DISPARITIES IN DEVELOPMENT

A CASE STUDY OF KARNATAKA STATE (INDIA)

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By

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PREFACE

The Five Year Plans have recognised the need to bridge the developmental disparities across the regions and have formulated strategies for accelerated development of backward areas. However, the widening disparities between a few highly developed centres and vast areas of under development only bring out the inadequacies of the plans which are yet to integrate the resources of a region to its people. This study is an attempt to understand the spatial processes and patterns of development which offer an explanation to the intra/inter-regional contrasts in development. The study while high-lighting the importance of the 'Spatial approach' has, in a limited way, attempted to bring out the shortcomings in the existing development strategies.

I thank the Indian Statistical Institute for enrolling me as a Research Scholar and providing me an opportunity to carry out this work. I am beholden to Dr. L.S. Bhat, Professor, Indian Statistical Institute, who readily accepted to guide and supervise this work. I am particularly grateful to him for not only initiating the study but also providing constant guidance at all stages of the work.

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CHAPTER I

REGIONAL DEVELOPMENT - AN OVERVIEW WITH REFERENCE TO PLANNING IN INDIA

1.1 The basic goal of India's economic planning as elaborated in the Five Year plans of economic development has been development along socialistic lines to secure rapid economic growth and expansion of employment, reduction of disparities in income and wealth, prevention of concentration of economic power and establishment of an egalitarian society. Recognising the regional diversities in the distribution of physical and human resources and disparities in development, the long-term strategies of development have emphasised that minimising regional disparities in development is as important as minimising disparities in levels of living among different sections of the society. To this end the strategy has stressed that the pattern of investment should be so devised as to lead to balanced regional development[1]. Given this development objective, it has often been assumed that a fast rate of growth of national income would by itself lead to spread effects of development

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[1] Government of India; Planning Commission(1956): Second Five Year Plan, New Delhi

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benefits in different regions, by activising different sectors, creating near full employment and bringing about an overall improvement in the standard of living of the masses. Rapid economic growth and balanced regional economic development, though not contradictory may seem to be at variance with each other given the physical and financial resource constraints.

1.2 An improvement in the overall rate of growth of economy or an increase in the GNP over the years per se is no longer accepted as indicators of progress. In other words, what is desired is that the benefits of higher rates of growth should reflect in the well being of the people at large raising their standards of living. Studies of the process of economic development in several developing countries with satisfactory rates of economic growth bear out that growth has not always been able to make any significant impact on employment and poverty. Current thinking has, therefore, altered the approach to development planning. A high growth rate is a necessary but not a sufficient condition to ensure employment generation and income distribution in favour of the poor and reduction of mass poverty.

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Investment planning, from the beginning should simultaneously seek growth and distributive justice through the creation of productive employment and generation of income on a widely dispersed basis.

1.3 Space element in Development Planning

Regional development is nothing but the incidence of economic growth which is ultimately the result of location of economic activities in response to varying regional pulls. The problem of regional development, therefore, can be reduced to one of spatial organisation of economic activities. The space element that concerns the regional planner is the economic space which is defined by the economic relations that exist between the economic elements. Viewed in this manner, the space of the national economy is not the national territory but the domain covered by the economic plans of the Government and the individuals[2].

1.4 In a development plan, there are both sectoral and spatial aspects. The spatial dimension finds its expression in the regional physical plan which concerns itself with the manner in which economic activity is organised in space.

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[2] Friedman, J and Alonso, W (ed) (1964): Regional Development Planning - A reader; Cambridge, Massachusetts.

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A country's economy is made up of several interacting subsystems and each sub-system can be taken as a region which has to be integrated into the main system. Since the subsystem is part of a larger system, the regional economic plan has to get its direction from above which means it should be in accordance with the broad national goals. These goals are translated in the form of spatial location/allocation of economic activities that fall within the domain of the centrally formulated and implemented sector of development such as national high ways, major industrial complexes such as of steel and petrochemicals, major hydro and thermal power projects, etc. Location of any major economic activity within a region has to be effectively linked with activities of importance for the regions' resources and people. It is here that the regional physical plan with its spatial dimension has to provide for mutually supporting activities within a region which would create forward and backward linkages transforming geographic region into an economic space. Thus, disaggregation of planning from above and aggregation from below in the regional context are essentially excercises in coordination and integration in the spatial frame work.

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1.5 Planning from the grass-root level

which draws up plans for small administrative units should have a physical spatial dimension comprising the distributional pattern of physical resources, human settlements, population and its attributes, industry, infrastructure facilities and pattern of inter-relationships among them. In the Indian process of planning, regional dimension is provided by treating political/administrative units as regions. These conceal regional realities since boundaries of various types of regions may not be co-terminus with those of administrative units. Given the fact that physical resources are contiguous in their distribution, their development strategy and formulation of area/location specific plans should be based according to resource regions which are identified by grouping appropriate administrative units on the basis of homogeneity in one or more related resources. For instance, agro climatic regions, forest, mineral and water resources cut across State boundaries[3]. In such cases, it is necessary to delineate these regions on the basis

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3 Government of India, Planning Commission(1964): Resource Regions and Divisions of India, New Delhi

- Rao V.L.S.P. and Bhat L.S.(1962); A tentative scheme of regions for resource development in India; Bombay Geographical Magazine, X, Bombay: pp 35 - 50.

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of homogeneity criteria using data for smaller administrative units than those of the States. This has been recognised in the context of the preparation of national sectoral plans[4]. Locations of industries or of urban centres and their spheres of influence and of market centres also cut across administrative boundaries and hence such aspects of spatial integration of economic activities cannot be perceived if only States are accepted as regions.

1.6 The space element of the economy has two components, one is areal as in the case of agricultural and other physical resources and the second one is locational. In spatial integration of the economy, there is a need to integrate the areal and locational components without which regional disparities originate even at the grass-root levels (e.g. cluster of villages with surplus of agricultural produce not having a market or processing centre/s within them) and get accentuated at the level of higher order regions (e.g. intra-state sub-regions or of regions comprising groups of States or parts of them which have complementary resources and economic activities).

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4 The Planning Commission has recently accepted a scheme of 16 agro-climatic regions for formulating region specific development plans.

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1.7 The formula of 'structure <—> process <—> stage' would illustrate this point clearly[5]. For example, a region with unfavourable physical structure and resources (areal component) could have imbalanced spatial process of development centred on locations of economic activity which are very weak and do not have spread effects within the region and outside with other regions with which it should interact through flows of goods, people, money and services. This leads to under-development (stage). On the contrary, an agricultural region with relatively uniform conditions of environment and agricultural productivity has inherent conditions for balanced process of spatial integration centred on hierarchic levels of market/processing centres leading to more uniform or balanced development of different parts of the region. This is the essence of A. Losch's concept of Economic Landscape formulated on the basis of empirical evidences in Iowa area (USA)[6]. Locations or centres providing various services and facilities also serve to minimise imbalances in development as illustrated by the concept of Central Places formulated on the

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5 Rao V.L.S.P. (1963): Regional Planning, Indian Statistical Institute.

6 Losch, August (1954): Economics of location. New Haven, Yale University Press.

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basis of empirical evidences by W. Christaller in Germany[7]. Theories of Growth Pole, market centres, interregional trade, urbanisation and industrialisation formulated often in isolation have to be modified to develop spatial models of regional economic development in a multi-regional framework as in India.

1.8 The space element comprising a system of interacting and interrelated system of areal and locational components creates over the years economic space which has discontinuous system of regional units over a 'sea' of physical space in which are located a large number of human settlements - mainly rural - and small towns and agricultural areas which sustain them[8]. This is true of India where even in 2000 AD nearly 65 per cent of the total population of nearly one billion would be living in about 0.5 million rural settlements in contrast to small number of cities and towns[9]. The regional development strategy therefore has to aim at integrating these areas and minimising disparities between them.

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[7] Christaller W (1966): Central Places in Southern Germany. (Translated by Cerlisle W. Baskin), Englewood Cliffs, Prentice - Hall.

[8] Words economic space and physical space are used essentially to distinguish metropolitan city and associated industrial clusters which are few in contrast to extensive areas of agriculture - rural settlements, market towns and their tributary areas. In a sense, all are involved in spatial organisation of the economy.

[9] Bhat L.S.(1985): Spatial perspective in Socio economic Development from national and regional angles in Sundaram K.V.(ed); Geography & Planning. Concept New Delhi.

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1.9 Theoretical and Conceptual framework of regional planning

It is for the creation of income on a widely dispersed basis, Nurkse and others propagated the approach of Balanced Development[10]. According to Nurkse, what the underdeveloped countries are experiencing is a vicious circle ofpoverty to break out of which diversified investment over a wide range of activities is required. An investment chain would be supporting each other resulting in a dynamic expansion of the market through investments carried out in a number of industries.

1.10 As against this, the advocates of growth theories argue that development occurs through a chain of disequilibria and hence it would be unwise to spread the investments thinly over wide areas. It is in this context Hirschman and others maintain that investments in a few selected sectors or industries which have the highest linkage effects (both forward and backward) would bring about the desired level of development[11]. In an ideal situation, this sort of concentration should bring about additional investments in their wake. New Industries

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10 Nurkse, Ragnar (1953): Problems of capital formation in underdeveloped countries, Oxford; Basil Blackwell & Mott Ltd.

11 Hirschman, Albert (1958): Strategy of Economic Development, Newyork.

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would be located near existing ones resulting in specific growing points/areas. This spatial concentration is paralleled by retradation in other areas leading to regional polarisation and an uneven geographic spread of development. Subsequently, however, the trickling down effect or the spread effect would correct imbalances.

1.11 Myrdal's concept of cumulative causation explains that both spread and backwash effects operate during the process of development[12]. While spread effects could be equated to the favourable linkage effects of Hirschman, backwash effects are migration of population, out-flow of capital, etc. from a region. According to Myrdal, the spread effects normally outweight the backwash effects resulting in overall development. If this process were so automatic, development in India would not have been as skewed as it is now with a few core regions drawing on the resources of the underdeveloped hinterland resulting in the emergence of extensive peripheral areas and a few core areas of development.

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12 Myrdal, G (1957): Economic Theory and underdeveloped regions, London, Gerald Duch Worth and Co. Ltd.

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1.12 A similar concept developed by Perroux is the growth pole theory. Perroux observed that growth does not appear everywhere at the same time; it manifests itself in points or poles of growth with variable intensity; it spreads by different channels and with variable terminal effects for the economy as a whole. The theory also laid emphasis on the spread of innovations. By growth pole, Perroux meant " a centre in abstract economic space from which centrifugal forces emanate and to which centripetal forces are attracted "[13]. Each centre being a centre of attraction and repulsion, has its own field which is set in the field of other centres. The forces which he conceived were basically economic in character and the generation of these forces were to be from firms and industries. A large firm according to him is dynamic, innovative and growth propelling. The growth centre approach recommends creation of growth poles/areas essentially as a means of speeding up growth process and bridging the inequalities between regions.

1.13 The spread effects which emanate from a growth pole to its sorrounding areas actually transcend the boundaries of a region in a system where the inter regional linkages operate.

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13 Perroux, F(1964): Economic Space; Theory and application in Friedman, J and Alonso, W(ed); (pp.26-27) op.cit. p.3

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In a state of economic interdependence, changes in production, exports and imports of one region have cyclical effects on the neighbouring region[14]. Much of the impact of the cyclical fluctuations within a region, however, depends on the existing industrial composition of the region. Changes such as major resource discovery, increase in productivity as a result of national economic growth or an outburst of any infra-structural activity generally result in reallocation of market areas and redistribution of industrial production to the benefit of the most efficient and best located firms. Greater industrial concentrations emerge generating mass production economies and still greater extension of market areas of the best locations. All these changes result in still greater interaction between the regions of a nation setting in motion a series of cyclical fluctuations, some positive some negative.

1.14 Regional Development and Disparities - The Indian Scene

Disparities in the levels of development could be due to historical reasons or the nation's resource endowments, their spatial distribution and the development strategy adopted at different points of time. Authors like Samir Amin trace the

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14 Isard Walter (1960): Methods of Regional Analysis; An introduction to Regional Science, M.I.T. Press, Masachusetts.

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inequalities in the underdeveloped countries to centre - periphery relationship that came into existence during the colonial regime[15]. The exploitation of natural resources and raw material in the periphery by the centre led to spatial inequalities in development.

1.15 Countries such as India which have been under colonial rule depict a dualistic structure of the space economy comprising a centre or cluster of centres making up an area of rapid intensive development and an extensive periphery, whose economy impertectly related to the centre, is either stagnant or declining. The lopsided development in space in India with a few centres or areas like Bombay - Pune, Calcutta, Madras and Hyderabad flourishing at the expense of peripheries are the imprints of historical and political factors operating prior to independence and abolition of Princely States. Inter-regional transport routes converged over the major port towns and this facilitated the growth of major Urban Industrial Centres which are few and far between leading to the emergence of 'islands of economic development' with vast agricultural and other resource rich areas remaining peripheral rendering

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15 Amin Samir (1977): Unequal development: An essay on the social formation of peripheral capitalism; Monthly Review Press, New York.

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thereby areas of major natural resources and population concentrations mutually exclusive[16]. This fact was brought out clearly by Berry's study of economic development and commodity flows[17]. Besides these, a large number of Princely States that were seats of administration gave rise to a pattern of development that was centripetal in nature resulting in disparities in development within and between regions, examples of which are the Princely States of Mysore (Part of Karnataka), Telengana (Part of Andhra Pradesh), and Saurashtra (Part of Gujarat).

1.16 We thus have a dichotomy between industry and urban centres on the one hand and rural population and agriculture on the other. However, a positive factor of the spatial organisation of the Indian economy prior to independence is that unlike in some of the developed and developing countries, the major Urban-Industrial centres are themselves distributed in different parts of the country and hence there is a built-in case for dispersed development integrating

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16 Bhat L.S. (1971): Regional Planning in India, Statistical Publishing Society, Calcutta.

17 Berry Brain J.L. (1966) Essays on Commodity flows and spatial structure of the Indian Economy; Department of Geography, Research Paper N.III, University of Chicago, Chicago.

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sub-regional economies with those of the Urban-Industrial centres. Macro economic regions can be conceived of by grouping States with complementarity in resources and patterns of development. A few examples are given below:

1. Western Region (comprising the States of Maharashtra and Gujarat)	:	Large urban - Industrial axes such as Bombay-Pune and Baroda-Ahmedabad.
2. Eastern Region (comprising the States of Bihar, West Bengal, Orissa and the North-Eastern States)	:	Calcutta urban-industrial axes; industrial centres of Bihar, Orissa, etc.
3. Southern Region (comprising the States of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu)	:	Madras-Bangalore-Mangalore axes; Hyderabad; Travancore - Cochin; Vijayawada-Guntur-Vishakapatnam of Andhra Pradesh.

These urban-industrial axes have to be integrated with the sub-regions, their resources and potentials and economic activities.

1.17 Natural endowments giving rise to resource based activities such as location of steel plant in tribal area of Madhya Pradesh or the Petro Chemical Complex in Gujarat have also accentuated regional disparities. The financial resource constraints led to the concentration of certain basic and heavy industries in selected centres/areas with the assumption that these industries would in turn give rise to a series of related activities having forward

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and backward linkages. These, however, have not acted as growth propellants, the problem being the absence of channels through which growth impulses can be diffused. One important reason for failure of growth-poles in areas like these is that the leading sector is linked with the distant manufacturing centre as a result of which the areas close to these centres do not have the benefit of spill-over effects. The basic assumption that the backward region possesses all productive resources, skilled manpower and all that they need is an external stimulus has been erroneous.

1.18 While inter-State disparities are a reflection of development or lack of basic and heavy industries, the intra-State differences even within the industrially developed States are sharp. These imbalances despite the policy proclamations remain to be corrected. Over the years, balanced regional development has been interpreted in terms of uplifting less developed areas by adhoc investments and not treating the strategy as a part of the overall plan frame both in its long-term and short-term perspectives. Spatial integration of economic activities at all the levels of political - administrative framework through which the planning process operates is a prerequisite for reducing regional imbalances in development.

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1.19 Strategy for removal of regional imbalances in development

Successive five year plans of India have recognised the problem of imbalance in development and stressed the need for the accelerated development of backward areas with a view to reducing regional disparities. Even as early as 1956, the Industrial Policy Resolution made a specific reference to the problems of industrial development in backward areas. In order that industrialisation may benefit the economy of the country as a whole, it is important that disparities in levels of development between different regions should be progressively reduced. Concentration of industries in certain areas has been due to the ready availability of power, water supply and transport facilities. It is one of the aims of national planning to ensure that these facilities are steadily made available to areas which are at present lagging behind industrially or where there is greater need for providing opportunities for employment provided the location is otherwise suitable. Only by securing a co-ordinated development of the industrial and agricultural economy in each region, can the entire country attain higher standards of living[18].

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18 Government of India, Cabinet Secretariat (1956): Industrial Policy Resolution, New Delhi

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The importance of balanced regional development has again been emphasised in the Industrial Policy Statement of 1980[19].

1.20 While the Second Plan articulated the strategy of industrial dispersal to achieve decentralised development, the Third Plan which laid emphasis on extending the gains of development to the less developed regions put forward the concept of large projects as nuclei for regional growth. However, the notion that industrial location is the basis for removing regional imbalances in development tends to ignore several other related aspects of development of a region. Hence, the Third Five Year Plan stressed further the importance of integrated development of the region as a whole in order that the benefits of large projects accrue in greater measure to the population of the region in which such projects are located, thereby, recognising for the first time the concept of spatial integration of economic activities. The Fourth Five Year Plan took a comprehensive view of the spatial impact of economic development and adopted a 'multi-level'

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19 Government of India, Ministry of Industry (1980): Statement of Industry Policy, New Delhi

20 Government of India, Planning Commission(1961-66); Third Five Year Plan, New Delhi

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approach according to which District, State and Nation are to be treated as a three tier system in development planning aimed at disaggregation of the national plan to the State and District levels using spatial approach where necessary[21]. The same approach was reiterated in the Fifth Five Year Plan which stated that the centralised planning process from above did not really go beyond the State level and as such the development plans did not reflect the assessment of the resource base, linkages among economic activities and peoples' participation and aspirations. As a corrective to this procedure, the concept of planning from below was emphasised with village as the local unit of planning and the Development Block and District as units for integrated development of physical and human resources using area approach to planning.

1.21 As an exercise in planning from below, during the Fourth Five Year Plan, a centrally sponsored scheme of 'Pilot Project on Rural Growth Centres' was launched in twenty selected Districts. The idea of selecting suitable locations to optimise the establishment of facilities in an area, with the selection envisaged not only for provision of social amenities and basic infra-structure but also for a

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21 Government of India, Planning Commission (1969-74): Fourth Five Year Plan, New Delhi.

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number of economic activities was the central concept underlying the rural Growth Centres. The project was to indicate how the selected Growth Centres could be promoted through comprehensive and scientific study of the overall development needs and how the centres could be meaningfully woven into the frame of District plan and thus help in the process of planning from below. The implementation of the scheme, however, was tardy, the State Governments having used it for varying purposes[22].

1.22 A Working Group on Block-level planning was set up by the Planning Commission in 1977 to prepare guidelines for Block-level planning[23]. The Block-level planning was to form part of the integrated Rural Development Programme (IRDP) introduced during the Fifth Plan period. The working group stated that the Block-level planning is to be viewed not as an isolated exercise but as a link in a hierarchy of levels. Based on the Working Group's recommendations in December, 1979, the Planning Commission issued guidelines for Block-level Planning. However, the Block-level Planning was reduced to a mere routine exercise.

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22 Government of India, Planning Commission(1974-79): Draft Fifth **Five** Year Plan, Part II, New Delhi

23 Government of India, Planning Commission(1978): Working Group on Block-level Planning, New Delhi

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The institutional change, the organisation of the rural poor, the strengthening of the implementing machinery at the Block-level with adequate degree of autonomy and decision making process recommended by the Working Group on Block-level Planning were not stressed upon in the guidelines issued by the Government for Block-level Planning[24].

1.23 One of the important reasons why the area development Plans did not achieve the desired result was that the problems of backward areas and those of the people living there have not been tackled simultaneously in the Planning process. The micro-level planning is yet to recognise the need for drawing up plans which are specific to the local conditions and local needs of the area for which it is intended[25]. This however does not mean that each unit exists in isolation independent of the other. In preparing a development plan for less developed areas, the situation of that

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[24] Centre for Development studies and Activities (CDSA); (1982) Block-level Planning in Maharashtra

[25] The phrases micro, meso and macro used in the Indian Context are essentially to distinguish three area levels in planning:

i) Micro level - District, Development Block and within them village clusters where necessary;

ii) Meso level - State and intra-State regions comprising groups of Districts or Development Blocks.

iii) Macro level - Groups of States or of inter State regions.

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area vis-a-vis the adjoining developed area is also an important consideration since the process of development spatially takes place around a system of nodes whose situation exerts influence on the sourrounding areas. However, integration of an area with others has to be in tune with the developmental needs and resource potential of that region. For instance, the hill areas by and large have remained backward owing to uneven dispersal of productive resources over vast areas, high cost of development of infra-structure facilities and lack of integrated development of these areas. In preparing development plans for hill areas, tribal areas, dry and drought prone areas, it is necessary to differentiate one area from another and evolve location specific programmes of development based on a careful identification of the causes of backwardness as well as the potential for growth. All these imply spatial approach to planning at different levels of areas depending on the resources and activities to be planned. Complementarity of the resources and economic activities also necessitate an integrated approach rather than treating backward area development as an adhoc exercise.

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1.23 Attempts at Regionalisation and studies on indicators of development

Realising the importance or regionalisation for the purpose of economic development, the Planning Commission attempted a scheme of 15 regions and 61 divisions. The administrative Districts were grouped together on the bases of homogeneity in physical factor (topography, soils, geological structure and climate), land-use and cropping pattern. The exercise also indicated the resource potential of each region and suggested guidelines of development[26]. An alternative approach to promotion of regions for planning was suggested by L.S. Bhat in which 11 regions were identified based on factors like cropping patterns, natural resources and industrialisation[27]. The same exercise also recommended the adoption of macro economic regions comprising parts of complementary resource regions or grouping of States on the basis of their complementarity in resources or patterns of economic development. Sengupta and Galina Sdasyuk delineated 7 macro economic regions of India based on the Soviet concept of Power Production Cycle. The concept of Power Production Cycle is based on the strategy that for large countries such as the

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26 Government of India, Planning Commission(1964): op.cit; p.5

27 Bhat L.S. (1971), Op. cit. p. 14

contd...

Soviet Union, it is necessary to provide certain degree of self-sufficiency in basic and heavy industry and infrastructure to groups of Republics. This would result in the formation of macro-economic regions with self-sustained growth in a national context[28].

1.24 Measuring variations in levels of development among regions

The strategy for minimising regional imbalances in development led to several attempts in working out a composite index of development. In a national context these exercises used Districts as the areal units and chose a variety of indicators of development [29]. These by necessity have been reflective (e.g. agricultural, industrial or urban development) rather than directly related to level of development (e.g. per capita income or per capita consumption expenditure). Techniques of combining these indicators have also been varied. Simple ranking of Districts against each indicator and working out a composite rank score have been used in some exercises. An improvement over these techniques was in assigning weights to each indicator. Objective

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28 Sengupta. P. and Sdasyuk. G. (1968); Economic Regionalisation of India - Problems and approaches; Census of India, Monograph Series, Vol.I No. 8, New Delhi.

29 For details refer pp. 25-29.

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techniques such as factor analysis and cluster analysis have also been adopted[30]. It must however be mentioned here that the results of these exercises have inherent limitations and are of limited use. The extent of association among the indicators is not always linear and one is not in a position to relate the association between levels of development and intensity of spatial organisation, the latter reflecting the causal relationship in the development process.

1.25 On the basis of 1961 Census data, Ashok Mitra classified all the Districts into 4 levels of development. District-wise data for 63 variables were grouped into 6 blocks such as general ecology, agricultural infrastructure, participation rates in traditional sector, potential of human resource, distribution of trade, manufacturing and infrastructure. In the analysis, Block I was left out as it was mainly descriptive and qualitative. Thereafter, for each item in Blocks II to VI, the Districts were arranged in Quartiles according to their observed values. The scores for individual items were added to arrive at the final rank for Districts[31]. Even though the

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30 For details refer pp. 26-29

31 Mitra Ashok: Levels of Regional Development in India; Census of India, 1961 Vol. I, Part I.A(i)

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method giving weights was arbitrary, the exercise brought to focus, for the first time, the variations in levels of development which could be explained in terms of the regional structure and patterns of development which the State level exercises do not reveal.

1.26 Disparities in development of Southern India have been systematically analysed by M.N. Pal[32]. For this, several indices of non-agricultural activities like Index of Concentration of total industrial labour, Index of Concentration of factory workers, Index of Concentration of male migrants, Index of Urbanism, Index of Concentration of Labour employed in transport services, Index of Concentration of Labour employed in commercial services were computed. From this, a composite index of non-agricultural development was computed using principal component analysis. An Index of agricultural productivity was also worked out using weighted index for yields of important crops. Finally combining these two indices, a composite index of development was formed by assigning weights in proportion to the values of output (average for 3 years 55-56 to 57-58) in non-agricultural and agricultural sectors. Such a

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[32] Pal M.N.: A method of Regional Analysis of economic development with special reference to South India: Journal of Regional Sciences: Vo.5, 1963.PP.41-58

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procedure had an advantage in that it was possible to relate the cause of variations in overall levels of development to the structural attributes and their variations in levels of development.

1.27 Government of India set up a Committee in 1969 (Pande Committee as it has been commonly referred to) to identify backward areas and lay down the norms of backwardness exclusively for the purpose of spread of industries through concessional financial assistance to such areas. A total of 6 variables from the all India average was calculated and the States were ranked accordingly. Andhra Pradesh, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh were classified industrially backward by the Committee[33].

1.28 A socio-economic classification of Districts was attempted by Biplab Dasgupta in 1971. In all 24 variables (1961 census data) in 294 Districts covering 15 States were analysed using correlation technique, principal component analysis and discriminant analysis. From a correlation matrix of these 24 variables, a smaller set of 15 variables was chosen and principal component analysis applied for computing the index[34].

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33 Government of India, Planning Commission(1969): Report of the Working Group - Identification of Backward Areas, New Delhi

34 Dasgupta Biplab: Socio-economic classification of districts - A statistical approach, Economic and Political Weekly, Vol. VI, August 14, 1971, PP. 1763-1774.

1.29 S.K. Rao measured the distance between regions in India by making a comparison between early 50's and 60's. States were the unit of analysis and a composite index was constructed using 6 variables, the variables, among other things, including output data of agriculture and industry[35]. The study hypothesised that industrialisation was the basis of development and hence 3 of the 6 variables were industry variables. Agricultural output per head instead of productivity was taken because areas with hign productivity are also areas which are densely populated. The availability factor therefore, becomes important. By the use of factor analysis, States were ranked and by cluster-analysis they were grouped for calculation of distances.

1.30 For identifying backward regions Hemalatha Rao analysed 24 variables at the State level. The variables were chosen from 4 specific sectors, namely, agriculture, industry, education and banking. A comparison between 1956, 1961 and 1965 has been attempted. Principal component analysis was used for computing indices of these 4 factors and finally a composite index of development at the State level[36].

