↓

-Chief Minister of Haryana	-Hon'ble Minister of Work and Housing
-Chief Minister of Rajasthan	-Hon'ble Minister of Planning
-Chief Minister of Uttar Pradesh	-Hon'ble Minister of Railways
-Lt. Government of Delhi	-Hon'ble Minister of Shipping and Transport

Member Secretary-Chairman of National Capital Region Planning and Development Authority

Second Level

Chairman- (Full time officer of the level of Minister of State)

M E M B E R S

Member Planning	Member Finance	Member Engineering	Member Water Power And Irrigation	Representative from -Ministry of Energy; -Ministry of Shipping and Transport; -Ministry of Agriculture and Rural Development. -Ministry of Railway; -Ministry of Works and Housing

States

-Haryana	-Chief Secretary
-U.P.	-Chief Secretary
-Rajasthan	-Chief Secretary
-Delhi	-Chief Secretary

Member Secretary-Chief Planner and Co-ordinator for technical matters.

Name of Different Departments

(1) Regional and Physical Planning:
- -Delineation of regions, sub-regions, designation of priority towns, regional cents and sub-regional centres.
- -Planning of residential, industrial, commercial, institutional, Govt. offices etc.
- -Design of houses and other buildings.
- -Interpretation of the plan, revision and Modification in the plan.

(2) Utilities and Services: Water supply, sewerage, drainage, electricity, telephones, gas, pipe lines.

(3) Traffic and Transportation: Roads, railways, airways, terminals and depots.

(4) Agriculture and Rural Development: Agriculture, mining, forestry, livestock, dairy, poultry farms, reclamation of waterlogged and saline areas, soil conservation, irrigation and rural industries.

(5) Fiscal Planning: Programming of Annual Plans, Five Years Plans, Ten year and Twenty Year Plan.

(6) Location of economic activities: Large and heavy industries, decentralization of Govt., offices, wholesale trades, planning of fruit and vegetable markets and wholesale markets.

(7) Land: Acquisition, development and disposal.

(8) Sub-standard areas; Slum areas, urban villages, *jhuggi* clusters, resettlement colonies and unauthorized colonies.

(9) Depressed areas and backward areas.

(10) Rural Development: Rural settlements, central place villages, growth centres, flood control and drainages.

(11) Development and construction of important projects, like-stadia, sports complexes and big commercial centres.

(12) Community facilities like-educational, medical, police, post offices, telephone exchanges, milk depots, courts and street furniture.

(13) Environmental improvement and controls: Preservation of heritage, maintenance of ecological balance, historical monuments, maintenance of ridge areas, preservation of trees, aesthetics of buildings on main highways and of regional importance, river front development, tourists sports, pilgrimage centres, picnic spots, hotels, lakes, water sources, waterfalls, *jheels*, hot water springs, bird sanctuary, wild life sanctuary, big fairs, zoo, fishing, boating, woodlands and orchards.

(14) Personnel, publicity and legal matters.

Third Level

At this level, the work of execution and implementation of various projects would be taken up by special authorities/undertakings or department set up for the purpose, specially on infrastructure part, namely-water supply, sewerage, drainage, power, major roads etc. Work of internal development would be taken up by development or Improvement Trust etc.

Constitution of various functional committee would be as under:
Chairman-Concerned member of the NCR (P and D) Authority Member Secretary-Chief Planner and Co-ordinator of the NCR (P and D) Authority
Members – Chief Engineer of the concerned subject
-Chief Planner of the State Government
-Chief Planner of concerned development authority or improvement trust.

PUBLIC PARTICIPATION

THE PLANS

WHO MAKES — AUTHORITIES
ORGANISATIONS
PLANNERS

FOR WHOM PREPARED — GENERAL PUBLIC AND THE POOR

THIS WOULD REDUCE

COST OF THE PROJECT TIME FO
IMPLEMENTATION NON-ACCEPTANCE
BY MASSES

PUBLIC PARTICIPATION IS REQUIRED FOR

ACQUISITION
PLANNING OF ANY SUBJECT
DEALING WITH SUBSTANDARD
AREAS SHIFTING OF ECONOMIC
ACTIVITIES

CHAPTER 17
Public Participation

Introduction

Planning is for five basic elements, i.e., -man, society, nature, structure and networks. In Part One of the book, a theory of land use/location of settlements was evolved, that man is supreme and for his the entire planning/development is required. Man has different types of needs; biological, physiological, psychological, primary, secondary, tertiary, subjective, objective etc. To keep him satisfied, his needs are to be fulfilled constantly; otherwise we cannot achieve the desired goals. Considering all these factors, it is justified to say that when planning is done by man for man, his ideas should not be ignored.

There are two facades of the planning process; one, who makes the plans, i.e., the planning authority/planner, and the other, for whom the planning is done, i.e., the general public/urban poor. The former thinks himself more knowledgeable, and considers the latter a liability. But it is a fact that no single authority/person, can handle the problem of sheltering the public, unless he involves all the other factors, e.g., the people to be housed, the agencies (official and non-official) interested in providing shelter to the urban poor.

The people should not be considered a liability; they should be recongnised as capable, resourceful and productive members of the society, who can contribute meaningfully to the solution of planning problems, if their skills, genius and resources are put to use. While formulating the policies, at the central level, their detailing at the regional and local levels, and preparation and finalization of any plans, people should be taken into confidence and must be treated as the centre of all such activities. Collaboration of people's organisation at the *basti* and slum level, of service and professional organizations, of official, statutory and governmental bodies must be made essential in the projects of planning/development/construction. People's participation in such activities can considerably reduce the cost of these projects. But the lack of communication between planners and the public enables a haphazard growth of the city. It is also the basic reason as to why we are not successful in stopping the unauthorized constructions in metropolitan cities.

Recommendations of the UN Conference on Human Settlements, July, 1976

-Pubic participation should be an indispensable element in human settlements, especially in planning strategies and in their formulation. It should influence all level of Government in the decision-making process to further the political, social and economic growth of human settlements.

-The planning process must be designed to allow for maximum public participation.

-To be effective, public participation requires the free flow of information among all parties concerned and should be based on understanding and trust.

-Public participation should integrate the various sectors of the population including those that traditionally have not participated either in the planning or in the decision-making processes.

-Public participation must respond to both newly emerging needs of society and to existing social, economic and cultural needs. The people and their governments should establish mechanisms for popular participation that contribute to developing awareness of people's role in transforming society.

-Public participation elicited on a scale commensurate with the problems of human settlements, Should influence all decisions concerning management of human settlements and should focus on the application of resources to improve the standard of living and the quality of life.

Areas of Public Participation

(i) Acquisition of land and built-up properties.

(ii) Preparation and finalisation of :
- -Master plan
- -Sector or zonal plan:
- -Alignment plans of various roads, intersections and trunk services;
- -Road-over-bridges, road-under-bridges and cloverleafs.

(iii) Dealing with sub-standard areas, namely,
- -Unauthorised colonies;
- -Slum areas;
- -*Jhuggi* clusters;
- -Resettlement colonies;
- -Urban villages;
- -Rural settlements.

(iv) Shifting and spot zoning of non-conforming uses of industrial and commercial nature;

(v) Shifting of wholesale trade;

(vi) Location of any major activity, especially which creates pollution, like a thermal power station etc.

For proper public participation, ample opportunities must be given to all persons, to see, study and file objections/suggestions, For this, wide publicity should be given through radio, television and other mass-media. Plans should be made public before finalization. There should be discussion and debate on the Various Master Plans. Discussions in various forums should be well thought of and conducted with representatives from different sectors, irrespective of any political party.