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35 Rao S.K.: A note on measuring economic distances between regions in India, Economic and Political Weekly, April 28, 1973 pp. 793-799.

36 Rao, Hemalatha, Identification of backward regions and the trends in Regional disparities in India; Artha Vignana Vol. XIX.No.1 March,1977, pp.93-112.

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In a recent study of Karnataka, the same author has analysed the inter-regional disparities at the block level at a particular point of time. About 85 development indicators for the period from 1975-76 to 1979-80 were selected and these were reduced to 10 sectoral indices from which a single index of development was computed. The study examined the interrelationships of different sectoral indices and structural variations and typologies of backwardness[37].

1.31 N.S. Iyengar and Sudarshan developed a different method from the ones specified earlier for measuring the level of District development. An application of the method was tried on a selected number of variables for the districts in Karnataka and Andhra Pradesh[38]. Briefly, if Xid represents the I th development - indicator in d th district, then,

$$Yid = \frac{Xid - \underset{d}{Min}\ Xid}{\underset{d}{Max}\ Xid - \underset{d}{Min}\ Xid}$$

The scaled values Yid's were so calculated for all I's i = I....n. From the matrix of scaled values Y=(Yid), a measure of development was computed by giving weights to the scaled values.

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37 Rao, Hemalatha (1982): Regional Disparities, Dimensions & Typology of development in Karnataka (Mimeo)

38 Iyengar, N.S. Sudarshan P: A method of classifying regions from Multivariate data : Economic and Political Weekly, Dec. 1982 PP.2047-2052.

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1.32 Recent studies carried out in the Hill regions of Uttar Pradesh and Southern Bihar explain the underdevelopment of these regions in terms of inherent geographical and resource characteristics in the regional setting[39].

1.33 Thus objective of minimising regional disparities as adopted in the Indian context has its focus on removal of inter-state disparities in economic development for which a number of indicators - mostly indirect or retlective areas - are chosen. This has led to the belief that exercises that were attempted using smaller units than the States have lost their meaning in the context of regional development in a national context. The problem has also acquired political overtones with every State trying to raise its share in the Central assistance under different categories by declaring as many areas within them as backward under one category or the other. In all these studies the accent has been on identifying less developed areas and to adopt special measures for ameliorating the economic conditions. It should be stressed here that accentuation or minimisation of

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39 Dhobal G.S. (1982). Money Order remittances and out migration - A case study of Pauri Garhwal District AND Sinha Savita (1982), Regional structure, process and patterns of Development. A case study of the Chota Nagpur Region in Bhat L.S. spatial perspectives in socio-economic development from National and Regional Angles, (Mimeo)

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inter-State disparities in development depends on the spatial structure and organisation of the economy within the States. Intra-State regional disparities brought out in the studies reviewed here bring out the utility of measuring levels of development on an objective basis. Underdeveloped regions comprising groups of Districts such as Eastern Madhya Pradesh, Southern Bihar, parts of Orissa, Maharashtra and West Bengal or of Telengana in Andhra Pradesh reveal the nature of resources, potentials and limitations for development. These realities of regional economies are concealed in inter-State comparisons of development.

1.34 Against this background of the theoretical and conceptual frame work and the spatial aspects of the national development plan, this study is an attempt to understand and evaluate the spatial processes and patterns of development using Karnataka State as a case study.

CHAPTER II

STUDY AREA, OBJECTIVES AND DESIGN OF THE STUDY

2.1 Study Area

The study relates to the State of Karnataka. The present State of Karnataka formed around the nucleus of the former princely State of Mysore came into existence on 1st November, 1956 under the State Reorganisation Act. The Princely State of Mysore which occupies the Southern half of Karnataka was formed in 1799 A.D. after the fourth Mysore war and remained unchanged till 1950. In 1950, following the exchange of enclave areas between the State of Mysore and the then province of Madras under the Provinces and States (Absorption of Enclaves) Order, 1950, the State gained another 80 Km.^{2} area. Subsequently, under the Andhra State Act, 1953, the Bellary district of Madras State excluding the talukas of Adoni, Alur and Rayadurga were annexed to the State of Mysore resulting in an addition of 9897 Km.^{2} area to the State. Finally, the linguistic reorganisation of the States in 1956 resulted in the merger of Belgaum, Bijapur, Dharwar and North Kanara districts from the Bombay Province, Gulbarga, Raichur and Bidar districts from the Nizam's State of Telengana, South Kanara district and Kollegal taluk from the Madras Province and the entire State of Coorg.

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The State has been renamed Karnataka in 1973(Fig.I). The State is bounded by Maharashtra in the North and by Goa in the West. It has common borders with Andhra Pradesh to the East and with Tamil Nadu and Kerala to the South-East. Though the State is linguistically homogeneous, there are sharp contrasts in environment, physical and humman resources and socio-economic development. The State can be divided into four sub regions, namely, the Coastal Region, the Malnad (the Western Ghats), the Southern Maidan (Plateau) and the Northern Maidan (Plateau).

2.2 Objectives of the Study

The following are the objectives of the study : -

i) To understand the interaction between the structure and process of economic development of each region within the State;

ii) To evaluate the levels of development of the region at two points of times, 1971 and 1981; and

iii) To examine whether planning has bridged the gap between the developed areas and the less developed areas over the years. In doing so, it will be examined whether planning has incorporated the 'area approach' which

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KARNATAKA
POLITICAL-ADMINISTRATIVE FRAMEWORK
BEFORE STATE REORGANISATION (1956)

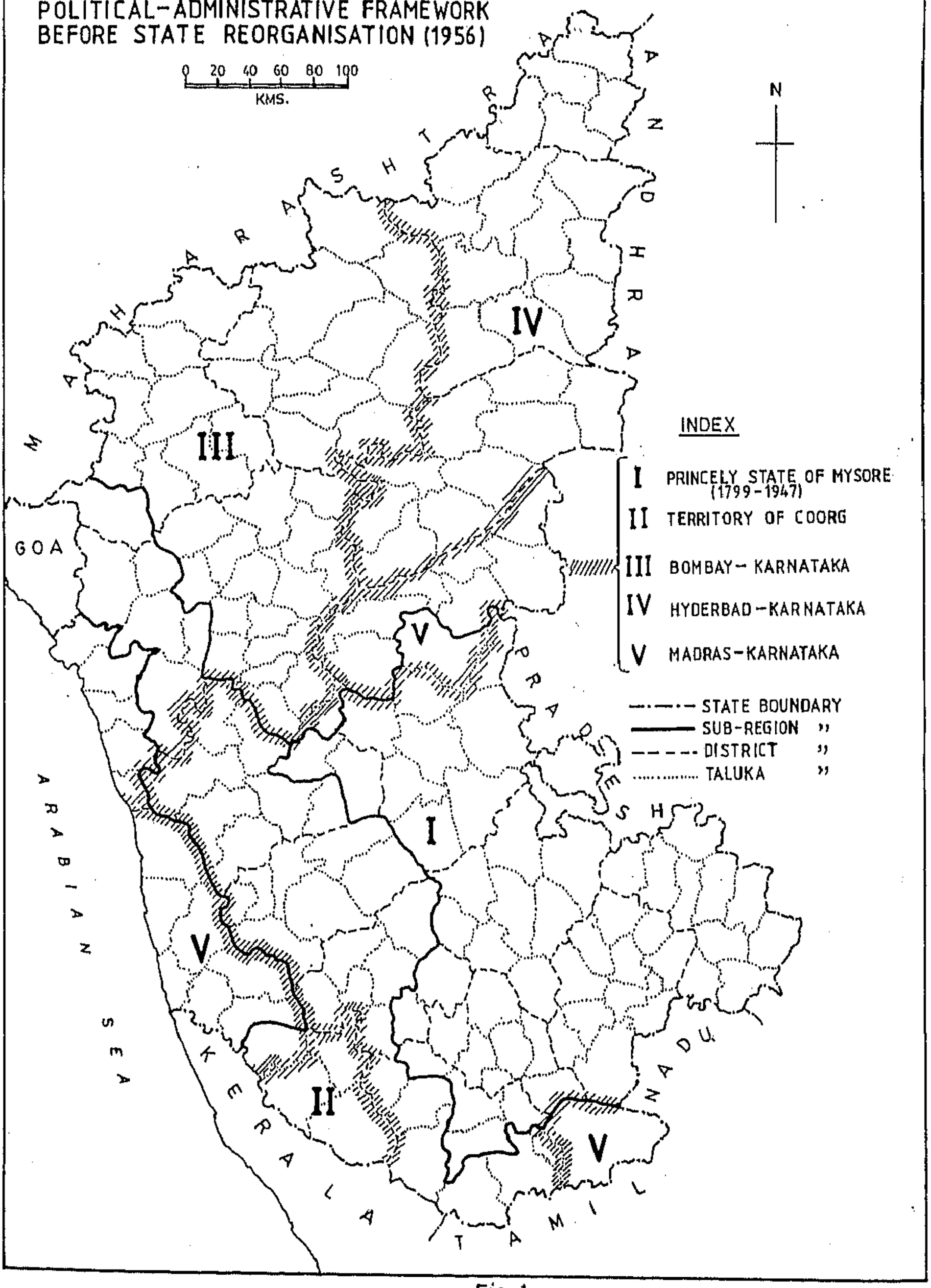

Fig. 1

integrates human settlements with resource base. An assessment whether the area development plan (if it exists) for a backward area takes care of its problems and needs within the context of overall regional plan will also be made.

2.3 Data-base and unit area for regional analysis

The areas of analysis will be the talukas which have been grouped together to form regions. In the case of Karnataka, the talukas or tehsils are coterminus with Development Blocks. Though for administrative convenience, sub regions are carved out within the State by grouping Districts, the plan programmes supported by required financial and physical inputs have to be worked out for a smaller area. It is for this talukas have been selected as the area of analysis. Our States which are linguistically homogeneous have varying levels of development within owing to differences in resource base and other related factors. Hence drawing up a plan for the State as a whole and breaking it down to sub-regional plans (more as a financial exercise) will only result in a situation where the needs of smaller unit levels get completely eliminated. For a State like Karnataka, in particular, a smaller unit like taluka becomes all the more relevant because of the wide regional

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variations in the resource base, topography and land-use resulting in sharp intra/inter regional variations in development. Talukas as the unit of data compilation and analysis would, therefore, serve to evaluate the spatial processes and patterns of development more realistically. Any attempt at decentralised planning should be based on a meaningful aggregation of plans drawn up for smaller unit levels like talukas in tune with their potentials and resource base.

2.4 Source of data

The taluka level data in respect of 175 talukas of the State for 1971 and 1981 were collected from the Bureau of Economics and Statistics, Government of Karnataka, the State Departments of Planning, Public Works and Industry, the Directorates of Agriculture, Education, Health and Medical Services, Cooperation and Marketing. The data on population and human settlements were taken from the Directorate of Census Operations, Karnataka.

2.5 Methodology

About 100 variables representing the major sectors of the economy like agriculture, industry, education, infrastructure etc., were collected for 1971 and 1981. From out of these, 67 indicators have been worked out for the 175 talukas

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and these have been subjected to further analysis. The three methods used for analysis are factor analysis, taxonomic ranking and cluster analysis. While factor analysis and taxonomic ranking have been carried out to identify the levels of development of the different regions, the cluster analysis has been done mainly with a view to understanding the processes of development.

2.6 Factor Analysis

This has been used primarily to get a measure of development in terms of a few indicators. Factor analysis in which the problem of giving weights does not arise reduces the whole body of data into a few factors (latent variables) with very little loss of information. Normally, the first few factors account for bulk of the variation among the observations. Though no composite index has been worked out, the talukas have been ranked on the basis of their factor scores on factor I since a number of variables have high factor loadings on factor I.

2.7 Taxonomy

Instead of working out a single yardstick of development, the technique of taxonomic ranking was used to rank talukas on the developmental scale. For this purpose, ten variables were chosen representing

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a factor each of the first ten factors. The variable having the highest factor loading on each factor was chosen as representative of that factor.

In this method, an ideal taluka is chosen for each of the selected variables from among the observations. Depending on the variable under consideration, the ideal could be a positive or a negative value. If it is positive, the highest observation becomes the ideal and if it is negative, the lowest the ideal. The squared deviatious are then taken between the ideal and actual for all the talukas, in respect of all the variables. Finally, the deviations between the ideal and actual are consolidated over the variables for each of the talukas and on the basis of the consolidated measure/distance the ranking has been done. The taluka whose distance is the lowest from the ideal is the most developed and vice versa.

2.8 Cluster Analysis

Ranking by itself helps us identify developed versus less developed areas but what is equally important is to know the underlying structure of the development processes at work for explaining both development and disparities. Cluster analysis has therefore been used to understand the nature and causes of backwardness. The variables used for this are the same as those for taxonomic ranking. Under

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this, the 175 talukas have been put in different groups of clusters such that the elements within a cluster have a high degree of natural association and the clusters between themselves are distinct from each other. These, however, are not hierarchic clusters.

2.9 In the 'Euclidean Clusters' the clusters are formed around a cluster centre. Initially, each observation is allocated to its closest cluster centre. The means of the clusters are then calculated and are taken to be the new cluster centres. By a process of iteration, the observations are allocated to their respective clusters such that the sum of squared deviatious of the observations from the cluster centre is minimum. The cluster analysis while bringing out the structural characteristics offers an explanation for lack of development of certain areas.

An explanation of the three methods is given in the technical note appended to Chapter-IV.

CHAPTER - III

KARNATAKA : INTER-STATE ANALYSIS

3.1 An inter-state analysis apart from bringing out the inherent strengths and weaknesses of the economy also gives a measure of the State's potential for further development. With economic development inter-State linkages and complementarities become evident and these in a limited way provide an explanation for the varying levels of development as between States. Thus, inter-State comparisons are only the first step to understand the endogeneous factors for disparities in development before analysing the intra-State differences. The imbalances in development also get heightened when a state which is highly developed in comparison with others shows wide variations internally as in the case of Maharashtra. As against this, Punjab which may not be as developed as Maharashtra in overall terms has a more balanced development internally. Before proceeding to analyse the intra-State differences, some salient aspects of Karnataka's economy as compared to other States are discussed below:

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3.2 Demographic features (Tables 3.1 and 3.2)

In respect of both population and area, Karnataka stands eighth in the country. According to 1981 census, the population of Karnataka was 37 million. The State which was experiencing slow growth of population at rates lower than the country between 1901 to 1941 started growing rapidly since the decade 1941-51. The growth rates of population in the State since then have generally been higher than all India growth rates. During the decade 1971-81, Karnataka has had the fifth highest growtn rate of population in the country. (Table 3.1). The State is not only among the few that have registered an increase in the growth rate of population in 1971-81 over 1961-71, but is also the fastest growing among the four southern States. In contrast to Karnataka, the neighbouring States of Tamil Nadu and Kerala have recorded perceptible fall in their population growth.

3.3 Inspite of its high growth, the State has not come under the excess pressure of population. The density of population in the State at 196 persons per Km^2. is less than that of all India (215 persons per Km^2) and a considerably large proportion of the population lives in relatively low density areas unlike in the states of West Bengal, Kerala and Maharashtra. Distribution of population by density

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ranges shows that as against 30 percent of the population living in low density areas (less than 200 persons per Km^2.) in the country, almost 50 percent of the population in Karnataka lives in areas with a density of less than 200 persons per Km^2. This is also in sharp contrast with the other Southern States of Kerala and Tamil Nadu where more than 60 percent of the population lives in areas with a density of over 350 persons per Sq. Km. (Table 3.2)

Table 3.1 Decennial growth rate of population and variations in growth rate (1951 - 81).

States	1951-61	1961-71	1971-81	Percent variation 61-71 over 51-61	Percent variation 71-81 over 61-71
Andhra Pradesh	15.65	20.90	23.10	5.25	2.20
Assam	34.98	34.95	36.05	-0.03	1.10
Bihar	19.76	21.33	24.06	1.57	2.73
Gujarat	26.88	29.39	27.67	2.51	-1.72
Haryana	33.79	32.21	28.75	-1.58	-3.46
Karnataka	21.57	24.22	26.75	2.65	2.53
Kerala	24.76	26.29	19.24	1.53	-7.05
Madhya Pradesh	24.17	28.67	25.27	4.50	-3.40
Maharashtra	23.60	27.45	24.54	3.85	-2.91
Orissa	35.04	25.05	20.17	-9.99	-4.88
Punjab	21.56	21.70	23.89	0.14	2.19
Rajasthan	26.20	27.83	32.97	1.63	5.14
Tamil Nadu	11.85	22.30	17.50	10.45	-4.80
Uttar Pradesh	16.66	19.78	25.49	3.12	5.71
West Bengal	32.80	26.87	23.17	-5.93	-3.70
INDIA	21.51	24.80	25.00	3.29	0.20

Note : Only selected states are included for comparison.

Source: Census of India, 1981, Series I. India, Part II(A): General Population.

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TABLE 3.2: Population concentration according to density ranges.

(Per cent)

States	1981					
	Density ranges : Persons per Km^2.					
	200 or below	201-350	351-500	501-750	751-999	1000 +
Andhra Pradesh	48.91	41.50	5.37	-	-	4.22
Bihar	10.28	15.27	26.32	30.95	17.18	-
Gujarat	40.22	38.72	21.06	-	-	-
Haryana	12.59	51.97	35.44	-	-	-
Karnataka	48.38	38.30	-	13.32	-	-
Kerala	3.82	2.18	8.03	31.51	25.07	29.39
Madhya Pradesh	83.76	13.54	2.70	-	-	-
Maharashtra	57.33	24.20	5.34	-	-	13.13
Orissa	52.70	21.20	26.10	-	-	-
Punjab	-	56.79	32.88	10.33	-	-
Rajasthan	75.81	24.19	-	-	-	-
Tamil Nadu	-	33.82	56.47	-	2.94	6.77
Uttar Pradesh	7.11	8.66	36.43	45.98	1.82	-
West Bengal	-	9.62	24.66	22.60	25.11	18.01
INDIA	**30.91**	**22.37**	**20.38**	**15.14**	**5.39**	**5.81**

Source: Complied from the Census population tables for 1981.

3.4 Trends in Urbanisation (Table 3.3)

Of the total population in the State, 28.9 percent is urban. Though higher in comparison with the national level of urbanisation (23.3 per cent), it is less when compared with more urbanised States like Gujarat, Maharashtra and Tamil Nadu which have more than a third of their population living in urban areas, according to 1981 census.

3.5 The State accounts for 7.5 per cent of the total towns and 6.8 per cent of the urban population in the country. Compared to 1971, the relative share of the State in towns as well as urban population have remained more or less unchanged in 1981. However, the growth rate of urban population has been very high in the State in the last decade. While the number of towns has grown by 9 per cent between 1971 and 1981, the urban population has increased by as much as 50.6 per cent. This is higher than the all India increase of 46.3 per cent for the same period. The State has recorded the highest growth rate in urban population in South India as well during the decade, 1971-81.

3.6 A distribution of the urban population by size class of towns in 1981 shows that 58.6 per cent of the urban population in Karnataka lives in Class I towns with a population of 1 lakh and more(Table 3.3).

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TABLE 3.3: Percentage distribution of twon population by categories of town - 1971& 1981.

States	Class I		Class II		Class III		Class IV-VI	
	1971	1981	1971	1981	1971	1981	1971	1981
Andhra Pradesh	45.4	53.7	14.5	16.2	21.5	20.9	18.6	9.2
Assam	11.0	--	23.7	--	24.3	--	40.9	--
Bihar	32.3	54.1	13.5	14.4	28.2	19.3	26.0	12.2
Gujarat	45.1	57.9	15.7	14.5	17.7	13.3	21.5	14.3
Haryana	12.8	56.6	39.8	10.8	26.1	14.8	21.4	17.8
Karnataka	51.1	58.6	8.2	6.5	15.4	17.8	25.3	17.1
Kerala	42.3	53.1	13.4	9.5	31.8	31.9	12.5	5.5
Madhya Pradesh	41.1	46.8	12.5	18.0	20.4	12.2	26.1	23.0
Maharashtra	64.8	75.2	11.1	5.9	11.7	10.9	12.5	8.0
Orissa	30.0	41.6	8.0	12.8	31.7	21.8	30.3	23.8
Punjab	39.9	46.4	15.7	13.3	21.8	21.3	22.7	19.0
Rajasthan	40.9	46.5	10.8	10.0	20.0	22.0	28.3	21.5
Tamil Nadu	43.8	62.2	13.8	16.0	20.9	12.5	21.6	9.3
Uttar Pradesh	53.0	51.5	11.6	12.7	17.9	12.3	17.5	23.5
West Bengal	54.9	76.8	19.4	10.8	13.8	7.7	11.9	4.7
INDIA	**48.9**	**60.4**	**13.5**	**11.6**	**18.3**	**14.3**	**19.3**	**13.6**

Note:

	Population range.
Class I	Over 100,000
Class II	50,000-99,999.
Class III	20,000-49,999.
Class IV to VI	Less than 19,999.

Source: Census of India, 1971 and 1981; Series I, Part II(A), General Population.

This concentration has further increased over the years. While the proportion of population living in Class I towns has increased from 50.1 per cent in 1971 to 58.6 per cent in 1981, there is a decrease in the relative shares of other towns excepting Class III towns (with a population size of 20,000 to 49,999) whose share of the urban population has more or less remained stable. The concentration of urban population in the higher order towns is, however, largely true of almost all the States. Inspite of the substantial increase in the population of higher order towns, what marks Karnataka from States like Maharashtra, West Bengal and Tamil Nadu is that, a little over 30 per cent of its urban population still lives in smaller towns (17.8 per cent in Class III towns and 13.7 per cent in Class IV towns). As against this, 87 per cent of the urban population in West Bengal, 81 per cent in Maharashtra and 78 per cent in Tamil Nadu live in towns of size Class I and II. Thus, the urban structure and pattern of urbanisation in Karnataka is less lopsided than those of the States mentioned above. However, in States which have an extensively uniform agricultural base as in Punjab, urbanisation shows balanced development with cities having lower percentage of the total urban population.

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3.7 Industrial Development (Tables 3.4 to 3.6)

The occupational pattern of the workforce as revealed by the 1981 census shows that 35 per cent is in non-agricultural occupations. Though, it is only an indirect measure of the extent of industrialisation, the non-agricultural component of the workforce (secondary and tertiary occupations grouped together) indicates the diversification of the economy. The per cent of workforce in non-agricultural occupations in the State (35 per cent) is slightly more than the all India level (33.5 per cent). Yet in comparison with the industrialised States like Gujarat, Maharashtra and Tamil Nadu (about 40 per cent), the State has a lower level of development of the non-agricultural sector.

3.8 Despite showing signs of growing industrialisation, the State's economy is not as diversified as those of Maharashtra, Gujarat or Tamil Nadu. In these States, apart from a lesser dependence on agriculture, the income generated from the tertiary sector was also very high (over 35 per cent of the State Domestic Product). At constant prices, the share of secondary sector in the State Domestic Product of Karnataka has registered an increase from 18.6 per cent in 1970-71 to 22.4 per cent in 1981-82, which is marginally more than the secondary sector's share in the National Product. However, the State is yet to reach the level of the highly

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Table 3.4 Relative shares of Primary, Secondary and Tertiary sector in the Net Domestic Product (1970-71 prices)

(Per cent)

States	1970-71			1981-82 (P)		
	A	B	C	A	B	C
Assam	63.8	14.1	22.1	60.0	12.3	27.7
Andhra Pradesh	57.2	13.4	29.4	51.7	15.2	33.1
Bihar	62.8	16.8	20.4	50.9	22.0	27.1
Gujarat	48.9	20.8	30.3	38.8	24.7	36.5
Haryana	64.8	15.2	20.0	50.6	19.2	30.2
Karnataka	59.6	18.6	21.8	50.6	22.4	27.0
Kerala	49.4	16.3	34.3	39.2	20.7	40.1
Madhya Pradesh	62.2	14.7	23.1	53.2	17.8	29.0
Maharashtra	28.6	34.2	37.2	28.4	34.5	37.1
Orissa	67.3	10.4	22.3	66.2	11.3	22.5
Punjab	58.3	15.3	26.4	50.6	17.5	31.9
Rajasthan	64.5	13.6	21.9	53.0	15.4	31.6
Tamil Nadu	39.9	26.1	34.0	29.3	33.2	37.5
Uttar Pradesh	60.3	14.9	24.8	53.1	20.1	26.8
West Bengal	45.1	22.7	32.2	41.1	24.5	34.4
INDIA	**50.0**	**19.6**	**30.4**	**42.0**	**20.9**	**37.1**

Note: (A) Primary Sector (B) Secondary Sector (C) Tertiary Sector P - Provisional.

Source: Government of India, Central Statistical Organisation } Estimates of State Domestic Product 1960-61 to 1982-83.

industralised States. Within the four Southern States, it is only second to Tamil Nadu where secondary sector's contribution is nearly one-third of the State Domestic Product (Table 3.4).

3.9 As secondary sector includes construction activities as well, industrialisation of the economy is more appropriately captured by the manufacturing activity. The share of manufacturing in the Net Domestic Product at factor cost (at constant prices) shows a rise from 11.4 per cent in 1970-71 to 13.8 per cent in 1981-82 in the State. This is not only lower than the all India share of 14.8 per cent but far less in comparison with the industrialised States

Table : 3.5 Share of manufacturing in the Net Domestic Product at factor cost (1970-71 prices)

States	1970-71		1981-82	
	A	B	A	B
Assam	9.1	60.1	9.5	58.3
Andhra Pradesh	8.8	46.9	9.9	52.0
Bihar	9.9	73.0	11.3	72.1
Gujarat	16.0	75.8	18.7	78.8
Haryana	9.9	68.1	13.8	73.7
Karnataka	11.4	65.8	13.8	73.7
Kerala	12.5	45.0	14.7	53.2
Madhya Pradesh	9.0	52.0	11.4	62.0
Maharashtra	26.5	77.7	28.5	80.7
Orissa	8.0	68.4	8.6	71.5
Punjab	8.0	49.4	11.6	50.0
Rajasthan	8.0	39.9	8.4	43.0
Tamil Nadu	19.3	57.7	25.8	64.2
Uttar Pradesh	8.9	49.3	11.6	43.6
West Bengal	17.5	73.5	17.2	72.9
INDIA	13.4	62.2	14.8	63.7

Note: A - Percentage share of total manufacturing
B - Percentage share of registered manufacturing in total manufacturing

Source: Government of India, Central Statistical Organisation, Estimates of State Domestic Product - 1960-61 to 1982-83.

3.10 However, Karnataka is one of the few States where the registered manufacturing forms a substantial portion of total manufacturing. As of 1981-82, organised manufacturing accounted for nearly 74 per cent of the Net Domestic product originating from the manufacturing sector in the State. This, as can be seen from the Table compares well with other industrialised States. The all India picture indicates that over a ten-year period from 1970-71 to 1981-82, the share of registered manufacturing in total manufacturing has increased only marginally from 62.2 per cent to 63.7 per cent. Compared to this, the emergence of registered manufacturing in Karnataka is quite significant.

3.11 An examination of the data for factory sector of the Annual Survey of Industries showed that Karnataka which had 5 per cent of the total registered factories in the country also accounted for 5 per cent of the total value added in 1979-80. (Table 3.6).

3.12 Considering the fact that both productive and fixed capital for the factory sector in Karnataka are among the lowest in the country, the performance as judged by the value added is impressive. As of 1979-80, the fixed capital per factory (census sector) in Karnataka was Rs. 116 lakhs against Rs. 142 lakhs for all India. But the net value added

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per worker in the State (Rs. 22,373) was higher than that of the country (Rs. 20,152). The net value added per factory at Rs. 55.40 lakhs was almost on par with that obtained at the national level.

TABLE 3.6: Share of selected States in the number of Units, employment and value added, ASI (Census Sector), 1979-80

(Per cent)

States	Registered Factories	Employment	Value added
Assam	2.7	1.8	1.4
Andhra Pradesn	8.1	7.7	4.9
Bihar	4.1	5.1	5.2
Gujarat	10.7	8.7	9.3
Haryana	3.2	2.2	2.9
Karnataka	4.9	4.7	5.1
Kerala	3.9	3.7	3.1
Madhya Pradesn	3.8	4.2	4.3
Maharashtra	16.5	17.7	25.0
Orissa	1.1	1.6	2.3
Punjab	4.9	3.0	2.9
Rajasthan	1.9	2.5	3.0
Tamil Nadu	10.3	9.5	9.6
Uttar Pradesh	10.6	10.0	6.3
West Bengal	8.9	14.2	11.6
INDIA	100.0	100.0	100.0

Source: Government of India, Central Statistical Organisation, Annual Survey of Industries, Summary results for factory sector, 1979-80.

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3.13 The structure of manufacturing sector brings out that there is a concentration of engineering units in the State which comprise basic metals and alloys, metal products and parts except machinery and transport equipment; machinery and machine tools; electrical machinery and apparatus and transport equipment and parts. Their share in employment and value added in the State respectively was 36 per cent and 50 per cent in 1979. Investments by public sector in the engineering industry is an important reason for its concentration in the State.

3.14 In a study by Ahuwalia[1] on Regional Pattern of Industrial development, the State has been categorised as industrially advanced. On the basis of a number of indicators like per capita value added in manufacturing, relative contribution of the manufacturing sector to the State Domestic Product, annual compound growth rates of NDP in manufacturing sector between 1962-63 to 1977-78, the study showed that Karnataka's rank had moved up from 7(from the top) in 1960-61 to 5 in 1977-78 at the national level.

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1 Ahluwalia, S.S. (1982); "Regional Pattern of Industrial development in India." Paper presented in a seminar on Regional Dimensions of India's Economic Development, Nainital.

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3.15 Agriculture

Agriculture supports 65 per cent of the State's workforce which is almost as high as the dependence of the workforce on agriculture at the national level (66 per cent). Among the Southern States, the dependence on agriculture is the second highest in Karnataka, the first being Andhra Pradesh with 69 per cent of the workers in agricultural occupations. The corresponding figures for Kerala and Tamil Nadu are 41.3 per cent and 61 per cent respectively.

3.16 In terms of incomes generated, almost 50 per cent of the State's Domestic Product is generated by the primary sector. Though over the years, the relative share of the primary sector in the State Domestic Product has decreased, it is still higher than the relative share of the primary sector in the National Product which was 42 per cent in 1981-82 (Table 3.4). In the case of States like Maharashtra, Gujarat and Tamil Nadu, the share of primary sector in the State Domestic Product stands limited to around 30 per cent.

3.17 Cropping Pattern

The cropping pattern in the State shows that between 65 and 70 per cent of the total cropped area is under food crops. The other important

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commercial crops grown are groundnut, cotton, sugarcane, coffee, tobacco and spices. The State is the largest producer of coffee and one of the major producers of groundnut. The cropping pattern has undergone a slight change over the years. While the relative share of area under food crops (cereals and pulses) as a whole has remained more or less the same, the share of cereals in the total cropped area has increased from 53 per cent in 1970-71 to 61.3 per cent in 1980-81. On the otherhand, the share of pulses in the total cropped area has declined from 13.2 per cent in 1970-71 to 6.5 per cent in 1980-81. The share of sugarcane in the total cropped area has almost doubled during the period under reference and that of cotton has marginally increased from 10.4 to 11.3 per cent. An important aspect of change about the cereal cropping is that the relative share of paddy has gone up which is mainly due to additional areas coming under irrigation in certain parts of the State. (eg; Bellary and Raichur). Increase in area under sugarcane crop is also mainly attributable to better irrigation facilities.

3.18 Yield Rates (Table 3.7)

The yield rates of some of the principal crops in the State are well above the all India averages and are also comparable with those of the

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TABLE 3.7 Yield per hectare of principal crops (1970-71) & (1980-81)

Quintals/hect.

States	Rice		Jowar		Bajra		Maize		Ragi	
	1970-71	80-81	70-71	80-81	70-71	80-81	70-71	80-81	70-71	80-81
Andhra Pradesh	13.6	19.5	3.8	5.3	5.0	6.5	13.4	22.6	8.0	9.7
Assam	10.1	11.1	-	-	-	-	5.5	5.9	-	-
Bihar	7.9	10.2	@	@	@	@	11.2	9.9	5.2	6.4
Gujarat	12.2	11.7	3.7	6.4	8.8	8.9	16.2	13.1	9.3	7.1
Haryana	17.1	26.0	2.8	3.5	9.4	5.5	11.4	11.3	@	@
Karnataka	16.8	20.1	7.8	7.7	5.2	3.1	32.3	25.8	9.4	10.3
Kerala	14.8	15.9	@	@	@	@	@	@	@	@
Madhya Pradesh	8.4	8.3	6.1	7.7	5.4	6.1	10.6	9.2	@	@
Maharashtra	12.3	15.7	2.8	6.9	4.1	4.5	10.0	17.8	8.7	9.5
Orissa	9.6	10.3	6.2	6.8	@	@	8.2	9.7	9.0	7.9
Punjab	17.7	27.4	@	@	11.7	12.5	15.5	16.0	@	@
Rajasthan	11.3	8.9	4.9	3.4	5.2	2.3	12.3	8.7	-	-
Tamil Nadu	19.7	18.7	7.3	7.9	6.6	8.4	11.0	10.7	10.2	13.0
Uttar Pradesh	8.2	10.5	6.6	6.0	7.9	7.4	11.9	7.3	7.8	9.6
West Bengal	12.4	14.4	@	@	@	@	9.4	10.6	7.9	6.1
ALL INDIA	**11.2**	**13.4**	**4.7**	**6.6**	**6.2**	**4.6**	**12.8**	**11.6**	**8.7**	**9.6**

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TABLE 3.7 (Contd) Yield per hectare of principal crops (1970-71) & (1980-81)

Quintals/hect.

States	Ground-nut		Cotton		Tobacco		Sugarcane (Cane)	
	70-71	80-81	70-71	80-81	70-71	80-81	70-71	80-81
Andhra Pradesh	7.7	6.6	0.5	3.0	6.5	9.7	762	760
Assam	-	-	@	@	@	@	373	358
Bihar	@	@	@	@	8.9	7.8	384	314
Gujarat	10.4	7.7	1.8	1.9	13.0	15.2	520	590
Haryana	8.3	12.8	3.3	3.5	@	@	450	405
Karnataka	7.3	5.8	0.6	0.8	5.0	6.6	877	793
Kerala	10.9	8.5	@	@	@	@	489	592
Madhya Pradesh	7.2	6.1	0.6	0.8	@	@	266	592
Maharashtra	6.5	7.3	0.3	0.8	@	@	680	923
Orissa	12.4	13.4	@	@	8.7	5.3	539	630
Punjab	9.7	12.5	3.7	3.1	@	@	413	552
Rajasthan	6.7	4.1	1.8	1.8	@	@	327	395
Tamil Nadu	9.2	8.6	2.0	2.0	15.0	15.5	773	1015
Uttar Pradesh	6.5	7.0	1.5	1.3	8.9	13.1	406	470
West Bengal	@	@	@	@	7.6	9.2	542	607
INDIA	**8.0**	**7.4**	**1.1**	**1.5**	**8.1**	**10.7**	**483**	**578**

Note: @ These crops are insignificant in the respective States.
- Negligible.

Source: Government of India, Ministry of Agriculture, Directorate of Economics and Statistics, Area and Production of principal crops, 1984-85.

agriculturally advanced States in the country. During 1980-81, the State has had the hignest yield rate for maize and the second highest for Jowar in the country. Karnataka ranked third in the per hectare yield of rice next to Punjab and Haryana during the period under reference.

3.19 Among the Southern States, the yield rates of rice in Karnataka are marginally above the major rice producing States of Andhra Pradesh and Tamil Nadu which is a significant achievement. In the case of other cereal crops like jowar which is extensively grown in the State and maize, the yield rates though well above the all India averages have actually decreased between 70-71 and 80-81. The productivity levels of certain major cash crops grown in the State are however, far from satisfactory. While the yield rates of groundnut and cotton are below the all India averages, the yield rates of sugarcane has declined by 10 per cent in the ten-year period. The other sugarcane growing States like Maharashtra and Tamil Nadu, on the contrary, have had impressive increases in their yield rates of the crop.

3.20 Overall, the productivity levels attained by agriculture in the State are commendable.

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In their study of Indian agriculture, Bhalla & Allagh established that the growth in production during 1962-73 in Karnataka has mainly been due to the growth in yield rates[2]. The study was an exercise in decomposing growth in production into growth in area and growth in yield rates.

3.21 Irrigation (Table 3.8)

Despite the impressive yeild rates, in terms of certain other measures such as extent of irrigation and fertilizer consumption, the State is yet to achieve the levels of the agriculturally advanced States like Andhra Pradesh, Haryana, Punjab or Tamil Nadu. The level of irrigation in Karnataka is the third lowest among the selected States. As a consequence, the State's cropping intensity which bears a high correlation to the extent of irrigation is also the lowest in the country. Commenting on the utilisation of irrigation potential, the Draft Seventh Five Year Plan of Karnataka observes that the completion of major irrigation projects has been delayed because of technical problems escalating their costs. The result of inadequacy of irrigation is seen in the relatively smaller area under the High Yielding Varities of crops in the State.

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2 Bhalla, G.S. and Alagh. Y.K. (1979): Performance of Indian Agriculture. A district wise analysis, Sterling, New Delhi

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State-wise coverage of High Yielding Varities for the year 1982-83 for cereal crops indicates that area covered under HYV in Karnataka as per cent to total area under these crops (covered by High Yielding Varities) is only 42 which is lower than the all India figure of 50.

TABLE 3.8: Levels of irrigation and cropping intensity, 1980-81.

States	Gross cropped area irrigated (Per cent)	Area sown more than once as per cent to NSA
Assam	16.5	30
Andhra Pradesh	35.3	14
Bihar	32.6	34
Gujarat	21.8	12
Haryana	60.6	51
Karnataka	15.8	8
Kerala	13.3	31
Madhya Pradesh	11.5	14
Maharashtra	12.4	11
Orissa	19.5	43
Punjab	85.5	61
Rajasthan	21.6	14
Tamil Nadu	50.9	21
Uttar Pradesh	46.3	43
West Bengal	20.2	37
INDIA	26.6	24

Source: (i) Government of Karnataka, Draft Seventh Five Year Plan, 1985-90.

(ii) Government of India, Central Statistical Organisation, Statistical Abstract, 1984.

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3.22 Another indicator of improved agricultural practices is the consumption of chemical fertilizers which again is dependent on the availability of water. The consumption of chemical fertilizers in Karnataka (31.2 Kg./hectare) was below the all India average of 32 Kg/hectare in 1980-81 and far below the per hectare consumption of 118 kg. and 63 kg. respectively in Punjab and Tamil Nadu. These incidentally are the States where the irrigation potential has been effectively exploited.

3.23 <u>Development of social/economic infrastructure</u> (Table 3.9)

Karnataka ranks 5th or 6th from the top in terms of certain other development indicators like per capita electricity consumption, length of surfaced roads per 100 Km^2., and number of persons per hospital bed. The literacy rate (38.5 per cent) in the State according to 1981 census was only slightly more than the literacy rate in the country (36.2 per cent) and in comparison with States like Kerala, Maharashtra and Tamil Nadu, it was quite low. Similarly, the electrification of villages as of 1982, though above the all India level, was not 100 per cent as it was in the other more developed States. Development of railways is notably poor in the State with the rail route per 100 Km^2. below the national average. A State like Karnataka in particular with diverse topography, needs a developed rail net-work with transport and easy accessibility

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TABLE 3.9: Development indicators - All India and selected States (1981-82)

States	Per capita electricity consumption k.w.h.	Surfaced roads per 100 sq.km.	Rail route per 100 sq. K.m.@	Population served by a hospital bed	Village electrified as per cent to total	Literacy
Andhra Pradesh	118.0	21.5	1.7	1373	70.5	29.9
Assam	39.9	7.5	2.8	1809	30.3	-
Bihar	84.6	14.7	3.1	2589	37.2	26.2
Gujarat	249.3	19.0	2.9	947	73.5	43.7
Haryana	237.7	42.5	3.3	1436	100.0	36.1
Karnataka	165.9	29.5	1.6	1004	65.7	38.5
Kerala	119.6	51.4	2.4	509	100.0	70.4
Madhya Pradesh	106.9	11.5	1.3	2609	40.9	27.9
Maharashtra	247.2	23.4	1.7	616	80.6	47.2
Orissa	125.8	8.2	1.3	1884	42.6	34.2
Punjab	300.5	64.8	4.2	763	100.0	40.9
Rajasthan	101.3	10.2	1.6	1557	48.7	24.4
Tamil Nadu	193.7	72.5	2.9	1030	99.2	46.8
Uttar Pradesh	88.8	18.6	3.0	1945	42.2	27.2
West Bengal	122.5	19.6	4.2	895	42.8	40.9
INDIA	**141.3**	**18.9**	**1.9**	**1144**	**51.5**	**36.2**

Source : (1) Government of India, Central Statistical Organisation, Statistical abstract, 1984.

@ Reproduced from Saggar, R.K. (1982) The infrastructure in transport: Measurement problem. Paper presented in the Seminar on Regional Dimensions of Indian Economic Development, Nainital.

providing the base for further development. The State which is intrastructurally developed ranks below Kerala and Tamil Nadu in the Southern region.

3.24 Impact of Five Year Plans on the economy (Tables 3.10 and 3.11)

The performance of the economy measured in terms of the State Domestic product shows that Karnataka's economy which grew at a faster pace than the national economy in the 60's slowed down in the 70's. The State was the fastest growing among the southern States with an average annual growth rate of 4.3 per cent which was much higher than the national growth rate (3.7). This position drastically changed in 70's with the annual average growth rate sliding down to 2 per cent. This was not only below the all India growth rate but the lowest in South India.

3.25 The sluggish performance of the economy during the 70's can largely be attributed to the slow growth in agriculture. The State Domestic Product by industry of origin brings out that the incomes originating from secondary as well as tertiary sectors recorded steady increases whereas the income from the primary sector which rose from around Rs. 1200 crores (at 70-71 prices) to nearly Rs. 1300 crores during 70-75 came down to Rs. 1150 crores in 1980-81. Though fluctuations in agricultural incomes are a common feature, the impact of it on an economy which derives 50 per cent of its income from the primary sector is more severe.

TABLE 3.10: Average annual growth rate of State Domestic product at constant prices (1960 - 61 to 80-81)

States	1960-61 to 1969-70 (1960-61 prices)	1970-71 to 1980-81 (1970-71 prices)
Andhra Pradesh	2.1	3.5
Assam	N.A.	3.6
Bihar	1.5	3.4
Gujarat	3.6	3.8
Haryana@	11.6	4.8
Karnataka	4.3	1.9
Kerala	3.7	2.2
Madhya Pradesh	2.6	3.8
Maharashtra	2.9	4.7
Orissa £	10.2	4.7
Punjab @	8.0	4.7
Rajasthan	2.6	2.0
Tamil Nadu	2.2	2.5
Uttar Pradesh £	2.4	3.4
West Bengal	2.6	2.7
INDIA	3.7	4.1

Note @ for the period 65-66 to 69-70 only.

£ At 1970-71 prices.

Source: Government of India, Central Statistical Organisation; Estimates of State Domestic Product June, 1984.

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3.26 Analysing, tne growtn profiles of the States over a period of three decades from 1950-51 to 77-78 in terms of growth rates of the State Domestic Product, Mathur corraborates the slowing down of the growth in Karnataka. On tne basis of changing pattern of growth rates, the study classifies States into 'improved', 'no change' and 'deteriorated' categories. Karnataka which was in the 'improved' category in the sixties over fifties slipped down to 'deteriorated' category in the seventies over sixties[3].

3.27 In terms of per capita income, the State ranked 6th from the top during the period 1970-76 and also had the distinction of having the highest per capita income in South India. However, the position as it emerges in 1981-82 shows that Karnataka has yielded place to Andhra Pradesn. While all the other Southern States had recorded an increase in their respective per capita incomes, Karnataka's per capita income in 1981-82 was even lower than in 1970-71. As against this, the States on top (Punjab, Haryana, Maharashtra and Gujarat) have more or less maintained their relative positions. Over the years, the income differentials between Karnataka and Punjab, tne State having the highest per capita income have widened.

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[3] Mathur K.B.L. (1982) "Statewise growth patterns and interstate inequality in India". Paper presented in Seminar on Regional Dimensions of India's Economic Development Nainital.

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TABLE 3.11 Per capita Net Domestic Product at constant (1970-71) Prices

States	1970-71	1975-76	1981-82
Andhra Pradesh	586	625	718
Assam	535	559	546
Bihar	402	413	448
Gujarat	829	818	948
Haryana	877	939	1078
Karnataka	685	702	678
Kerala	594	610	636
Madhya Pradesh	484	497	512
Maharashtra	783	878	1007
Orissa	478	475	563
Punjab	1070	1192	1443
Rajasthan	620	572	575
Tamil Nadu	581	598	667
Uttar Pradesh	486	474	520
West Bengal	722	747	720
INDIA	633	661	715

Source: Government of India, Central Statistical Organisation, Estimates of State Domestic Product, June 1984

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3.28 The per capita plan outlays for the State vis-a-vis all India snows that the per capita plan outlays for Karnataka upto the annual plans (1966-69) were above the national average. From IV Five Year Plan onwards, the per capita plan outlay for the State fell below the national average. Decline in the per capita outlays is even more disturbing considering the fall in the per capita income of the State. The States which had higher per capita plan outlays than Karnataka were Gujarat, Haryana, Punjab and Maharashtra.

TABLE 3.12 Per capita plan outlays (Rs.)

	I	II	III	Annual Plans	IV	V	VI
Karnataka	46	62	100	70	128	341	773
India	38	51	94	68	145	345	891

Note : Outlays denote actual expenditure upto IV Plan.

Source: Government of India, Planning Commission.

3.29 If allocation of resources by successive Finance Commissions is considered, the per capita fiscal transfers recommended to the State by the First to the Fourth Financial Commission (1966-67 to 1969-70) were above the national averages indicating a recognition of the relative lack of development of the State during the period. There has, however, been a decline in the resource allocation to the State from the period of the

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Fifth Finance Commission which is reflected in the State's rank coming down from 6 in the Fourth Finance Commission to 14 during the Fifth Finance Commission[4].

3.30 Salient features of the economy of Karnataka - Inter-State comparison.

Karnataka with its fast growing population is among the highly urbanising States in the country. During the decade 1971-81, the State had the fifth highest growth rate of population in the country. However, the State has not come under the excess pressure of population as evidenced by the densities. Nearly 50 per cent of the population lives in areas where the density is less than 200 persons per Km^2. Likewise, even though the urban population has grown at a faster rate than all India and the Class I cities are having 60 per cent of the urban population, a substantial share of urban population still lives in the middle/lower order towns. The urban structure is not as skewed as it is in the other highly urbanised States like Maharashtra, West Bengal or Tamil Nadu.

3.31 In the sphere of industry, the performance of the State has been remarkable with a strong manufacturing base which accounts for as much as 75 per cen

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4 National Institute of Urban Affairs (1984): Trends and processes of urbanisation in Karnataka, New Delhi.

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of the income originating from the secondary sector. This has largely been due to the concentration of high value engineering units. In addition to this, per capita value added in manufacturing in Karnataka was the seventh highest in the country as of 1977-78[5]. As the State is also endowed with a rich resource base of forests, minerals and hydro-electric power, with a fuller exploitation of these resources, a more diversified and balanced industrial development is possible.

3.32 Agriculture in Karnataka leaves much to be desired. Though much of the improvement in the State's agriculture has come from productivity increases, in terms of extent of irrigation, use of fertilizers and cropping intensity, the State still lags behind the agriculturally advanced States. Augmentation of irrigation facilities still remains one of the basic requirements of the State's agriculture, particularly, in the dry regions.

3.33 In the infrastructural development, though the State is yet to achieve the levels attained by the neighbouring States of Kerala and Tamil Nadu, at the all India level, it ranks 6th or 7th. The fact that 50 per cent of its population is distributed in areas of very low density of 200 persons per Km. is a factor

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5. Ahluwallia's S.S. - Op. cit.p. 51.

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impeding the even development of infrastructural facilities and amenities including off-farm activities in the rural areas. In the field of transport, the development of railways is less than adequate. A regional dispersal of economic activity demands that this vital infrastructural input be strengthened.

3.34 All the developmental efforts, manifest themselves in improvements in the standard of living of the people. An exercise in ranking the State according to the standard of living of its people showed that Karnataka's rank (from the top) was 5th in the country. The ranking done on the basis of several indicators covering nutrition, health, housing, education, transport, power and communication also brought out that the rank of the State moved up from 7 in 1961 to 5 in 1978[6].

3.35 Given its overall development, it is striking that the State continues to have areas across its length and breadth which are not so developed including areas which are markedly backward. A State of Karnataka's size with its varying resource base and physio-geographic conditions is bound to give rise to different levels of development as between regions.

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6 Gupta S.P. Srinivasan, T.G. and Singh (1982). "Indicators of Standard of Living". Paper presented in the Seminar on Regional Dimensions of India's Economic Development, Nainital.

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For instance, while certain parts of the Maidan region in the State have witnessed significant progress, the benefits of development are yet to reach certain other parts. A balanced development calls for reduction of such intra-regional differences within the State.

CHAPTER - IV

REGIONAL STRUCTURE, PATTERNS AND VARIATIONS IN KARNATAKA

4.1 Spatial inequality is inherent in the very process of development. Even the most developed States have chronically backward areas. The development plan, therefore, has to aim at not merely the overall development of a country or a State but a more even spread of benefits of development among the people in different regions. This necessitates an understanding of the causes that accentuate or retard development leading to sharp disparities in levels of development within and between regions. The different sets of indicators used by various planning agencies to bring out the contrasts in development of different regions throw little light on the causal aspects as they have inherent limitations in measuring the relationship among social and economic indicators and their role in spatial organisation of the economy.

4.2 The regional realities in spatial Organisation and processes of development are better captured for smaller units like a District in the all India context and taluka or Development Block in relation to a State. With this in view, the data for

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175 talukas have been complied and processed to reveal the characteristics of the physical structure, resource base and human settlements·Formal regions (with relatively stable structure) have been identified using the homogeneity criterion (Fig.2.)

4.3 The four sub-regions of Karnataka delineated on the basis of grouping of talukas are the (i) Coastal region (ii) Western Ghats or the Malnad as is locally known, (iii) the Southern Maidan and (iv) the Northern Maidan. The composition of the regions is as follows :

Coastal region: All talukas of Dakshina Kannada District except Sullia and five talukas of Uttar Kannada District namely, Ankola, Bhatkal, Honavar, Karwar and Kumta form this region.

The Malanad: The non-coastal talukas of Uttar Kannada; Khanapur from Belgaum District, all talukas of Shimoga District except Channagiri and Honnali; the Districts of Chickmagalur and Kodagu; all talukas of Hassan District except channarayapatna and Holenarasipur; parts of Mysore and Sullia of Dakshina Kannada District constitute the Malnad.

Southern Maidan: This region comprises the Districts of Bangalore, Kolar, Mandya, Tumkur; Chitradurga (except Harihar); Kudligi taluka of Bellary District,

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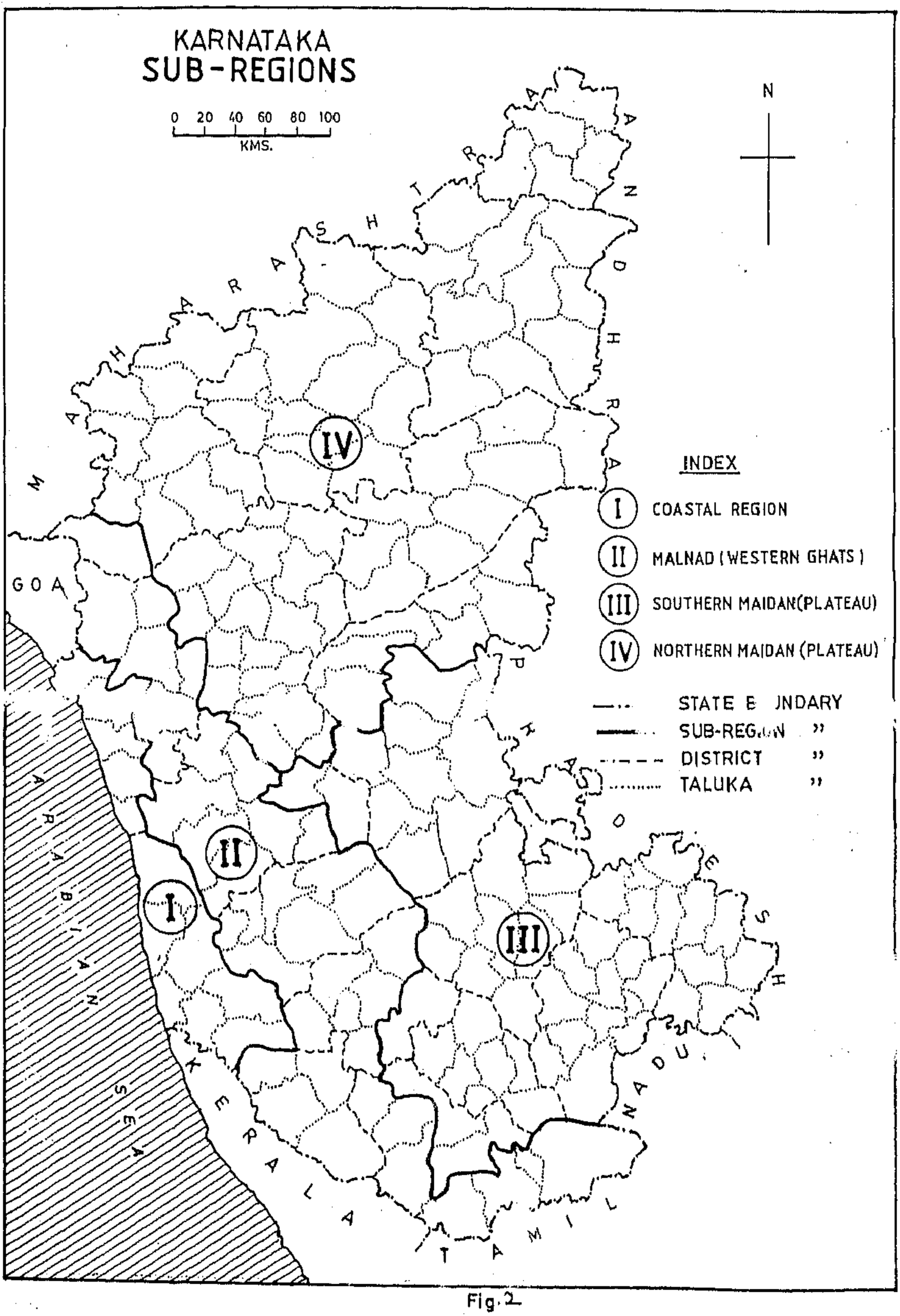
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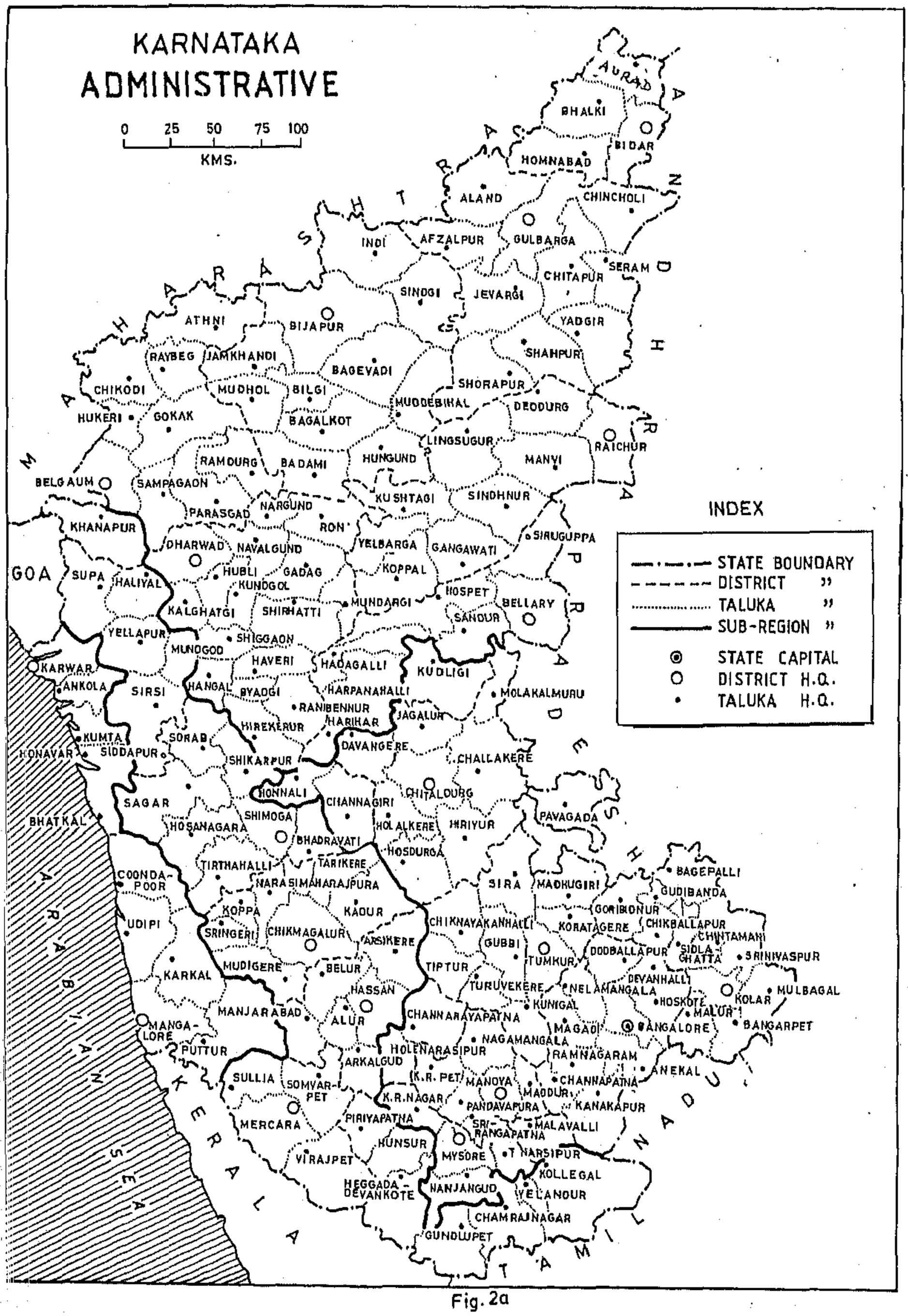
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KHANAPUR
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DHARWAD
NAVALGUND
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GOA
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TUMKUR
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K.R.NAGAR
MADDUR
PANDAVAPURA
KANAKAPUR
PIRIYAPATNA
SRI-
RANGAPATNA
MALAVALLI
MERCARA
HUNSUR
MYSORE
T NARSIPUR
VIRAJPET
KOLLEGAL
HEGGADA-
DEVANKOTE
NANJANGUD
YELANDUR
CHAMRAJNAGAR
GUNDLUPET
INDEX
STATE BOUNDARY
DISTRICT "
TALUKA "
SUB-REGION "
STATE CAPITAL
DISTRICT H.Q.
TALUKA H.Q.
ARABIAN SEA
KERALA
TAMIL NADU
GOA

Fig. 2a

Channagiri and Honnali talukas of Shimoga District, Holenarasipur and Channarayapatna of Hassan District and the non-Malnad parts of Mysore District.

Northern Maidan — The Districts of Belgaum (except Khanapur taluka), Bellary (except Kudligi taluka), Bidar, Bijapur, Dharwad, Gulbarga, Raichur and Harihar taluka of Chitradurga District from this region.

4.4 Salient features of the regions

Coastal Region

The Coastal region lying between the Western Ghats edge and the Arabian sea is about 320 Kms. long and 13 to 32 Kms. wide in the north and 50 to 65 Kms. wide in the South comprising sandy plains interrupted in their continuity by still narrower alluvial plains of short stretched rivers coming down the Ghats. Between the narrow coastal plains and the Western Ghats edge proper lies the foot-hill zone which has rugged topography and which has a large part of its area under forest (more than 50 per cent of the total area). The most important rivers of this region are the Kali, Agnanashini, Sharavathi and Netravathi. The Districts of Dakshina Kannada (South Kanara) and Uttar Kannada (North Kanara) constitute this region. The region receives heavy rainfall which exceeds 2500 mm. The cultivated area is less than 20 per cent

contd...

of the total geographical area. It comprises the narrow sandy and alluvial plains in the coastal tract and still narrower tongues of cultivation close to the tributory streams in the foot-hills. Away from the streams, patches of cultivated area occur along the gentle lateritic slopes. The dominant crops of the region are paddy, groundnut, coconut and spices (mainly in the foot-hill areas).

4.5 The region is densely populated (261 persons per Km^2 as against the State average of 196 persons per Km^2 according to 1981 census) with over 70 per cent of the population living in large sized villages (with a population of over 2000). The foot-hill region is, however, characterised by relatively smaller size settlements compared to the coastal plains. The towns of the region (mostly port towns) are strung along the coast longitudinally and are separated by a distance of 20-35 Kms.

4.6 Though the Coastal region is marked off from the Western Ghats region (the Malnad) and is homogeneous in several respects, the northern part is economically oriented to Bombay and its southern portion to the former princely State of Mysore (mostly constituting the Southern Maidan sub-region) and parts of Tamil Nadu with which it had cultural and economic

contd...

ties. The recently completed West-Coast highway connecting Bombay with Cochin passes through this belt with the port towns of Karwar and Mangalore in the northern and southern extremities. Infrastructurally, the region is well developed.

4.7 Malnad

The Malnad is a forested hilly country and stretches for about 650 Kms north-south and 50 to 65 Kms. east-west from the scarpline of the Western Ghats. It is a land-locked area with a height of more than 152 mts. above sea level. The Ghats edge proper is at a lower height while to the east there are several hill ranges with an average height of about 900 mts. Due to the rugged terrain and shallow valleys, the population and agricultural lands are scattered in the midst of forests or along the narrow valley plains. The villages are generally small (with an average population of less than 1000 persons) and inaccessible in places. As much as 45 per cent of the rural population lives in these villages. Population density is generally low (134 persons per Km^2 as against the State average of 196 persons per Km^2). The region is also least urbanised (19.5 per cent) having small urban centres serving mostly as contact towns. Since the 1960's, this pattern of the economy is rapidly changing.

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The Districts of Kodagu (Coorg), Chickmagalur, Shimoga and parts of Belgaum, Hassan and Mysore comprise the region.

4.8 There are intra-regional contrasts between the northern, central and southern parts of Malnad in the physical as well as economic characteristics. The region receives heavy rainfall decreasing from 2500 to 1000 mms. from west to east. The northern Malnad (comprising mainly the talukas of Supa, Haliyaland Khanapur) is more rugged and hilly and has very little plantation crops (spices) while the Central Malnad (Yellapur, Sirsi, Siddapur and northern part of Shimoga District) has an undulating topography with perennial surface streams favouring intensive cultivation of plantation crops and paddy in the very narrow valley plains. The southern Malnad (below Chickmagalur taluka) on account of its higher altitudes has coffee and horticultural crops along with spices and paddy. By and large, the pattern of land use closely follows the slopes and availability of water.

4.9 The Malnad is rich in forest and mineral resources. While the Bababudangiri hills around Chickmagalur are a source of iron ore, the region around Supa (northern Malnad) produces manganese and iron ore.

contd...

With the completion of the Kali-Hydro electricity project, the region will be a major producer of hydro-electric power. However, the economy of the region is externally oriented as a result of which much of the resources of the region are yet to be utilised for its own development. The spatial organisation of the Malnad economy shows strong influences of trade in commercial crops, mainly spices and is centred on a number of small towns which prior to the reorganisation of the State functioned as centres for movement of goods and people from the Coastal to the Plateau region (Maidan). Once again, the three sub-regions of Malnad differ in their economic interactions as these formed parts of different provinces as mentioned earlier[1].

4.10 Southern Maidan

These are plateau landscapes - the northern Maidan relatively plain with black soil and the Southern Maidan with red soil developed over the crystallines. The Plateau rises to a height of nearly 900 mts. in the eastern part. The Southern Maidan represents for the most part the core region of the former Princely State of Mysore. The region is traversed by the Thungabhadra, Cauvery, Pennar and

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[1] Refer Fig. 1 and p. 32 for details

contd...

Palar rivers and is divided into numerous valleys. The major river is the Cauvery with its tributaries (Hemavathi and Kabini) which is also the source of extensive canal irrigation. The Districts of Bangalore, Chitradurga, Kolar, Mandya, parts of Mysore and Tumkur from this region.

4.11 Southern Miadan is distinct in the physical landscape and its patterns and processes of socio-economic development. There are sharp contrasts in the land-use features on account of parallel ridges and rolling plains in which the distribution of settlements and human response show marked affinity to the terrain. In its socio-economic development, the region has had the benefit of large scale irrigation, electrification and industrialisation having been a Princely State. Besides major irrigation projects, the region is studded with a number of small tanks providing water for drinking and irrigation for coconut palms, sugarcane fields and a variety of garden crops for supply to the major urban-industrial centres such as Mysore, Bangalore and Shimoga.

4.12 The region is highly urbanised (36.5 per cent) and presents a widely distributed pattern of

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urban-industrial centres although the dichotomy between small towns and associated small scale industries and a few large urban-industrial centres is sharp[2]. With further concentration of industries around Bangalore, the core area of economic growth of Karnataka in general and southern Maidan in particular is getting further strengthened. Development of the region has been possible because of the patronage of the rulers of the former Princely State who were concerned with the welfare of the State - though in a centripetal manner.

4.13 Northern Maidan - This region consisting of the Districts of Belgaum, Bellary, Bidar, Bijapur, Dharwad, Gulbarga and Raichur lies to the east of semi-Malnad and is marked by a vast expanse of rich black soil under semi-arid conditions. In places, this monotony is broken by the presence of residual hill ranges prominent among them being the sand-stone, lime-stone hills of Karnool-Cuddapah series. The region is rich in mineral resources such as limestone, manganese and iron ore. The rainfall of the region varies from 350-900 mms. and the soils are only of average fertility. The area is drained by the Krishna, the Bhima and Thungabhadra.

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[2] National Institute of Urban Affairs (1984); op. cit. p. 66

contd...

4.14 The settlement sizes are generally large (with over 2000 population) and more tnan 50 per cent of the rural population lives in these villages (1981). Though the region nas a little over 40 per cent of the total towns in the State, urbanisation-nas by and large remained peripheral with cities and small towns situated along the rail-road axis converging on Hyderabad in Andhra Pradesh and Bombay-Pune in Maharashtra. The Krishna and the Thungabhadra canal irrigated areas in Raichur and Bellary districts are agriculturally rich and diversified in contrast to the remaining portion of the black soil Plateau which has mainly the millet-cotton-groundnut crop rotation. The economy of the region is oriented externally to the twin city of Hyderabad-Secunderabad and Bombay because it comprises largely the 'Bombay Karnataka' (Western part of the region) and Gulbarga Karnataka (eastern part).

4.15 Resource-base (Table 4.1)

Forests : - The State is rich in forest resources and because of the sharp regional contrasts within, tne area under forest in the State as a whole is only 15.9 per cent as against 22 per cent for the country. The forests are confined to the Malnad. Of the total area under forest, Malnad alone has 55 per cent and the Coastal region has 16 per cent. Thus the

contd...

TABLE 4.1: Karnataka : Regional variations in land-use pattern, 1971.

Per cent.

Regions	Forest	Non agricultural land	Barren Uncultivable land	Cultivable Waste	Permanent Pasture	Land under Miscellaneous crops	Current Fallow	Permanent Fallow	Net Sown Area	Total
Coast	41.40 (15.6)	7.72	6.53	7.51	2.88	8.75	3.37	1.95	19.89 (2.1)	100.0
Malnad	36.62 (54.9)	4.41	4.64	4.41	15.09	2.32	3.24	3.19	26.08 (11.1)	100.0
S. Maidan	7.37 (12.6)	7.50	4.77	4.80	14.27	1.32	7.03	4.63	48.31 (23.4)	100.0
N. Maidan	5.67 (16.9)	3.41	3.86	1.24	2.69	0.59	3.34	3.44	75.63 (63.5)	100.0
STATE	**15.21 (100.0)**	**4.94**	**4.42**	**3.24**	**8.54**	**1.64**	**4.27**	**3.54**	**53.80 (100.0)**	**100.0**

contd...

TABLE 4.1: Karnataka: Regional Variation in land-use pattern, 1981.

Per cent.

Regions	Forest	Non agricul-tural land	Barren Unculti-vable land	Culti vable Waste	Permanent Pasture	Land under Miscella-neous crops	Current Fallow	Per-manent Fallow	Net Sown Area	Total
Coast	40.69 (14.5)	8.46	7.22	7.45	3.10	8.43	2.19	2.49	19.97 (2.2)	100
Malnad	38.42 (55.4)	5.32	4.05	2.72	12.56	2.59	1.90	3.21	29.42 (13.0)	100
S. Maidan	8.06 (13.1)	8.40	5.67	3.87	11.71	1.58	9.52	3.45	47.74 (23.8)	100
N. Maidan	5.94 (16.9)	3.78	3.57	1.29	2.13	0.69	10.18	2.64	69.77 (61.0)	100
STATE	15.92 (100.0)	5.60	4.43	2.64	7.06	1.80	7.66	2.93	51.96 (100.0)	100

Note: Figures in brackets are per cent to State total.

Source: Government of Karnataka, Bureau of Economics and Statistics.

foothill sub-region of the Coastal region and the Malnad together have 70 per cent of the total forest area of the State. In the Maidan region, the forest area is an extension from the Malnad (the semi-Malnad tract along the fringe) where the vegetation is transitional from the tropical moist-deciduous forest of the Malnad to relatively open woodlands in the drier areas of the Maidan (Figs. 3 and 4). Among the main forest produce are timber, bamboo, sandal wood and teak. A number of forest-based industries have also come up in the State, e.g. the paper mill at Dandeli in Uttar Kannada District.

4.16 Even within the Coastal region and Malnad, there are intra-regional variations in the area under forest. The northern part of the Coastal region (the talukas of Uttar Kannada district) is relatively more forested than the Southern part. Likewise, the northern Malnad(mainly Uttar Kannada) and parts of Southern Malnad have more forest area than the Central Malnad. As much as 40 per cent of the forest area in Malnad, is in the northern part of the region (parts of Uttar Kannada and Belgaum Districts).

contd...

KARNATAKA
FOREST
1971

MAHARASHTRA

GOA

ARABIAN SEA

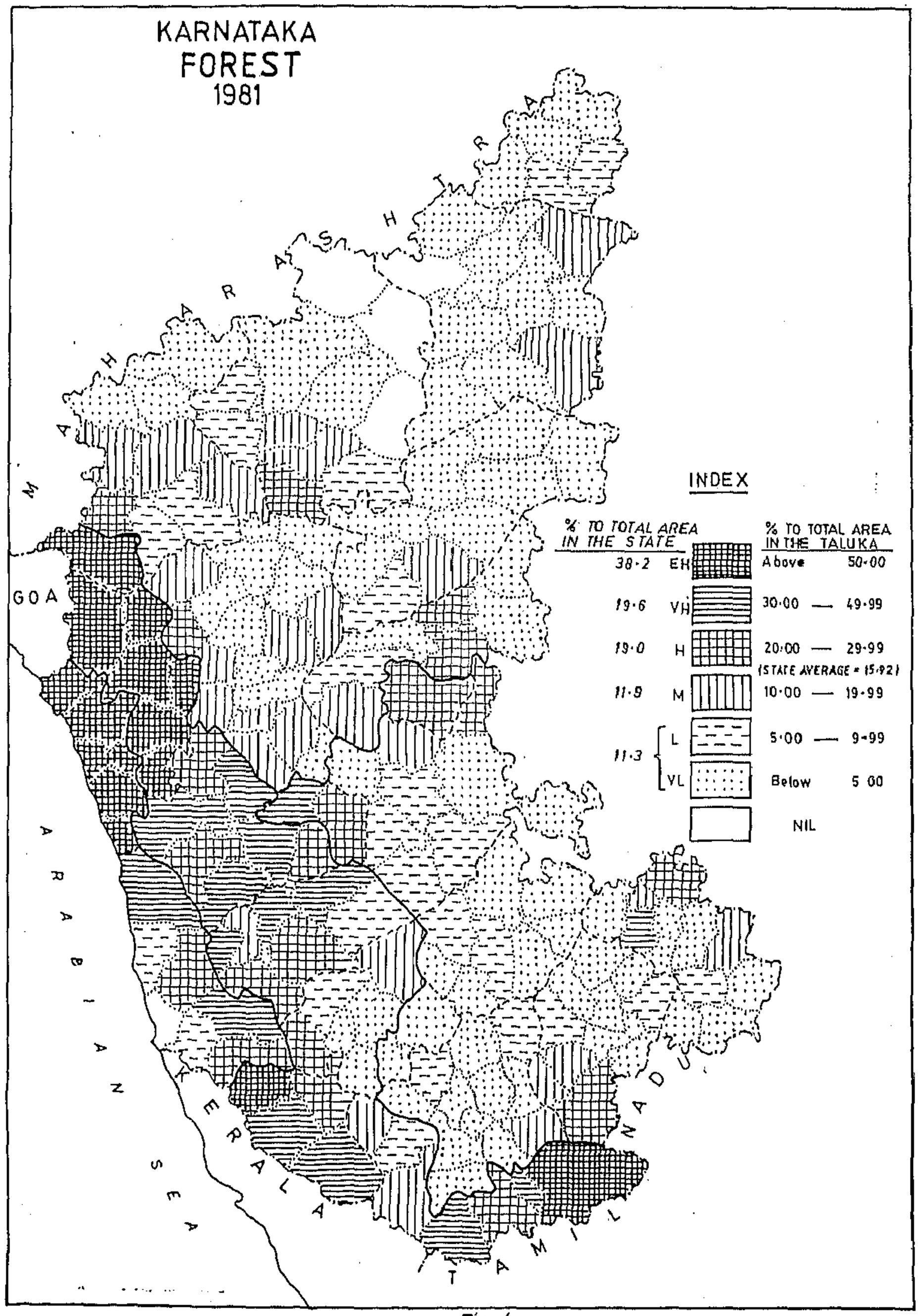
PONDICHERRY

TAMIL NADU

INDEX

% TO TOTAL AREA IN THE STATE			% TO TOTAL AREA IN THE TALUKA
40·5	EH	ABOVE	50·00
20·2	VH	30·00 —	49·99
11·4	H	20·00 —	29·99
		STATE AVERAGE = 15·21	
14·7	M	10·00 —	19·99
13·2 L	L	5·00 —	9·99
13·2 VL	VL	BELOW	5·00
		NIL	

Fig.-3


KARNATAKA
FOREST
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TAMIL NADU
INDEX
% TO TOTAL AREA IN THE STATE
% TO TOTAL AREA IN THE TALUKA
38·2 EH
Above 50·00
19·6 VH
30·00 — 49·99
19·0 H
20·00 — 29·99
(STATE AVERAGE = 15·92)
11·9 M
10·00 — 19·99
11·3 L
5·00 — 9·99
VL
Below 5·00
NIL

Fig.-4

TABLE 4.2: Intra-regional variation in the area under forest, 1981

Per cent

Region	Area under forest
COASTAL	
Districts	
Dakshina Kannada	42.5
Uttar Kannada[1]	57.5
TOTAL	100.0
MALNAD	
Districts	
Belgaum (Khanapur)	5.5
Chickmagalur	10.7
Dakshina Kannada (Sullia)	2.5
Hassan	3.1
Kodagu	8.0
Mysore	19.4
Shimoga	16.5
Uttar Kannada[2]	34.2
TOTAL MALNAD	100.0

Note : 1. Includes the talukas of Ankola, Bhatkal, Honavar, Karwar and Kumta.

2. Includes the talukas of Haliyal, Mundgod, Siddapur, Sirsi, Supa and Yellapur.

Figures are percentage to regional totals.

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4.17 The area under forest in the State as a whole has increased by 5 per cent between 1971 and 1981. Excepting the Coastal region which has recorded a decline in its forest area by 1.8 per cent, in the other parts, the area under forest has increased. The foothill sub-region is the main supplier of fuel wood and fodder to the densely populated Coastal plains and hence there is depletion of natural vegetation in this area. In Malnad, the relative share of area under forest has increased from 36.62 per cent to 38.42 per cent and in absolute terms, this is an increase of 6 per cent. Within Malnad, the talukas of Shimoga District in particular, have had substantial increase in their forest areas.

4.18 Net Sown Area

The Net Sown area which constitutes 54 per cent of the total area in the State also shows marked regional variations. The Coastal region and the Malnad have less than 30 per cent of the total area under cultivation. As against this, net sown area constitutes 70 per cent of the total area in Northern Maidan. Because of the forested, hilly and rugged terrain, cultivated areas in Malnad are limited to narrow perennial vallyes. However, in the central and Southern parts of Malnad, particularly, in the plantation talukas of Chickmagalur, Hassan and Kodagu, the net sown area is

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substantially higher than the regional average because of the extension of cultivation to hill slopes for coffee plantations and horticulture. Similarly, extensive tracts in the foot-hill areas of the Coast have less land available for cultivation. As against this, the Coastal plains have larger area under cultivation. The net area sown as proportion to total area is the lowest in the Coastal region (19.9 per cent).

4.19 The net sown area has shown a decline in the Southern and the Northern Maidan in 1981 over 1971, the decrease being more pronounced in the case of Northern Maidan where there is a 6 per cent reduction in the net sown area. This is partly due to extensive cultivation in the dry unirrigable areas where lands are kept fallow; and gully erosion in the loose soil also makes lands uncultivable. In the case of Malnad, the net sown area both in relative and absolute terms has increased in 1981 compared to 1971. This increase is perhaps due to additional lands coming under perennial crops.

4.20 With decline in the net sown area, there is steep rise in the area under fallow lands. This is particularly true of Northern Maidan which has more than two-thirds of its area under cultivation. For instance, as much as 17 per cent of the total area was fallow lands in Bidar district of Northern Maidan in 1981.

contd...

Outside Northern Maidan, this is also true of parts of Southern Maidan, particularly in the transition zone lying in between the Northern and Southern Maidans. All these areas with extensive fallow lands are also areas with low levels of irrigation. Between the period 1971 and 1981, the area under fallow lands has increased by 80 per cent in the State and by 206 per cent in the Northern Maidan. A balanced land utilisation pattern has to aim at better utilisation of fallow land, particularly in the Districts of Northern Maidan which can be achieved by augmenting irrigation facilities in the region and promoting dry land farming.

4.21 Cropping Pattern - Regional patterns and variations (Table 4.3)

The variations in cropping pattern as between regions are explained by variations in topography, soil-types and rain fall pattern. From the Coastal region with heavy rainfall at one extreme to the north eastern dry belt of the State, the incidence of rainfall shows wide variations. The soils in the Coastal region are lateritic except a narrow strip of coastal alluvium. In the Malnad, while most part of the region has red-loamy soil, the eastern parts of Chickmagalur, Hassan and Shimoga have red-sandy soils. In Southern Maidan, the soils are predominantly of red-sandy type though parts of

contd...

Bangalore and Tumkur have red loamy soils. Chitradurga which falls in the transition Zone is unique in that it is an amalgam of all soil types. Northern Maidan except for small portions in Dharwar and Bellary area has different grades of black soil.

4.22 The most important among the cereal crops grown in the State are jowar (about 23 per cent of the total cropped area in 1981), ragi (12 per cent) and paddy (12 per cent). Besides these, bajra and maize are found in the Northern Maidan. The major commercial crops of the State are groundnut (9.5 per cent) cotton (10 per cent) and sugarcane (2 per cent). While sugarcane is restricted to the irrigated areas, groundnut and cotton are largely grown in the Northern Maidan. The plantation crops which occupy less than 2 per cent of the cropped area are highly localised. The State also produces a variety of spices, most of it being grown in the Coastal region and the Malnad.

4.23 Coastal region

In the Coastal region, the single most important crop is paddy which occupies nearly 70 per cent of the cropped area followed by coconut (8.5 per cent) and spices (8.2 per cent). The coastal region contributes 15 per cent of the State's area under paddy (in 1981), 12 per cent of the area under coconut and

contd...

TABLE 4.3 Karnataka: Regional variations in Cropping Pattern, 1971

(Percent)

Region	Paddy	Jowar	Ragi	Total Cereals	Pulses	Ground-nut	Cotton	Sugarcane	Spices	Plantation Crops
Coast	77.75 (16.9)	-	0.23 (0.06)	77.98 (3.5)	4.48 (0.8)	1.04 (0.3)	-	0.81 (1.9)	5.37 (6.9)	0.23 (0.5)
Malnad	35.44 (35.1)	7.17 (3.4)	18.18 (20.2)	61.74 (12.6)	11.87 (9.8)	2.86 (3.3)	0.98 (1.0)	1.11 (12.1)	6.09 (35.6)	9.70 (99.5)
S. Maidan	13.22 (25.1)	10.94 (9.9)	34.29 (73.1)	62.15 (24.2)	16.37 (25.9)	8.96 (19.7)	2.85 (5.6)	1.56 (32.6)	1.86 (20.8)	-
N. Maidan	4.0 (22.8)	31.92 (86.7)	1.03 (6.6)	50.92 (59.7)	13.36 (63.5)	11.62 (76.80)	15.80 (93.4)	0.85 (55.4)	1.09 (36.7)	-
STATE	**11.14** **(100.0)**	**22.60** **(100.0)**	**10.0** **(100.0)**	**53.14** **(100.0)**	**13.20** **(100.0)**	**9.80** **(100.0)**	**10.56** **(100.0)**	**0.98** **(100.0)**	**1.92** **(100.0)**	**1.10** **(100.0)**

contd...

TABLE 4.3 Karnataka : Regional Variations in cropping pattern, 1981.

(Percent)

Regions	Paddy	Jowar	Ragi	Total Cereals	Pulses	Ground-nut	Cotton	Sugarcane	Spices	Plantation crops
Coastal	69.43 (14.9)	-	0.14 (0.03)	69.57 (3.1)	0.37 (0.2)	1.58 (0.4)	-	1.04 (1.4)	8.23 (8.3)	0.70 (0.4)
Malnad	33.13 (33.2)	7.27 (4.0)	19.75 (19.4)	64.0 (13.3)	1.51 (2.9)	2.72 (3.6)	1.16 (1.3)	1.63 (10.5)	6.63 (31.4)	13.5 (99.6)
S. Maidan	15.43 (27.7)	9.60 (9.5)	42.05 (74.1)	70.90 (26.3)	2.90 (10.0)	10.93 (26.1)	2.39 (4.9)	2.65 (30.6)	1.96 (16.6)	-
N. Maidan	4.68 (24.2)	30.41 (86.5)	1.28 (6.5)	53.57 (57.3)	8.77 (86.9)	10.16 (69.8)	16.00 (93.8)	1.73 (57.5)	1.79 (43.7)	-
STATE	12.2 (100.0)	22.2 (100.0)	12.5 (100.0)	59.1 (100.0)	6.4 (100.0)	9.2 (100.0)	10.8 (100.0)	1.9 (100.0)	2.6 (100.0)	1.7 (100.0)

Note : 1. Area under each crop is represented as percent to cropped area in each region.

2. Figures in brackets are percent to total area in the State.

Source : Government of Karnataka, Bureau of Economics and Statistics.

8.3 per cent to the area under spices. Within the region, the southern part namely, the coastal plains comprising the talukas of Dakshina Kannada shows a more diversified cropping structure with paddy, coconut, spices (cardamom, black pepper, arecanut) and rubber plantations to a limited extent. Coconut and arecanut crops in the Coastal region are by far restricted to the southern part. The northern part of the region on the other hand grow paddy, sugarcane (in a small measure) and lately groundnut.

4.24 Both in absolute and relative terms, the area under paddy has shown a decline during 1971-81 in the region while the area under oil seeds - mainly groundnut has increased, the increase in absolute terms being 44.4 per cent. This is partly due to the increase in area under coconut nearer population dwellings and cultivation of more remunerative crop (groundnut) in the dry season. The relative share of spices in the total cropped area has also moved up from 5.4 per cent in 1971 to 8.2 per cent in 1981. The other cash crop is cashew-nut which is grown in the southern part of the region. This crop occupies mainly the uncultivable sandy coastal plains and lateritic uplands in the foot-hill. The total area under cashew-nut has recorded a significant rise of 132.9 per cent between 1971 and 1981. Reduction in the

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relative share of paddy compared to cash crops like oilseeds, spices, cashew and even sugarcane only indicates that agriculture in the region is becoming more diversified than before.

4.25 Malnad: The Malnad has a cropping pattern similar to that of the Coastal region though the paddy and spice gardens reflect the impact of topography and perennial streams more in the Malnad than the Coastal region. Also in the Malnad, open forest lands close to spice gardens are an integral part of the cropping pattern in that they supply green leaf manure to spice gardens. Malnad contributes to one-third of the total area under paddy and spices in the State. The other important crop in the region is ragi. Ragi is grown in the drier slopes away from the tributary streams often in lands cleared of the open forests.

4.26 Though Malnad stands out as a distinct region of paddy, spices and forests, the intra-regional variations among the nortnern, central and the Southern Malnad are striking. The northern part has more land under paddy (over 70 per cent) and less of spice cultivation.

4.27 The Central Malnad (parts of Shimoga and Chickmagalur) has both paddy and spices while in the Southern Malnad paddy, spices, coffee and horticultural

contd...

crops are dominant. The Coffee plantations are spread in the 3 Districts of Kodagu, Chickmagalur and Hassan. In the Southern Malnad while the lower slopes are under interior millets like ragi, spice gardens occupy the valley floor with coffee plantations along steeper slopes extending even upto 8° slope. (Figs. 5 to 8). Even in the cultivation of spices, there are marked variations within the region. The spice cultivation in the northern Malnad stands restricted to arecanut whereas in Central Malnad arecanut and cardamom are grown. The dominant spice crops of southern Malnad are pepper and cardamom. The area under spices has increased by 6.5 per cent (in absolute terms) in 1981 over 1971. The area under plantation has also increased by 37 per cent, its relative share in the region's total increasing from 9.7 per cent to 13.5 per cent between 1971 and 1981.

4.28 Southern Maidan

The crops grown in Southern Maidan are ragi, paddy, jowar among the cereals and groundnut, cotton and sugarcane among the cash crops. The single most important crop of the region is ragi which accounts for 42 per cent of the cropped area of the region. Unlike in the coastal foot-hills and the Malnad where ragi is grown in unirrigated uplands, this crop is as important as paddy in the southern Maidan and is grown using irrigation. Paddy which occupies about 15 per cent of

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KARNATAKA

PADDY

1971

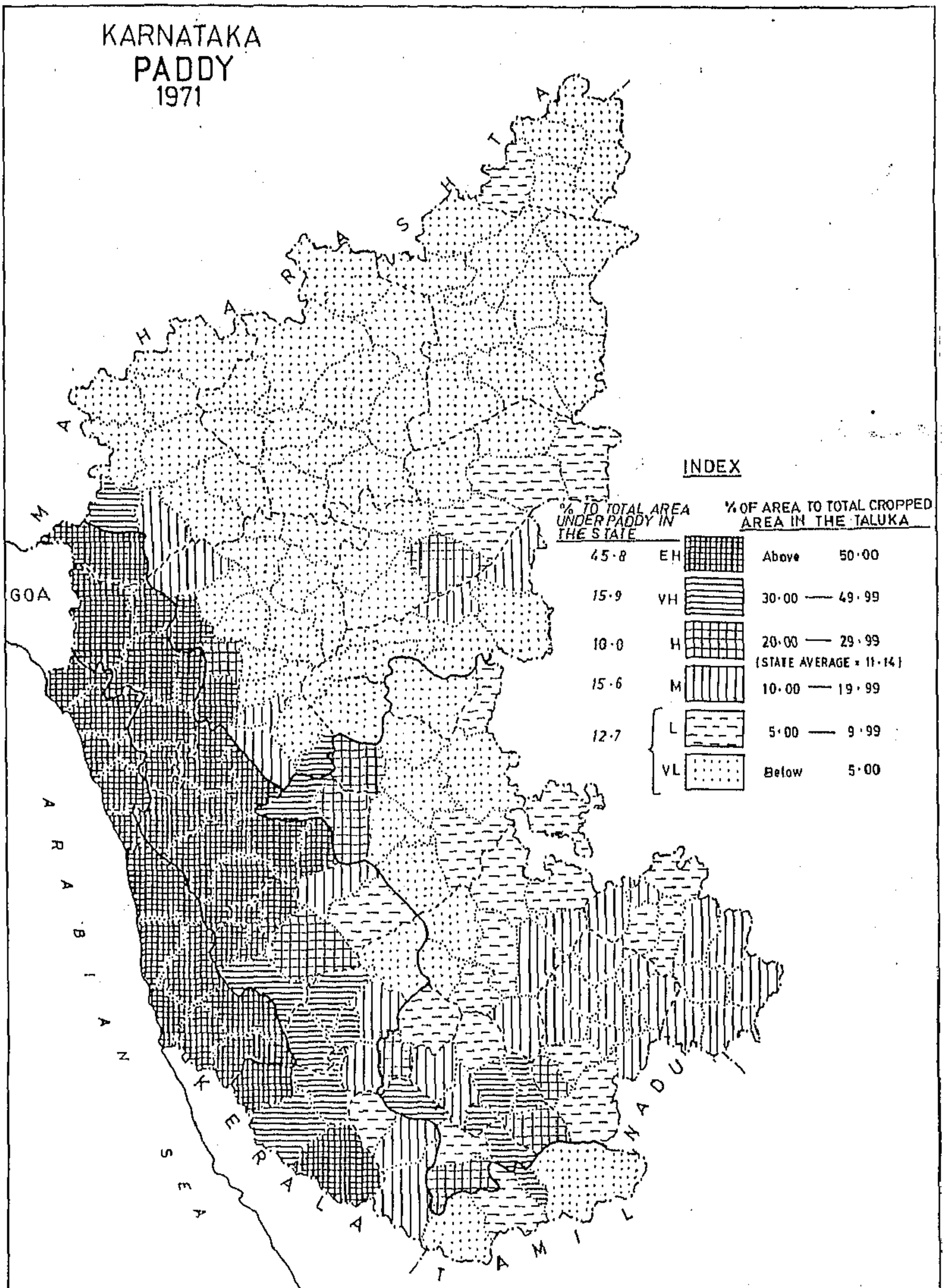

Fig.-5

KARNATAKA

PADDY

1981

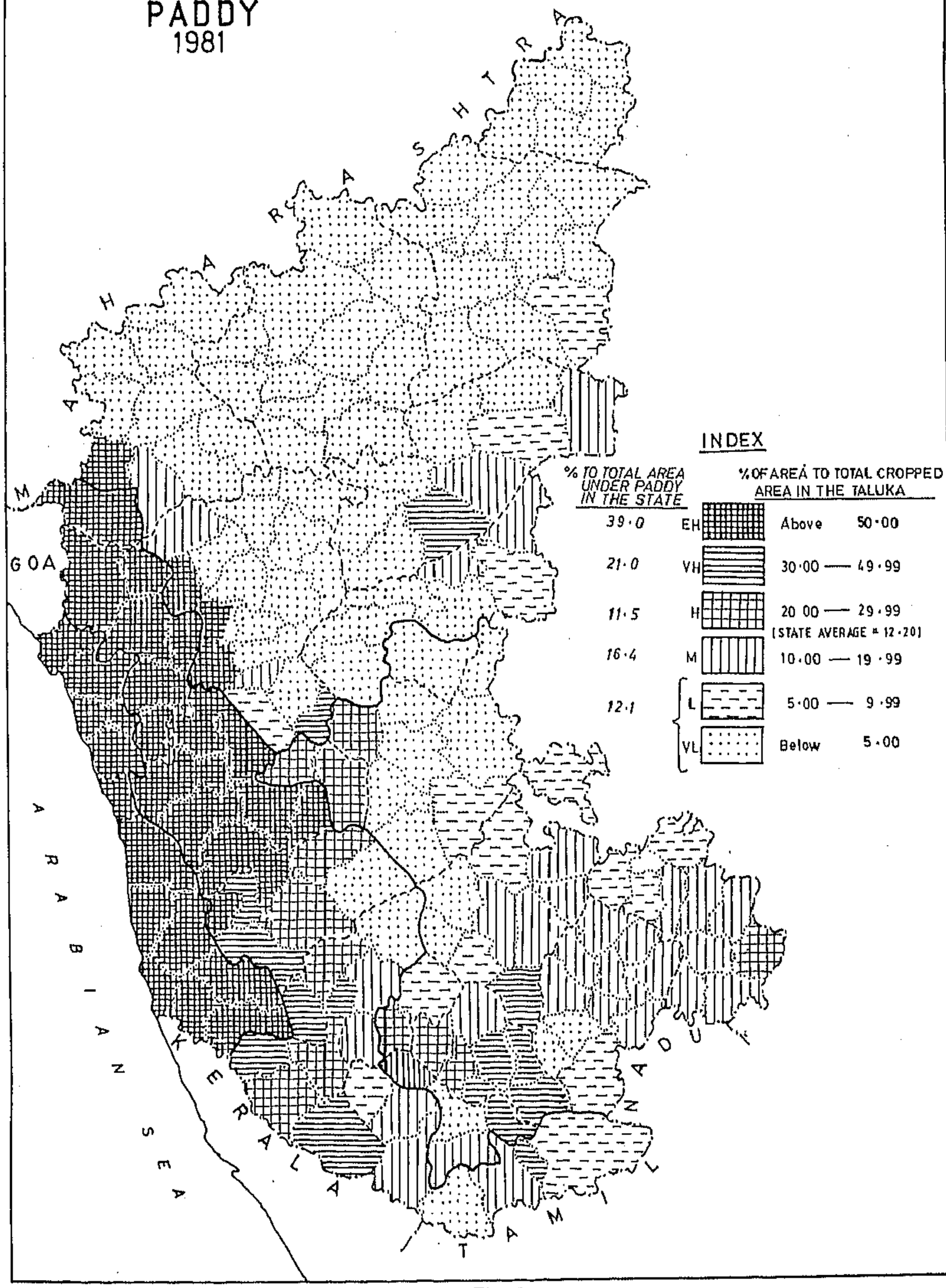

Fig. 6

KARNATAKA

RAGI

1971

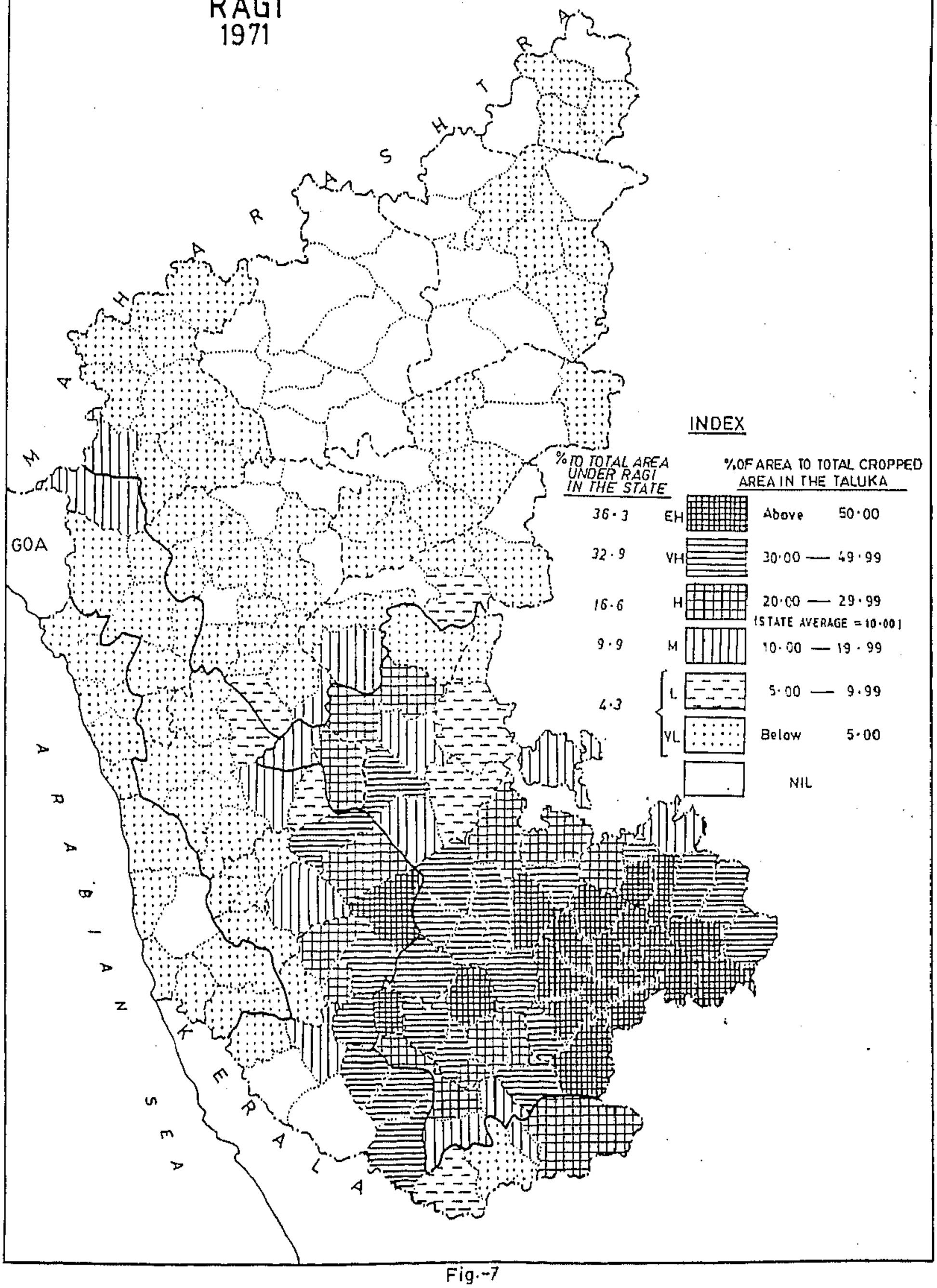

Fig.-7

KARNATAKA

RAGI

1981

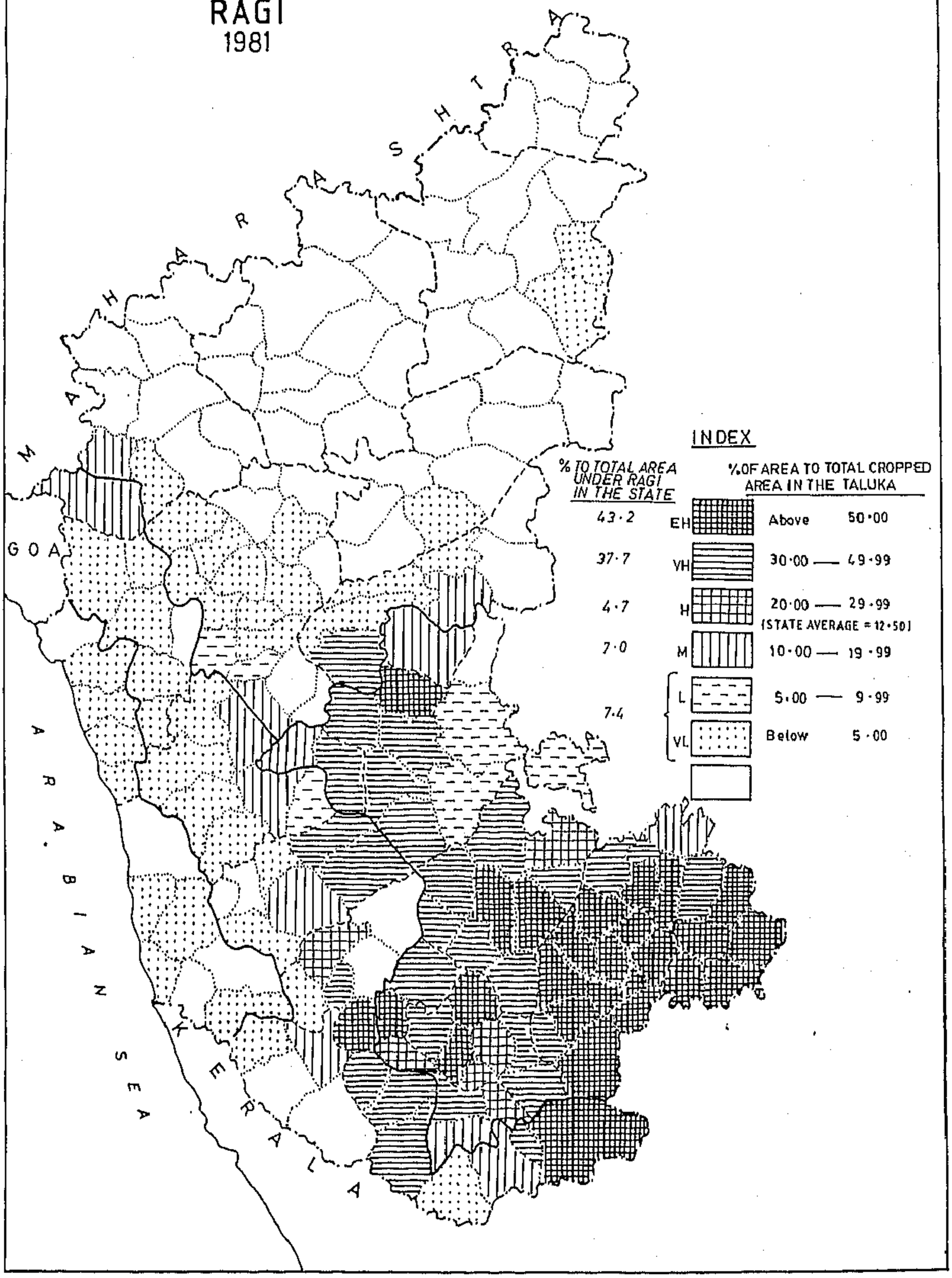

Fig.-8

the total area is found mostly in the southern parts which are well irrigated. The region also grows pulses though its share in the region's as well as the State's area has declined sharply in 1981 compared to 1971. This decline is mainly because the main pulse growing parts around Tumkur, Mysore and western Mandya have shifted from pulses to ragi cultivation.

4.29 Among the cash crops, groundnut is the most important in the region. More than one-fourth (26 per cent) of the area under groundnut in the State is in Southern Maidan. This crop is found mainly in the eastern parts (Bangalore, Kolar and Tumkur) and the northern part bordering Northern Maidan (Chitradurga). These also happen to be areas with low levels of irrigation (Figs. 9 and 10). The region's contribution to total area under sugarcane is about 31 per cent. This crop is by and large confined to one district, namely, Mandya which has extensive canal irrigation. Between 1971 and 1981, additional areas around Mandya have come under sugarcane as a result of which there is an increase of about 35 per cent in the area (in absolute terms) under sugarcane (Figs. 11 & 12).

4.30 <u>Northern Maidan:</u>

The Northern Maidan, unlike the other regions has a relatively larger share of its cropped area under commercial crops, grown mainly in dry

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KARNATAKA

GROUND-NUT

1971

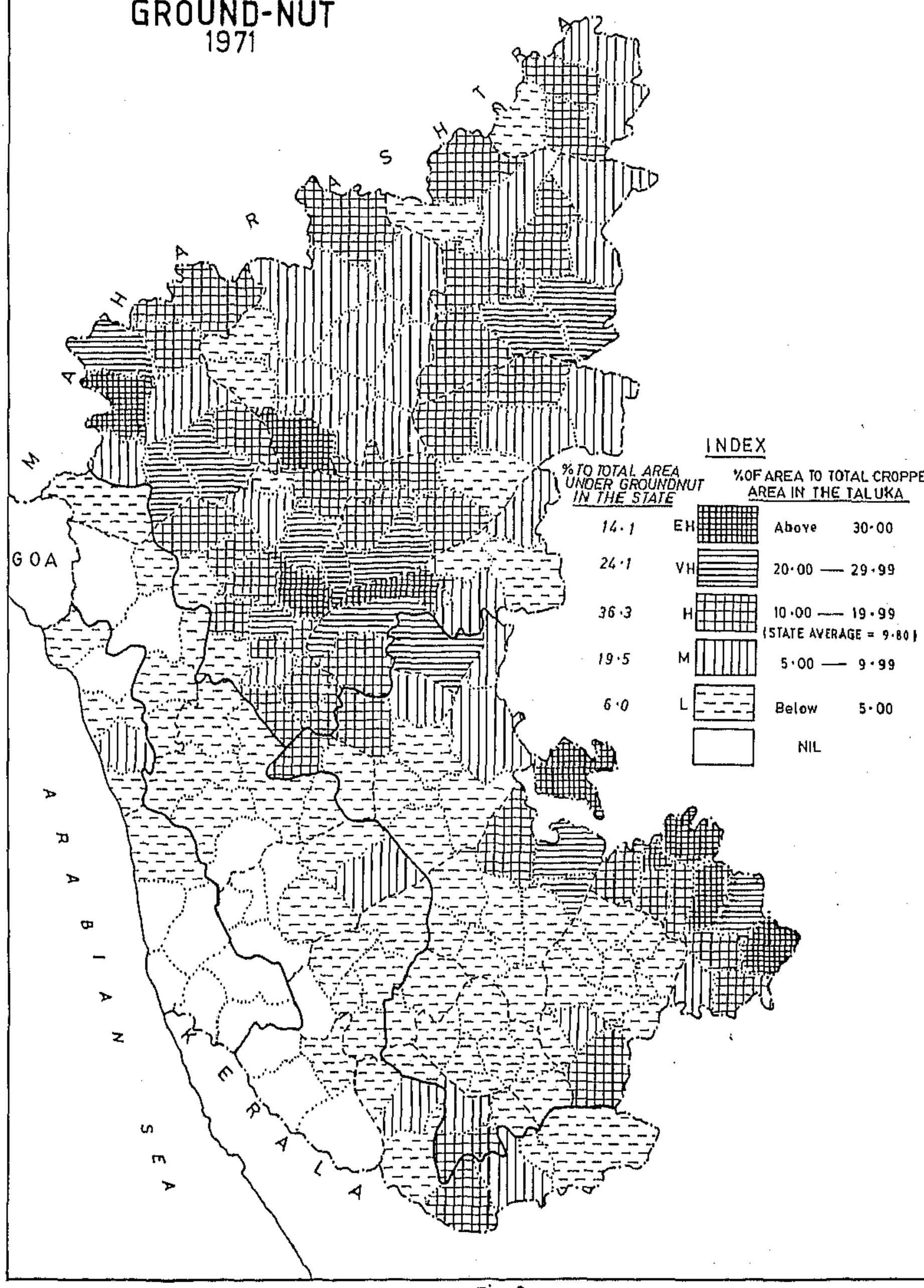

Fig. 9

KARNATAKA

GROUND-NUT

1981

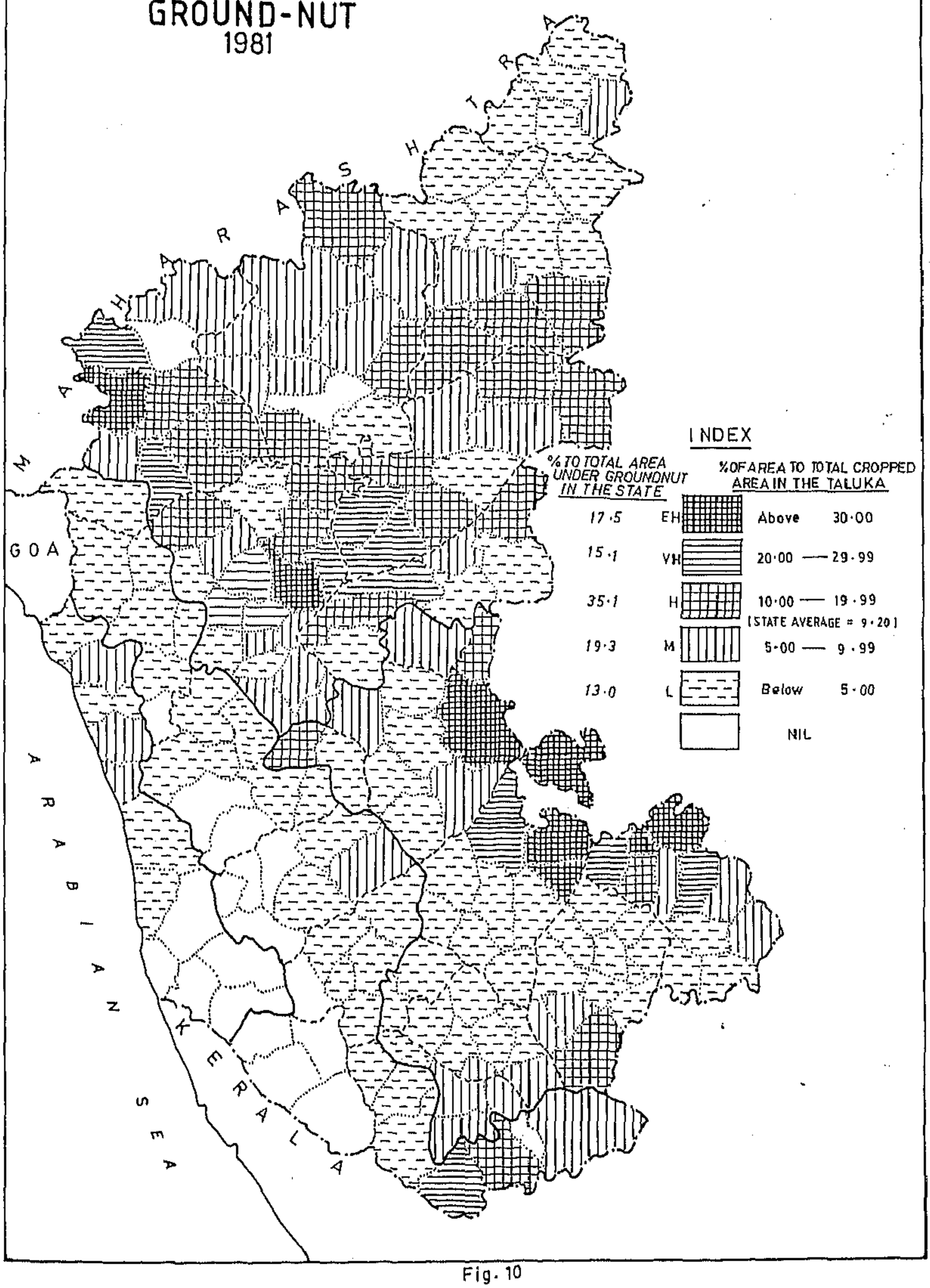

Fig. 10

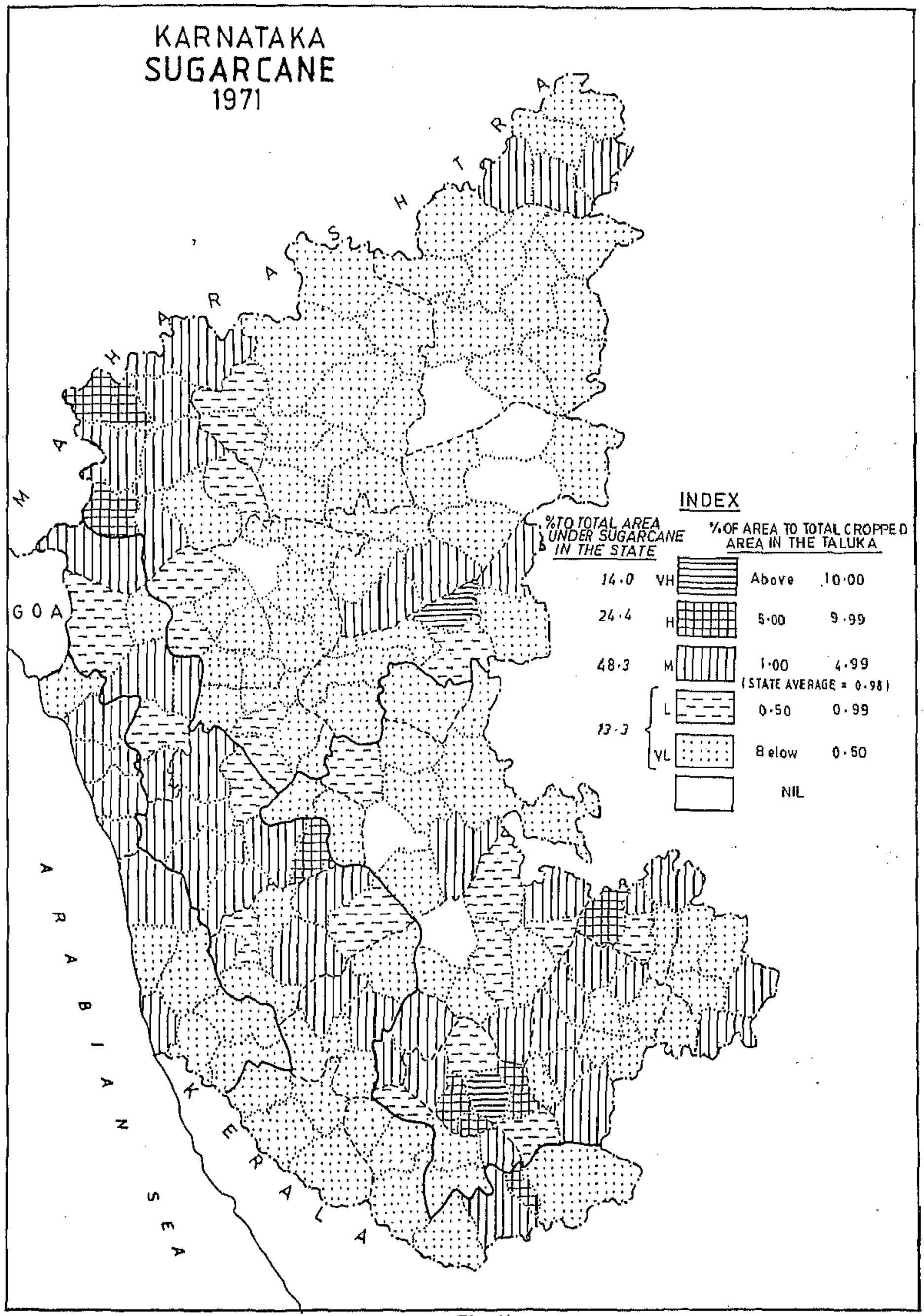
KARNATAKA
SUGARCANE
1971
MAHARASHTRA
GOA
ARABIAN SEA
KERALA
INDEX
%TO TOTAL AREA UNDER SUGARCANE IN THE STATE
% OF AREA TO TOTAL CROPPED AREA IN THE TALUKA
14·0 VH Above 10·00
24·4 H 5·00 9·99
48·3 M 1·00 4·99
(STATE AVERAGE = 0·98)
13·3 L 0·50 0·99
VL Below 0·50
NIL

Fig. 11

KARNATAKA

SUGARCANE

1981

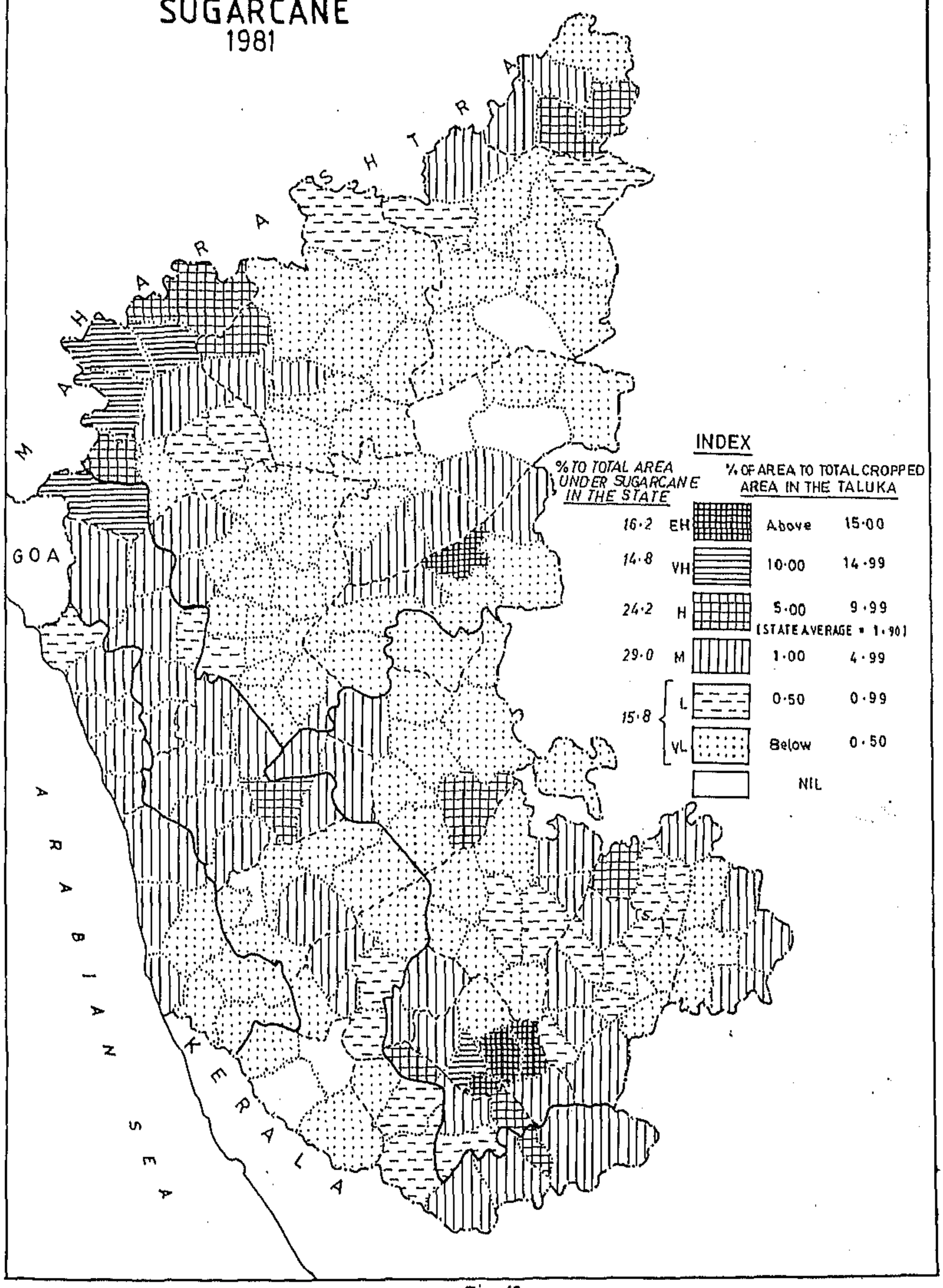

Fig. 12

conditions. A low rainfall coupled with a low level of irrigation has given rise to extensive cultivation of dry crops. Nearly 87 per cent of the area under jowar is in the region, the other inferior millets grown being bajra. These two crops together account for 40 per cent of the total cropped area in the region (Figs. 13 & 14). Paddy in the region is restricted to a few talukas in Dharwar District in the transitional area between the Malnad and the Maidan and Raichur area which are better irrigated.

4.31 The northern Maidan accounts for 70 per cent of the area under groundnut and 93 per cent of the area under cotton (Figs. 15&16). In sugarcane nearly 58 per cent of the State's area is in the region. While the area under groundnut and cotton have decreased between 1971 and 1981, the area under sugarcane shows considerable increase (by 78 per cent in absolute terms). This crop, however, is restricted to the irrigated portions around Bellary and Belgaum[3]. The increase in the area under sugarcane is primarily attributable to augmentation of irrigation facilities.

4.32 Irrigation

The average level of irrigation in the State is quite low when one compares it with States like Punjab or Tamil Nadu where more than 50 per cent of the

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[3] Ref. Figs. 17 & 18.

contd...

KARNATAKA
JOWAR
1971

MAHARASHTRA

GOA

ARABIAN SEA

KERALA

INDEX

% TO TOTAL AREA UNDER JOWAR IN THE STATE		% OF AREA TO TOTAL CROPPED AREA (TALUKA-WISE)	
26·3	VH	Above	40·00
48·9	H	25·00 — 39·99	
		(STATE AVERAGE = 22·60)	
19·7	M	15·00 — 24·99	
5·1	L	5·00 — 14·99	
	VL	Below	5·00
		NIL	

Fig. 13

KARNATAKA
JOWAR
1981

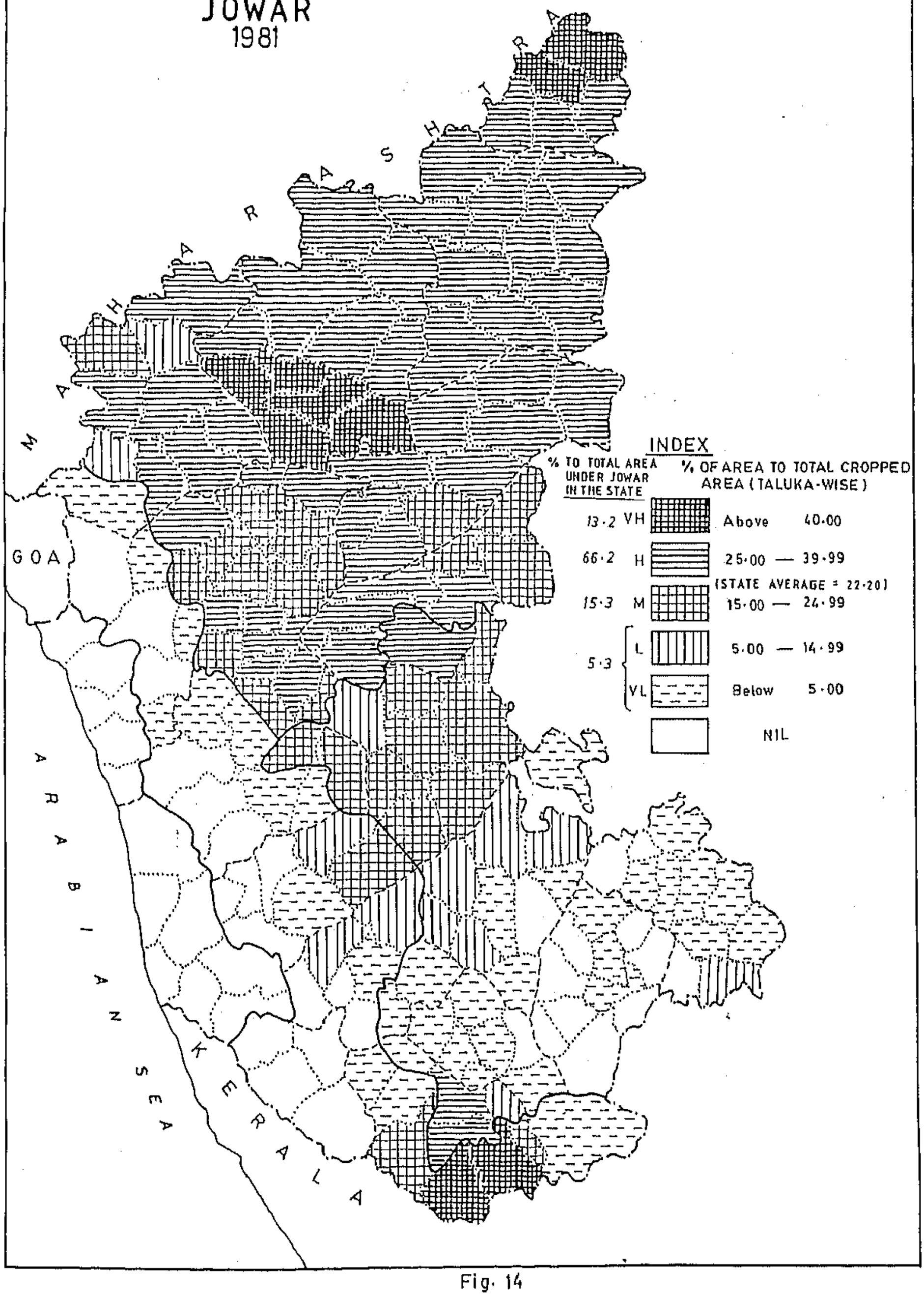

Fig. 14

net sown area is irrigated. However, within the State, there are striking regional variations.

TABLE 4.4 Karnataka : Regional Variations in irrigation, 1971 and 1981

Regions	Net irrigated area as per cent to net sown area	
	1971	1981
Coastal	35.51	34.40
Malnad	19.66	19.18
Southern Maidan	18.14	18.13
Northern Maidan	6.34	10.11
STATE	11.14	13.72

Source : Government of Karnataka, Bureau of Economics and Statistics.

4.33 The Coastal region is the most highly irrigated with over 30 per cent of its net sown area under irrigation. The level of irrigation in the Southern part of the region is particularly high with the extent of irrigation exceeding 40 per cent of the cropped area (Dakshina Kannada District). The extent of irrigation in Malnad is not as high as that of the Coastal region. However, the central part of the Malnad around Shimoga is well irrigated, the proportion even

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KARNATAKA
COTTON
1971

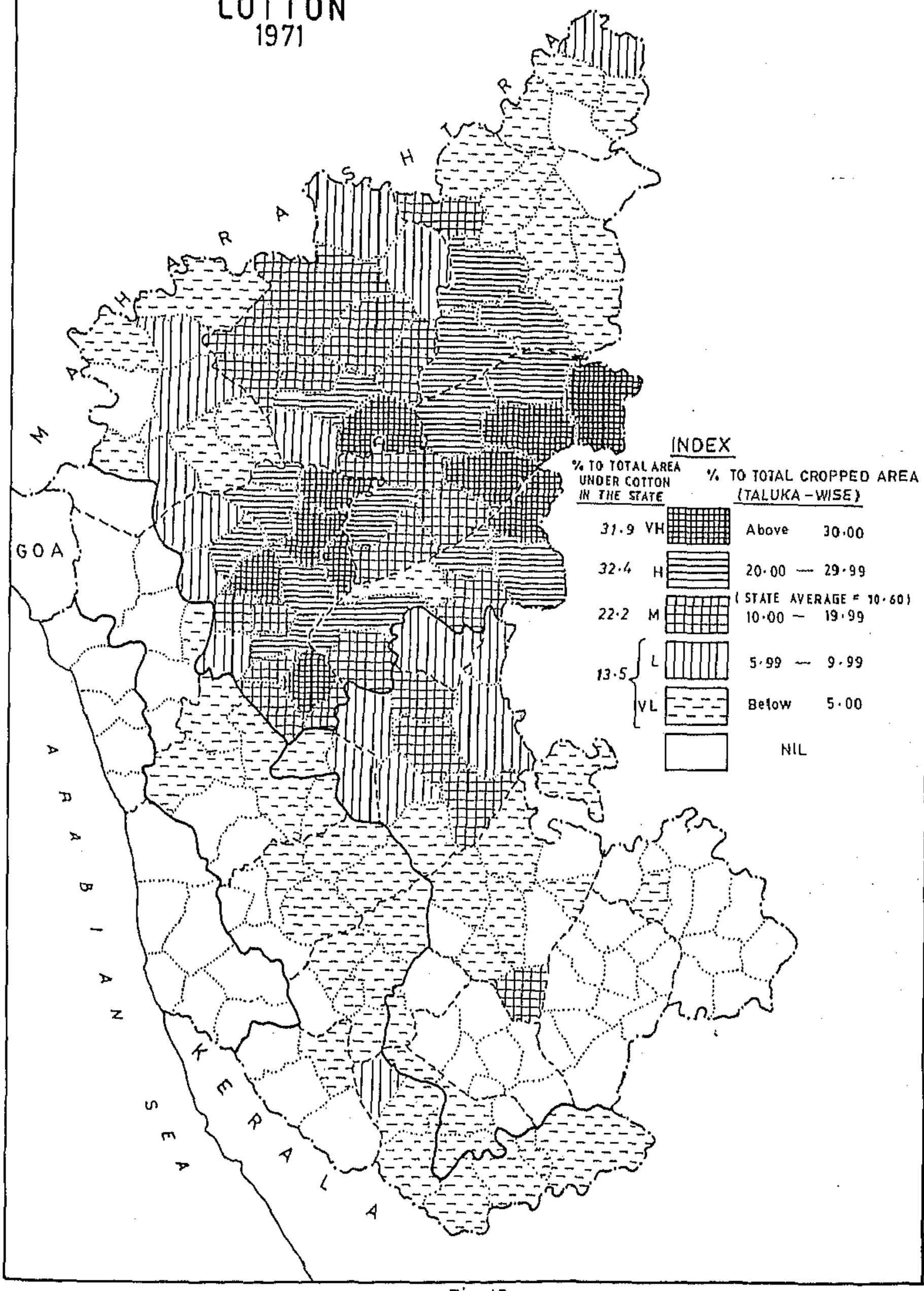

Fig.15

KARNATAKA
COTTON
1981

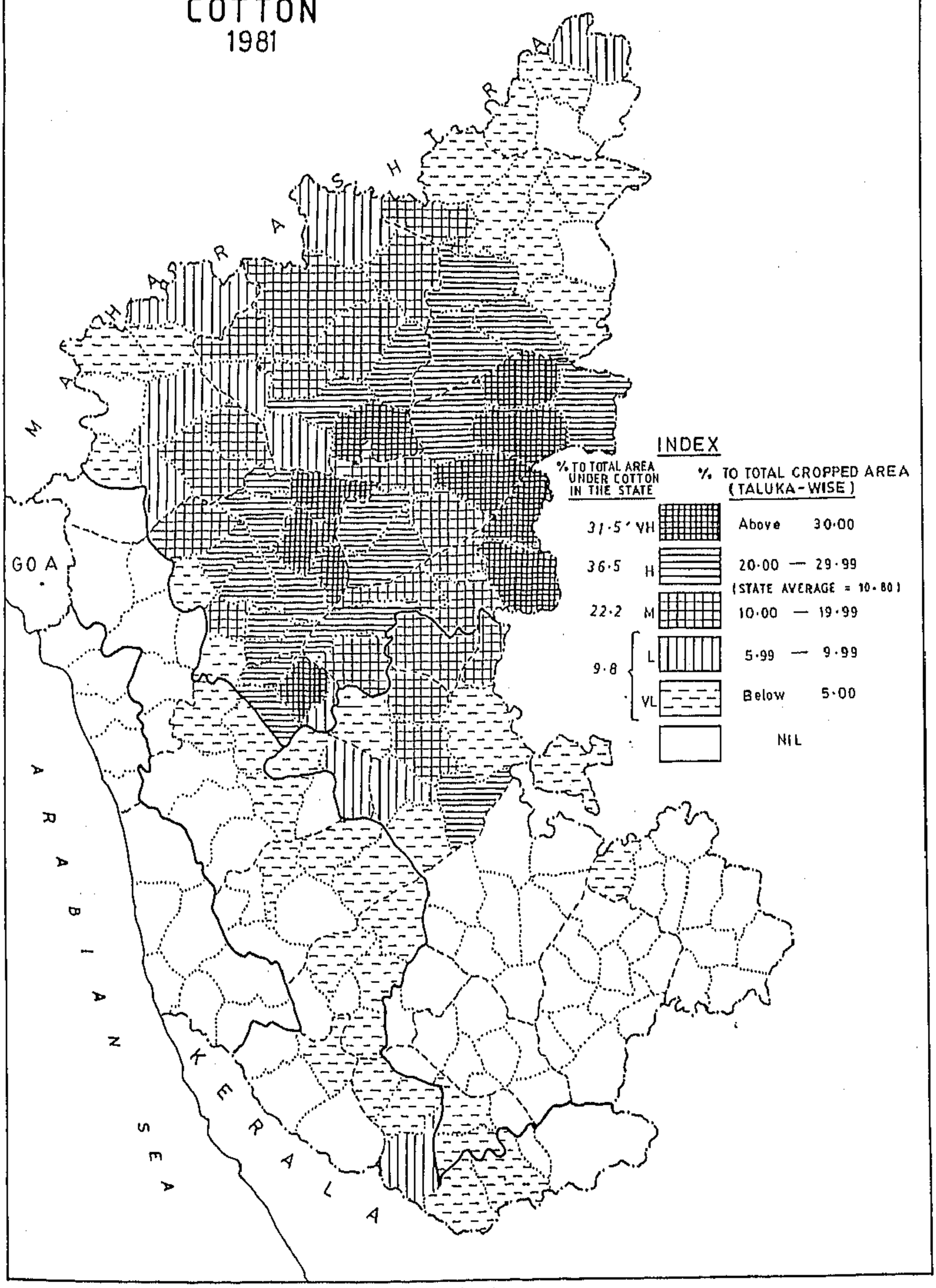

Fig. 16

exceeding more than half the net sown area in certain talukas. As against this, the level of irrigation in the southern part of the Malnad is relatively low (Periyapatna, Hunsur, H.D. Kote, Gundlupet, Chamrajanagar and Kollegal). These areas, with the exception of plantation areas, grow more of dry crops (Figs. 17 & 18).

4.34 Southern Maidan is a tank irrigated country excepting areas around Mandya and Kolar, where the irrigation is by canals. In all, less than 20 per cent of the net sown area is irrigated. It is noteworthy that in the already highly irrigated area around Mandya, Maddur and Srirangapatna, additional areas have been irrigated by 1981 compared to 1971. In these areas, irrigation covers nearly 50 per cent of the net sown area.

4.35 The least irrigated region in the State is the Northern Maidan. Though the average has moved up from 6 to 11 per cent during 1971-81, more than three-fourth of the region continues to remain practically unirrigated. The additional areas irrigated in this region have been due to the irrigation projects like the Thunga-Bhadra which has brought large areas under irrigation in Raichur and Bellary and Ghata Prabha which has irrigated areas in Belgaum and Bijapur. Overall, the State can broadly be divided into distinct crop-regions such as paddy-spice growing areas of the coastal plains and foot hill areas; paddy-spice plantation

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KARNATAKA
IRRIGATION
1971

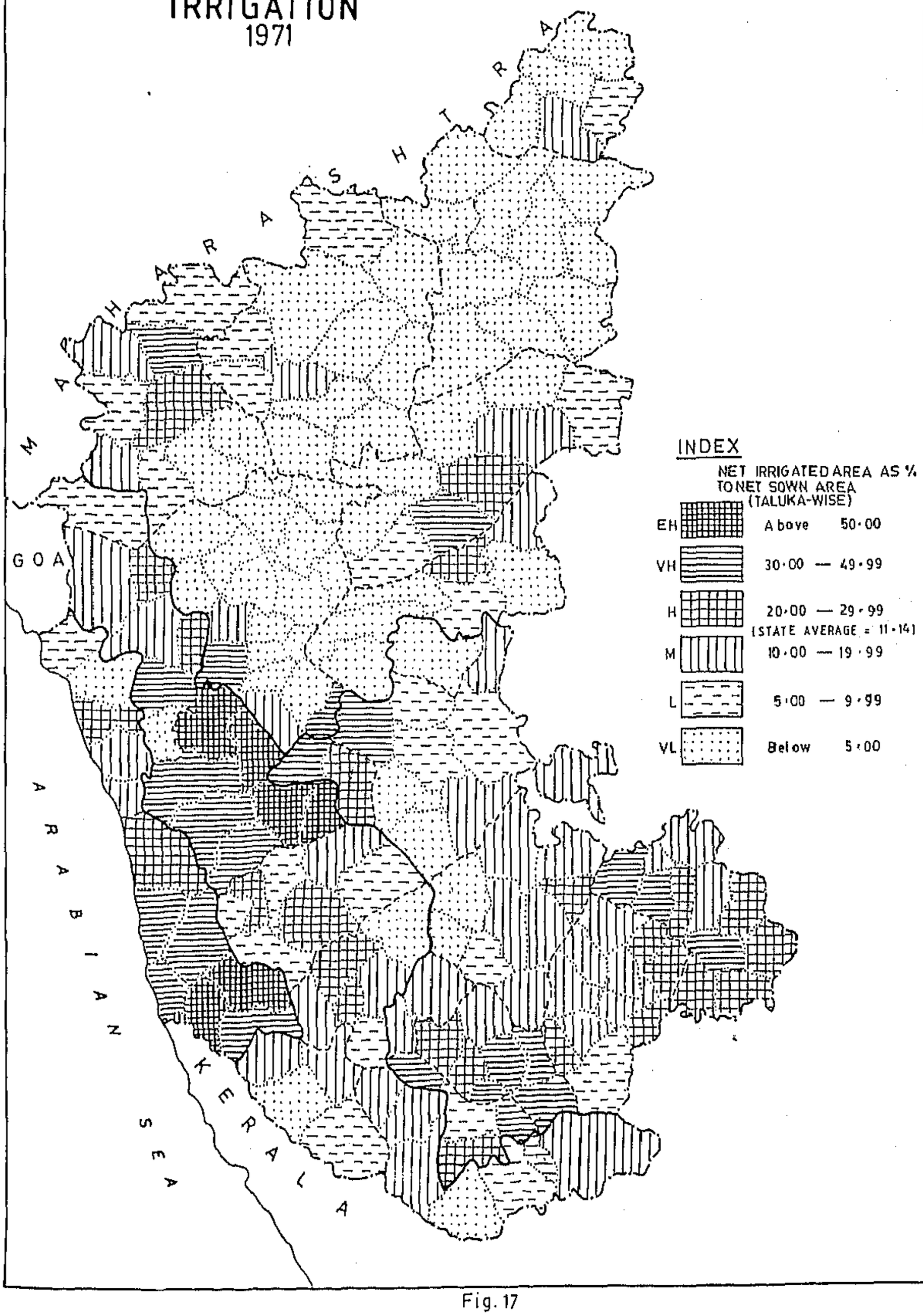

Fig. 17

KARNATAKA

IRRIGATION

1981

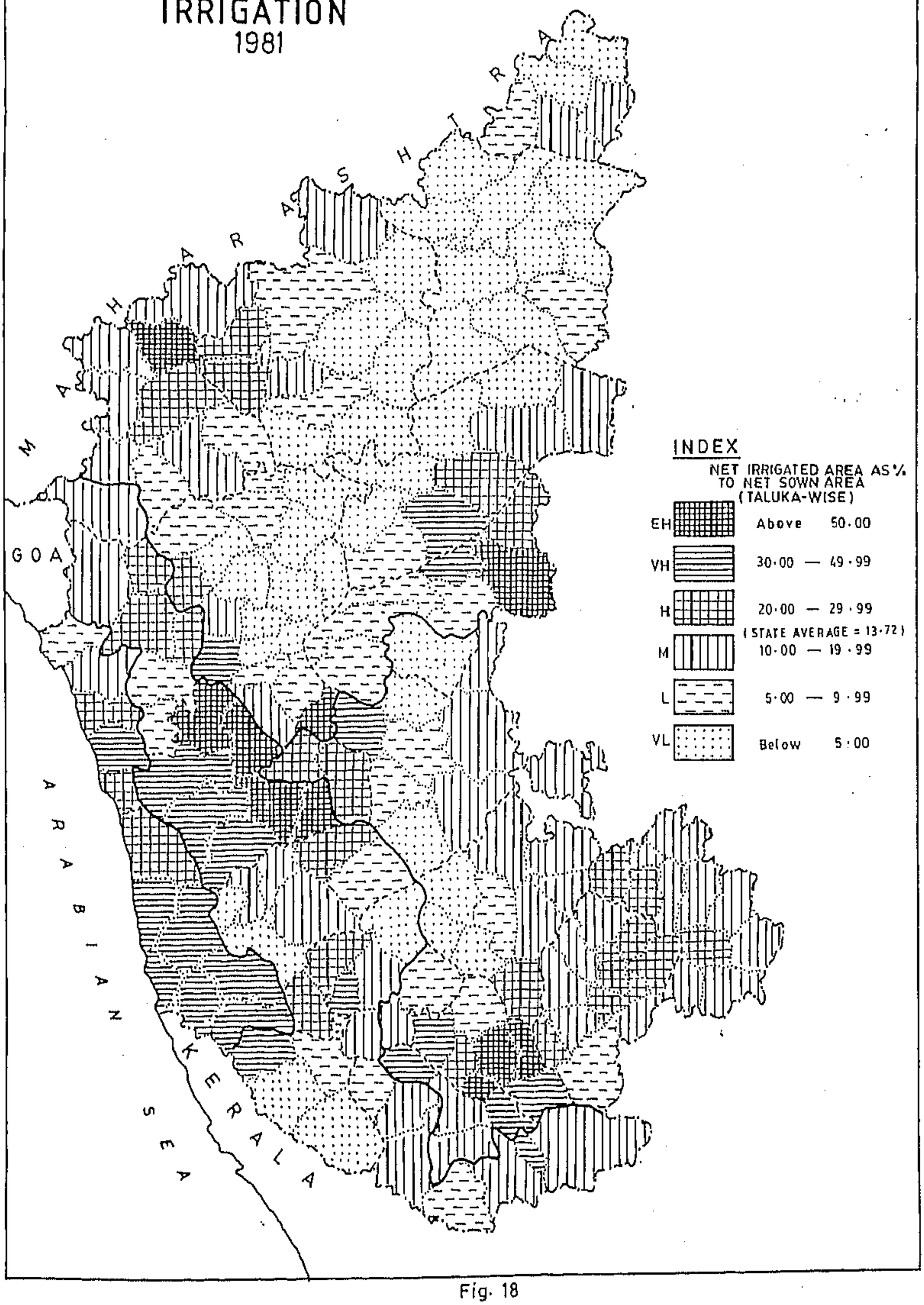

Fig. 18

areas of central and southern Malnad. Paddy-ragi and sugarcane areas of old Mysore and finally the millets-groundnut-cotton growing areas of Northern Maidan and the transitional zone in between Southern and Northern Maidans. However, the irrigated area around Belgaum and Bellary-Raichur stand out as areas of paddy and sugarcane within the Northern Maidan.

4.36 Industries - Regional Patterns (Tables 4.5& 4.6)

Though the State as a whole is rapidly industrialising in comparison with other States in the country, there are distinct regional contrasts. There is extremely high concentration of Industries in a few centres like Bangalore, Mysore (Southern Maidan), Mangalore (Coastal region) and Hubli-Dharwar (Northern Maidan). This has resulted in regional imbalances in development within and among the four regions of the State. The Malnad has been largely peripheral in industrial development as discussed elsewhere in the study.

4.37 The Annual Survey of Industries data for 1981 for both census and non-census sectors[4] classified by Industry groups and by selected urban centres brings out that the largest concentration of industrial units in

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4 The census sector covers units employing 100 or more workers without power and 50 or more workers with power and non-census sector covers the remaining units.

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TABLE 4.5 Karnataka: Regional patterns and variations in the Industrial Structure, 1981 - Industry Codes*

	20 to 22	23 to 26	27	28	30	31	32	33	34	35&36	37	38	42	97	Total
COASTAL REGION	12.8	1.9	25.2	15.1	11.4	4.2	25.6	3.1	3.3	1.6	10.1	4.2	0.0	13.6	8.9(100.0)
1. Coondapur	0.6	0.0	2.6	0.6	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7(7.5)
2. Karkal	1.0	0.0	3.1	0.3	2.4	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6(6.1)
3. Mangalore	8.1	1.3	2.5	10.0	8.5	2.9	13.7	2.9	3.0	1.3	9.2	4.2	0.0	10.3	5.7(63.7)
4. Udupi	0.8	0.3	1.4	2.4	0.5	0.5	2.0	0.3	0.3	0.2	0.0	0.0	0.0	0.9	0.7(7.6)
5. Karwar	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.9	0.2(1.9)
6. Others	1.8	0.2	5.6	1.8	0.0	0.3	4.0	0.0	0.0	0.2	0.0	0.0	0.0	1.5	1.1(13.2)
MALNAD	8.9	1.9	18.7	3.3	4.7	10.6	8.3	2.0	2.1	4.9	0.8	1.0	14.2	12.7	6.2(100.0)
1. Chickmagalur	0.3	0.0	2.8	0.3	0.0	0.8	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.5	0.4(6.3)
2. Kadur	0.3	0.0	1.7	0.0	1.7	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3(5.2)
3. Hassan	0.8	0.0	2.8	0.0	0.5	4.2	0.9	0.0	0.0	0.2	0.0	0.0	0.0	2.3	0.8(12.7)
4. Kollegal	0.4	1.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3(5.2)
5. Bhadravathi	0.9	0.0	0.0	0.3	0.0	0.0	0.3	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.3(5.2)
6. Shimoga	2.2	0.0	0.9	0.6	0.9	1.9	0.6	0.9	0.6	3.1	0.0	0.0	7.1	2.8	1.3(20.7)
7. Sirsi	0.5	0.1	0.9	0.3	0.0	0.0	0.0	0.0	0.6	0.2	0.0	0.0	0.0	0.9	0.3(4.4)
8. Others	3.5	0.8	9.4	1.5	3.3	2.9	4.5	0.8	0.6	0.6	0.8	1.0	7.1	5.7	2.5(40.0)
SOUTHERN MAIDAN	32.1	54.1	34.0	68.6	77.3	72.9	38.2	68.9	79.7	77.3	73.1	88.5	57.1	42.3	55.9(100.0)
1. Anekal	0.4	0.7	0.0	0.0	0.5	0.8	1.7	0.3	0.6	0.8	0.8	2.1	7.1	0.5	0.7(1.2)
2. Bangalore	11.0	41.9	20.7	54.5	71.6	52.5	21.4	60.1	74.3	72.3	63.0	54.2	14.2	33.3	42.4(75.8)
3. Davangere	2.7	2.0	0.0	3.0	0.0	0.3	0.6	1.1	0.3	0.8	0.8	0.0	7.1	0.9	1.4(2.5)
4. Bangarpet	1.3	0.0	0.0	0.3	0.0	0.8	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4(0.8)
5. Siddlaghatta	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4(0.7)
6. Mandya	1.2	0.0	2.3	0.6	0.0	0.8	0.0	0.6	0.6	0.0	0.8	0.0	7.1	0.5	0.6(1.0)
7. Mysore	4.8	1.2	6.5	6.3	3.8	13.0	3.4	4.0	2.1	3.1	7.6	10.4	7.1	2.8	4.3(7.7)
8. Nanjangud	0.4	0.4	0.6	1.8	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4(0.7)
9. Tumkur	2.2	0.1	0.6	0.0	0.5	1.1	1.1	0.0	0.6	0.2	0.0	20.8	0.0	1.4	1.1(2.0)
10.Others	8.2	5.8	3.3	2.1	0.9	2.3	8.3	2.8	1.2	0.3	0.0	1.0	14.5	2.9	4.2(7.6)

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TABLE 4.5 (contd.)

	20 to 22	23 to 26	27	28	30	31	32	33	34	35&36	37	38	42	97	Total
NORTHERN MAIDAN	46.2	42.1	22.1	13.0	6.6	12.2	27.9	26.0	14.9	16.0	16.0	6.3	28.7	31.5	28.9(100.0)
1. Belgaum	0.3	1.6	6.5	2.4	2.8	1.3	2.3	16.6	4.2	7.3	5.9	2.1	7.1	8.5	3.8(13.2)
2. Chikkodi	4.1	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.6	0.0	0.0	0.0	0.0	0.9	1.0(3.4)
3. Bellary	2.9	2.0	1.4	1.2	1.9	0.0	1.4	1.1	0.9	0.3	1.7	0.0	0.0	2.8	1.6(5.6)
4. Hospet	1.6	0.3	0.3	0.6	0.5	1.9	1.4	1.1	0.6	0.2	0.0	0.0	0.0	1.4	0.8(2.9)
5. Bijapur	1.2	2.0	1.4	0.3	0.0	0.3	1.1	0.9	0.0	0.3	0.0	0.0	0.0	0.9	1.0(3.3)
6. Jamkhandi	0.2	3.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8(2.7)
7. Dharwar	0.5	0.3	1.7	1.8	0.0	1.3	1.7	0.3	0.3	1.0	0.8	2.1	0.0	0.0	0.8(2.7)
8. Gadag	1.3	3.6	0.0	0.6	0.0	0.3	0.0	0.3	0.3	0.6	0.0	0.0	0.0	0.5	1.2(4.1)
9. Hubli	3.1	2.1	5.1	3.3	0.9	1.1	2.8	3.4	6.0	4.3	6.7	2.1	0.0	3.3	3.2(11.0)
10.Gulbarga	3.9	0.4	0.8	1.2	0.0	0.3	3.1	0.9	0.0	0.0	0.0	0.0	0.0	1.4	1.3(4.5)
11.Gangavathy	2.8	0.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.7(2.4)
12.Raichur	3.9	2.2	0.3	0.3	0.0	2.3	0.6	0.0	0.0	0.2	0.0	0.0	14.3	1.4	1.6(5.5)
13.Others	20.3	24.0	4.3	1.3	0.5	3.1	11.8	1.4	2.0	1.90	0.1	0.0	7.3	9.9	11.2(38.7)
STATE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

*Industry codes:

20 - 22	Manufacture of food products, beverages, tobacco and tobacco products.
23 - 26	Manufacture of cotton, wool, silk and synthetic textiles and textile products.
27	Manufacture of wood and wood products.
28	Manufacture of paper and paper products, printing and publishing.
30	Manufacture of rubber, plastic, petroleum and coal products.
31	Manufacture of chemical and chemical products.
32	Manufacture of non-metallic mineral products.
33	Basic metals and alloys.
34	Manufacture of metal products and parts except machinery and transport equipment.
35&36	Manufacture of machinery, machine tools and electrical appliances.
37.	Manufacture of transport equipment and parts.
38.	Other manufacturing.
42.	Water works and supply.
97	Repair services.

Source: Government of India, Central Statistical Organisation, Annual Survey of Industries, 1981.

the State is in Southern Maidan (56 per cent) followed by Northern Maidan (29 per cent). The industrial spread within a region measured by the number of units per 1000 km^2 also shows that the Southern Maidan has the maximum number of units (65.25 units per 1000 km^2), the next highest being the Coastal region (48 units per 1000 km^2). Northern Maidan which has the second highest industrial concentration has less than 20 units per 1000 km^2). The number of industrial units as well as units per 1000 km^2 was the lowest in Malnad. At the level of the State, the pattern of industrialisation shows a good amount of diversification. Nearly a fourth of the units is engineering units, the other important industries being manufacture of food products and cotton textiles.

4.38 Coastal Region:

The region in 1981 accounted for nearly 9 per cent of the total industrial units in the State. The pattern of industrialisation brings out marked intra-regional variations in that, the southern part of the region is highly industrialised as compared to the northern part. The talukas of Dakshina Kannada have as much as 92 per cent of the industrial units in the region with Mangalore alone having 64 per cent of the total. This is inspite of the fact that the northern part of the region with its rich resource base holds

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the potential for industrialisation. Analysis of the industrial structure reveals that the major industrial activities in the region are the manufacture of food products particularly coffee curing, cashew processing, etc. (29 per cent of the region's total), manufacture of tiles (17 per cent), wood and wood products (17 per cent) and paper and paper products (10 per cent).

4.39 Malnad :

The region which has just about 6 per cent of the industrial units in the state is the least industrialised. Industrialisation is by and large restricted to the central part around Shimoga, Hassan and Chickmagalur which are also areas connected by rail to the Maidan region. In the northern Malnad Sirsi and Dandeli (Haliyl) are emerging as industrial centres, particularly with the setting up of the West-Coast paper mills. Among the various types of industries, food processing emerges as the dominant activity (29.2 per cent), next in importance being wood and wood products (18 per cent). The other important industry groups are manufacture of chemical products, machinery and metal products. A large number of light engineering units have come up in Shimoga owing mainly to the presence of Bhadravathy steel plant. More than 30 per cent of the units in Shimoga and Bhadravathy are engineering units (Industry Codes 33 to 37).

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TABLE 4.6: Karnataka: Regional variations in Industrial pattern 1981.

(Percent)

Regions	Industry code *															
	20-22	23-26	27	28	30	31	32	33	34	35-36	37	38	42	97	Others	Total
COASTAL	29.2	4.4	17.0	9.6	4.6	3.1	17.2	2.1	2.1	2.1	2.3	0.8	-	5.5	-	100.0
Coondapur	17.9	-	23.1	5.1	-	-	53.8	-	-	-	-	-	-	-	-	100.0
Karkal	37.5	-	34.4	3.1	15.6	6.3	3.1	-	-	-	-	-	-	-	-	100.0
Mangalore	29.1	4.8	13.2	9.9	5.4	3.3	14.4	3.0	3.0	2.7	3.3	1.2	-	6.6	-	100.0
Udupi	22.5	7.5	12.5	20.0	2.5	5.0	17.5	2.5	2.5	2.5	-	-	-	5.0	-	100.0
Karwar	60.0	10.0	-	-	-	-	-	-	-	-	10.0	-	-	20.0	-	100.0
MALNAD	29.2	6.3	18.2	3.0	2.8	11.0	8.0	1.9	1.9	9.1	0.3	0.3	0.6	7.4	-	100.0
Chickmagalur	17.4	-	43.5	4.3	-	13.0	4.3	-	4.3	8.7	-	-	-	4.3	-	100.0
Kadur	15.8	-	31.6	-	-	15.8	31.6	-	-	-	-	-	-	5.3	-	100.0
Hassan	21.7	-	21.7	-	2.2	34.8	6.5	-	-	2.2	-	-	-	10.9	-	100.0
Kodagu	26.3	63.2	5.3	5.3	-	-	-	-	-	-	-	-	-	-	-	100.0
Bhadravathy	61.1	-	-	5.6	-	-	5.6	5.6	-	22.2	-	-	-	-	-	100.0
Shimoga	34.7	-	4.0	2.7	2.7	9.3	2.7	4.0	2.7	28.0	-	-	1.3	8.0	-	100.0
Sirsi	37.4	6.3	18.7	6.3	-	-	-	-	12.5	6.3	-	-	-	12.5	-	100.0
SOUTHERN MAIDAN	11.7	20.1	3.6	6.9	5.0	8.4	4.1	7.4	8.1	15.8	2.7	2.6	0.2	2.8	0.5	100.0
Anekal	13.2	23.7	-	-	2.6	7.9	15.8	2.6	5.3	13.2	2.6	5.3	2.6	2.6	2.6	100.0
Bangalore	5.3	20.6	2.9	7.3	6.1	8.0	3.0	8.5	10.0	19.4	3.0	2.1	0.1	2.9	0.8	100.0
Davangere	38.6	28.9	-	12.0	-	1.2	2.4	4.8	1.2	6.0	1.2	-	1.2	2.4	-	100.0
Bangarpet	61.5	-	-	3.8	-	11.5	23.1	-	-	-	-	-	-	-	-	100.0
Siddlaghatta	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0
Mandya	41.2	-	23.5	5.9	-	8.8	-	5.9	5.9	-	2.9	-	2.9	2.9	-	100.0
Mysore	22.5	5.9	9.1	8.3	3.2	19.4	4.7	5.5	2.8	8.3	3.6	4.0	0.4	2.4	-	100.0
Tumkur	38.8	1.5	3.0	-	1.5	6.0	6.0	4.5	3.0	1.5	-	29.9	-	4.5	-	100.0

contd..

TABLE 4.6 (Contd.)

Regions	Industry code *															
	20-22	23 to 26	27	28	30	31	32	33	34	35-36	37	38	42	97	Others	Total
NORTHERN MAIDAN	32.7	30.4	4.6	2.5	0.8	2.7	5.8	5.4	3.0	6.3	1.1	0.4	0.2	4.0	0.1	100.0
Belgaum	1.8	8.5	10.3	3.6	2.7	2.2	3.6	26.0	6.3	22.0	3.1	0.9	0.4	8.1	0.4	100.0
Chikkodi	84.5	-	-	-	-	-	8.6	-	3.4	-	-	-	-	3.4	-	100.0
Bellary	37.2	25.5	5.3	4.3	4.3	-	5.3	4.3	3.2	2.1	2.1	-	-	6.4	-	100.0
Hospet	38.8	8.2	2.0	4.1	2.0	14.3	10.2	8.2	4.1	2.0	-	-	-	6.1	-	100.0
Bijapur	25.0	42.9	8.9	1.8	-	1.8	7.1	5.4	-	3.6	-	-	-	3.6	-	100.0
Jamkhandi	6.7	88.9	-	-	-	-	2.2	-	-	-	-	-	-	2.2	-	100.0
Dharwar	13.3	8.9	13.3	13.3	-	11.1	13.3	2.2	2.2	15.6	2.2	4.4	-	-	-	100.0
Gadag	22.9	62.9	-	2.9	-	1.4	-	1.4	1.4	5.7	-	-	-	1.4	-	100.0
Hubli	19.9	14.0	9.7	5.9	1.1	2.2	5.4	6.5	10.8	15.6	4.3	1.1	-	3.8	-	100.0
Gulbarga	60.5	6.6	3.9	5.3	-	1.3	14.5	3.9	-	-	-	-	-	3.9	-	100.0
Gangavathy	82.9	9.8	2.4	-	-	2.4	-	-	-	-	2.4	-	-	-	-	100.0
Raichur	49.5	29.0	1.1	1.1	-	10.8	2.2	-	-	1.1	-	-	2.2	3.2	-	100.0
STATE	20.2	21.0	6.0	5.7	3.6	6.4	6.0	6.0	5.7	11.4	2.0	1.6	0.3	3.6	0.5	100.0

Note: * Industry Codes are same as in table 4.5

Source: Government of India, Central Statistical Organisation, Annual Survey of Industries, 1981

4.40 Southern Maidan

The region which has more than half the number of industries in the State (56 per cent) presents sharp intra-regional variations in its industrial spread. The largest concentration of industrial units is found in Bangalore (76 per cent of the region's total), the other industrialised talukas being Mysore (7.7 per cent) and Davangere (2.5 per cent). On the whole, the Bangalore-Mysore axis has over 85 per cent of the total number of industrial units in the region with Mandya- a rapidly growing agro-industrial town - in between them. Southern Maidan presents a well diversified industrial structure. More than a third of the total units in the region (34 per cent) are engineering units. The other important industry is the manufacture of silk-yarn. The agro-based industries which dominate in the other regions account only for 12 per cent of the units in Southern Maidan. The region also has the advantage of having a number of public sector undertakings which has given rise to related manufacturing activities around Bangalore.

4.41 Northern Maidan

The region has 29 per cent of the industrial units in the State. Besides the Hubli-Dharwar-Gadag axis which has 18 per cent of the industrial units in the region,

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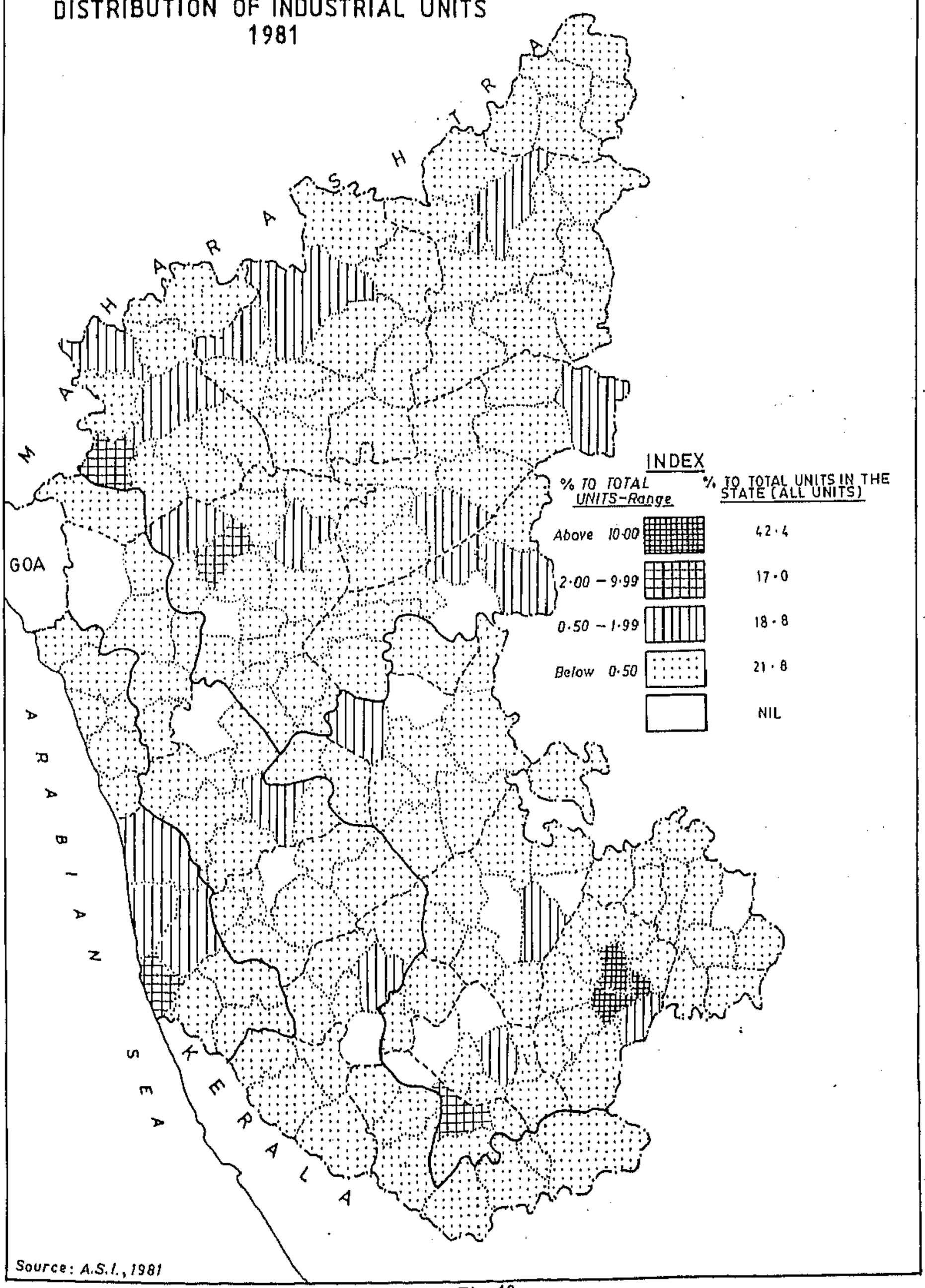
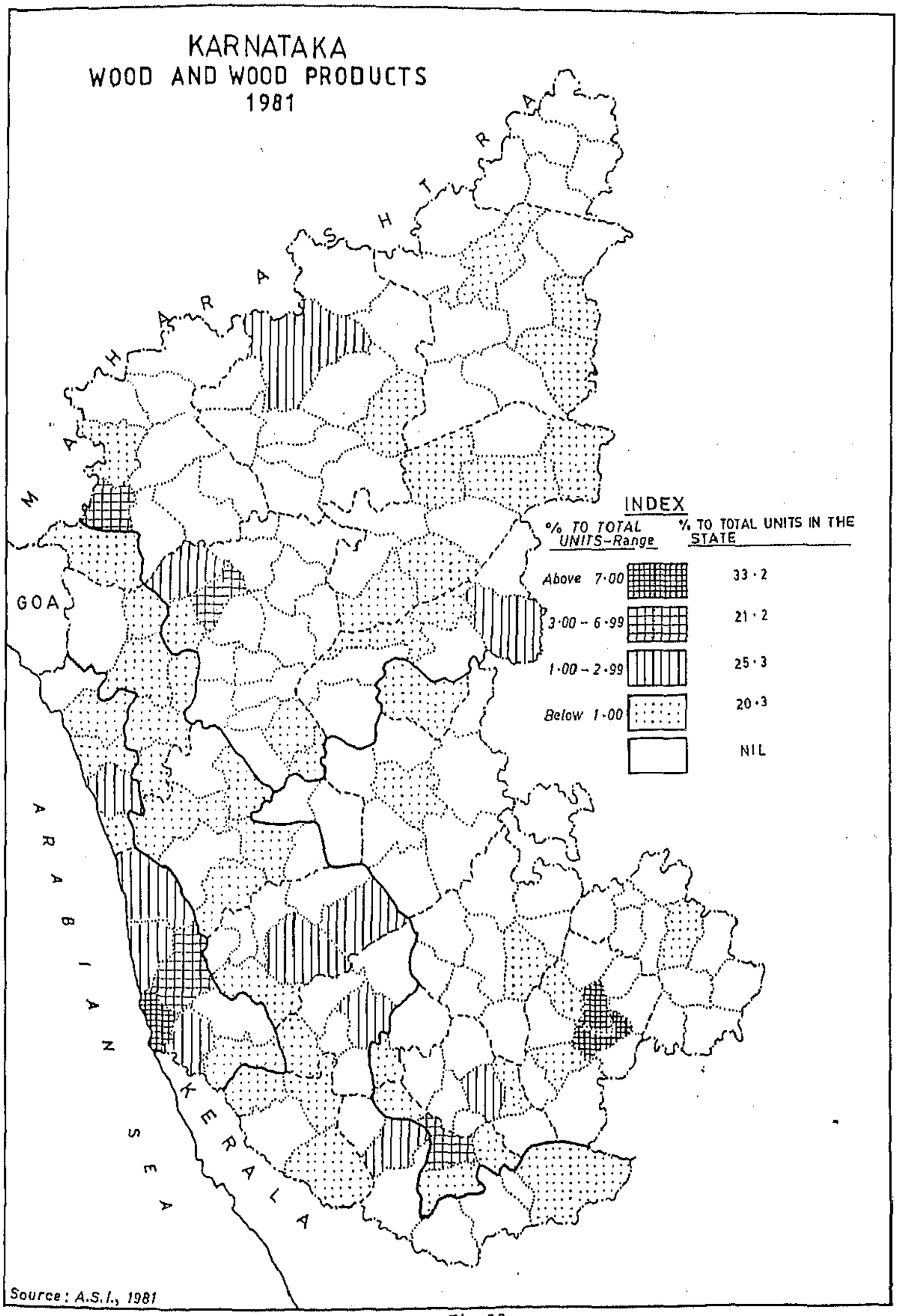
KARNATAKA
DISTRIBUTION OF INDUSTRIAL UNITS
1981



Source: A.S.I., 1981

Fig.19

KARNATAKA
WOOD AND WOOD PRODUCTS
1981



Source : A.S.I., 1981

Fig. 20

the other industrialised talukas are Belgaum (13 per cent), Bellary-Hospet (8.5 per cent), Raichur (5.5 per cent) and Gulbarga (4.1 per cent). Though the region is rich in minerals such as iron-ore and manganese in the Hospet-Bellary area, and limestone around Bijapur and Gulbarga, the industrial structure shows that agro-based industries occupy the largest share of total units. The single most important industry is cotton ginning, pressing and weaving (30 per cent of the total units). Food processing as a group which accounts for about 33 per cent of the units shows variations intra-regionally. While the western part of the region around Belgaum has activities related tobacco stemming and preparing raw-leaf tobacco, in the other parts oil crushing and rice milling are the most common activities. This conforms to the agricultural produce of the area which sustain agro-processing industries to a small extent. In fact, a large share of the agricultural produce are transported to major industrial centres outside the State in Maharashtra (Bombay and Sholapur for textiles and Oil based industries). Engineering units constitute 16 per cent of the total units in the region.

4.42 <u>Industrial locations - Patterns of association with human settlements.</u>

Almost all the centres of industrial concentrations are higher order urban centres (cities with a population of 100,000 and more). Just over

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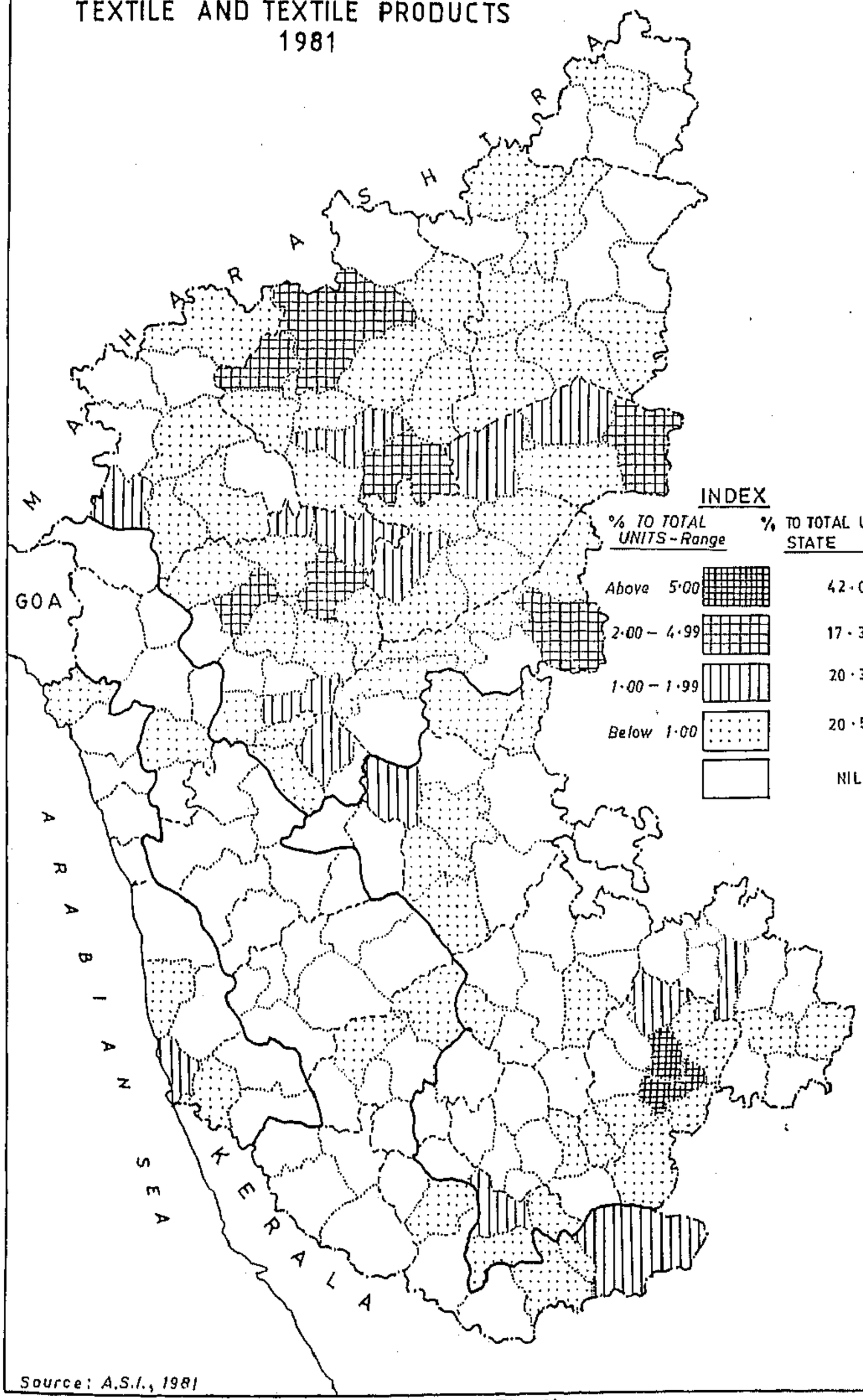
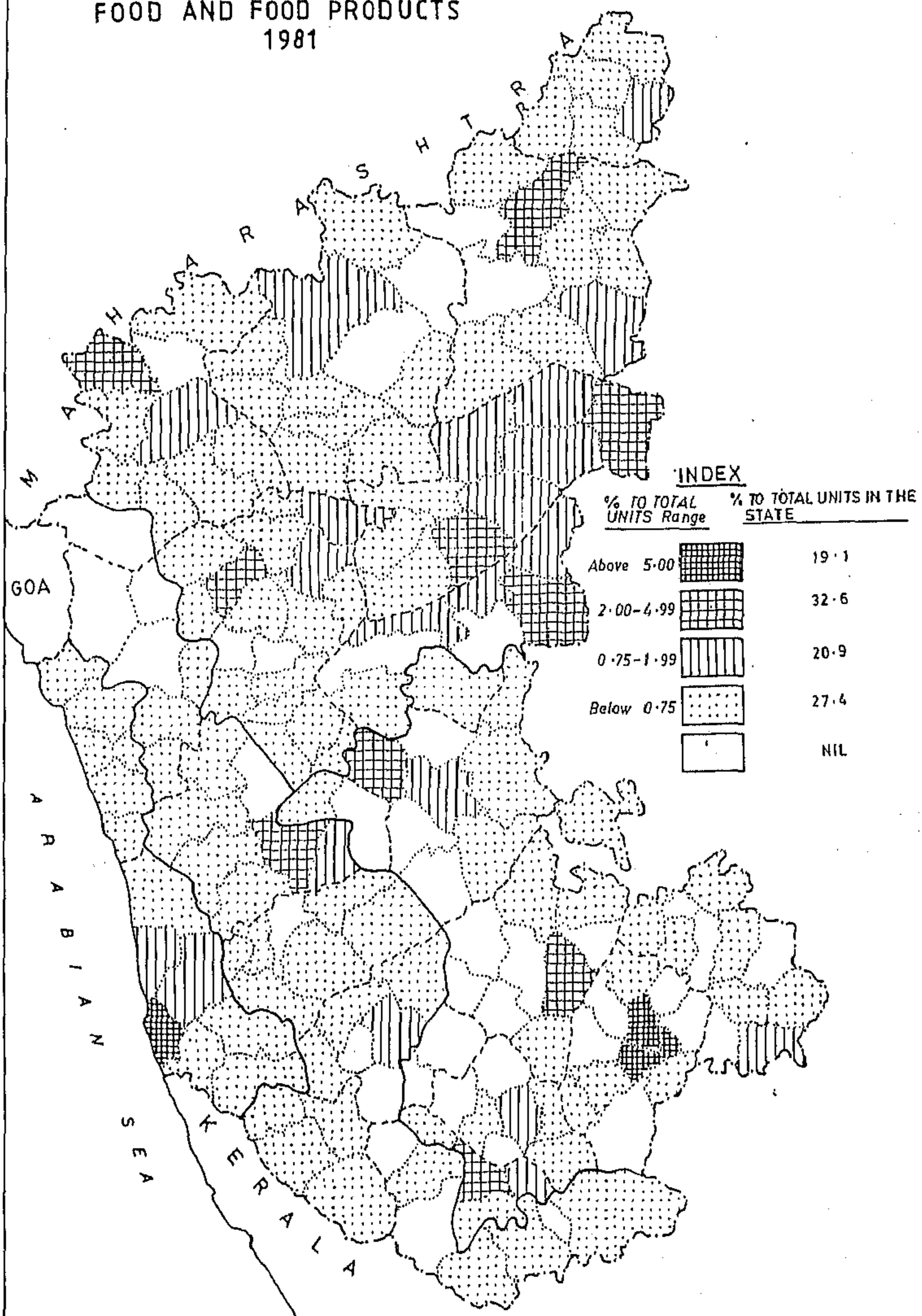
KARNATAKA
TEXTILE AND TEXTILE PRODUCTS
1981



Source : A.S.I., 1981

Fig. 21

KARNATAKA
FOOD AND FOOD PRODUCTS
1981



Source: A.S.I., 1981

Fig. 22

13 per cent of the towns account for as much as 80 per cent of the industrial units. Even in this, five urban centres, namely, Bangalore, Belgaum, Hubli-Dharwar, Mangalore and Mysore have about 60 per cent of the total units in the State (Figs 19 and 28). However, the coastal region is an exception where the industrialised talukas like Udupi, Karkal and Coondapur have relatively low levels of urbanisation. The region is perhaps unique in that it has inter regional economic linkages because of the coast line and occurance of small towns in between large centres such as Mangalore and Karwar.

4.43 The pattern of industrialisation also shows a lopsided distribution of industries. The spread of resource based industries such as food processing, manufacture of wood products and textile products also bring out that even these units irrespective of the availability of resources get located in the already industrialised centres. Industries such as manufacture of paper and wood are forest based and ideally, there should have been a clustering of these industries in the Malnad or the northern part of the coastal region. On the contrary, nearly 21 per cent of the wood products industry and 55 per cent of the paper and paper product manufacturing are in Bangalore (Table 4.5and Fig.20).

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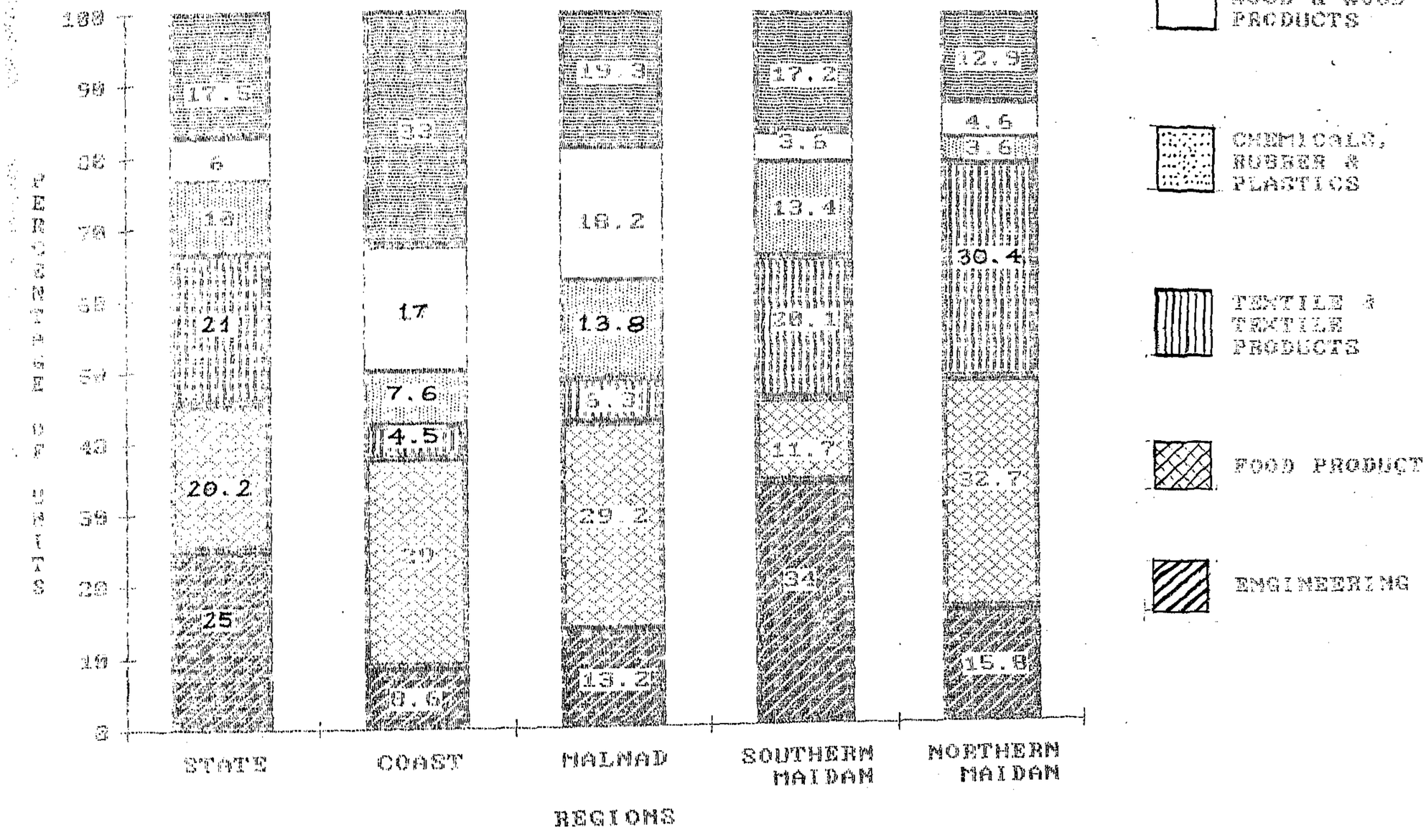
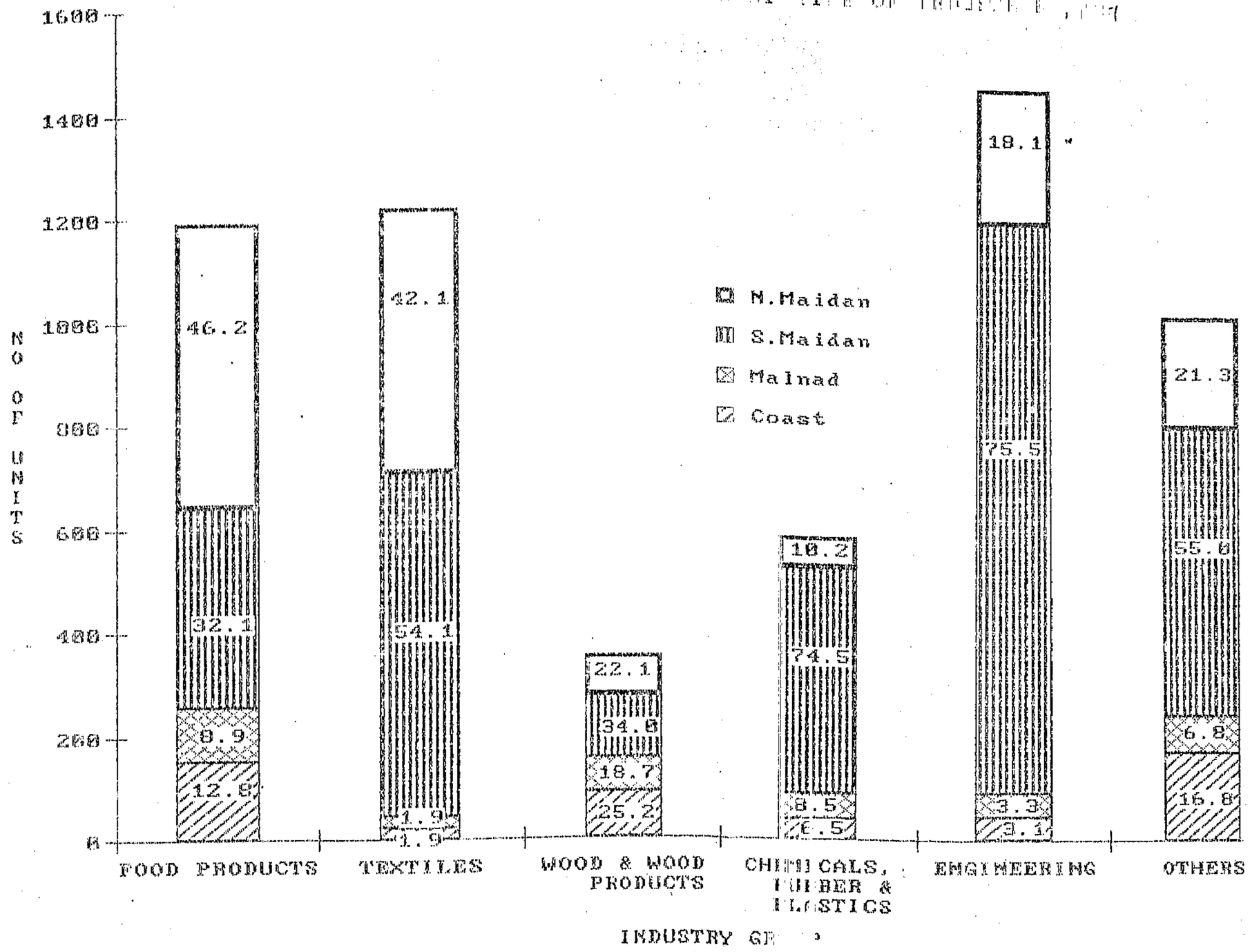
KARNATAKA: INDUSTRIAL PATTERN OF THE REIGONS, 1981



INDUSTRIAL CONCENTRATION IN STATE OF INDIA, 1994



Industries like Cotton ginning and processing (in the textile group) and food processing which can get located in smaller towns are also located in the already industrialised centres (figs.21 and 22). If this kind of a concentration has to be arrested, a bold policy towards dispersal of industries to the less industrialised regions of the State with an accent on utilising local resources locally has to be pursued.

4.44 Demographic characteristics - Regional Patterns (Table 4.7)

The population in the State has grown from 29 million in 1971 to 37 million in 1981, an increase of 26.75 per cent. Among the regions, Southern Maidan has had the maximum growth of population (31 per cent) followed by Malnad which registered a growth of 25 per cent during the decade 1971-81. The growth of population in the Coastal region and the Northern Maidan, was 22.5 per cent and 24.3 per cent, respectively during the same period. The high growth of population in the Southern Maidan is largely due to a relatively higher level of development of the region as a Princely State and subsequent growth of Bangalore-Mysore axis as the major focus of economic development of the region[5].

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[5] Incidentally Mysore had better infrastructure facilities as the capital of the Princely State and after linguistic reorganisation Bangalore has been enjoying this status as the State capital.

contd...

The decadal variation of population in the districts of Karnataka between 1901-1981 shows that the coastal District of Dakshina Kannada and almost all the Districts in the Southern Maidan have had steady increases in their population. On the other hand, the Districts of Chickmagalur, Hassan, Kodagu, Shimoga and Uttar Kannada of Malnad have had very low or even negative growth of population till 1931-41.[6] Subsequently, however, these Districts have had phenomenally high growth rates of population. Like the Malnad, the Northern Maidan also experienced decreases in its population in the early decades of the century. The population of the Northern Maidan has been increasing since 1920's, though at rates lower than that of the State. In the last two decades from 1961, population of Raichur and Bellary, in particular has grown at rates higher than the rest of the Northern Maidan which is directly a result of vast areas of agricultural land coming under irrigation in these two Districts.

4.45 Among the four regions, Northern Maidan has the largest share of area and population in the State. But the Coastal region and the Southern Maidan are more densely populated than others. Southern Maidan which has

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6 There was in general a decline or low growth of population in all the sub-regions of Karnataka. Yet, the Malnad on account of its humid and forested conditions had high mortality rate due to malaria.

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Districts	1901-1981	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951-1951	1961-1971	1971-1981
COASTAL REGION:	154.90 (3.45)	1.40	0.90	6.90	9.00	14.50	21.90	23.70	23.70
1. Dakshina-Kannada	164.00 (2.38)	4.82	4.50	8.04	10.38	13.41	17.50	21.01	22.55
2. Uttar Kannada	135.90 (1.07)	-5.27	-6.69	4.01	5.58	17.37	33.17	23.14	26.25
MALNAD	167.20 (4.39)	-1.90	-2.30	3.50	4.80	18.60	39.90	24.20	24.70
1. Chickmagalur	153.80 (0.91)	-5.79	-1.45	4.25	3.04	16.54	43.05	23.33	23.80
2. Hassan	138.50 (1.36)	1.61	0.63	2.61	5.16	13.93	25.27	23.05	23.10
3. Kodagu	155.70 (0.46)	-3.12	-6.37	-0.31	3.31	35.96	40.72	17.18	22.10
4. Shimoga	210.70 (1.66)	-2.69	-4.64	5.45	5.93	20.02	53.38	27.93	27.30

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TABLE 4.7 (contd.)

Districts	1901-1981	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951-1961	1961-1971	1971-1981
SOUTHERN MAIDAN	248.30 (14.62)	7.10	3.90	11.40	13.70	25.30	19.00	26.20	31.30
1. Bangalore	459.80 (4.94)	7.97	8.07	18.36	18.71	46.79	17.74	34.38	47.01
2. Chitradurga	248.10 (1.78)	10.43	1.96	14.35	10.47	19.56	26.02	27.71	27.20
3. Kolar	162.80 (1.91)	7.80	1.57	7.16	14.37	16.13	14.18	17.56	25.64
4. Mandya	193.90 (1.42)	4.47	7.59	7.27	9.09	12.90	25.49	28.38	22.85
5. Mysore	180.70 (2.59)	3.11	N	8.16	14.33	20.84	17.32	24.28	24.97
6. Tumkur	194.30 (1.98)	10.02	5.10	11.10	10.73	20.46	18.76	19.04	21.51

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TABLE 4.7(Contd.)

Districts	1901-1981	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951-1961	1961-1971	1971-1981
NORTHERN MAIDAN	150.40 (14.68)	3.9 0	-5.7 0	9.90	11.10	15.6 0	19.30	22.5 0	23.8 0
1. Belgaum	163.40 (2.98)	-4.19	0.46	13.63	13.97	16.71	20.53	22.16	22.99
2. Bellary	144.90 (1.49)	-0.51	-13.5	13.40	9.31	19.21	18.29	22.66	32.63
3. Bidar	178.40 (1.0)	18.95	-5.8	9.51	16.90	7.45	20.35	24.26	20.83
4. Bijapur	165.90 (2.4)	13.67	-6.65	9.25	12.31	18.79	18.87	19.60	20.96
5. Dharwar	136.10 (2.95)	-7.30	0.52	6.59	9.08	16.66	23.80	20.01	25.71
6. Gulbarga	135.60 (2.08)	9.22	-7.94	11.56	6.99	14.52	15.31	24.28	19.63
7. Raichur	144.20 (1.78)	7.38	-7.78	6.58	11.09	11.21	15.44	28.75	26.00
KARNATAKA	184.50 (37.14)	3.60	-1.09	9.38	11.09	19.36	21.57	24.2	26.75

Note: 1. N - Negligible
2. Figures in brackets represent the total population (in Million) as per 1981 census.

Source: Census of India, 1981, Part II-A, General Population Tables.

26.5 per cent of the area has as much as 38 per cent of the State's population. On the other hand, Malnad which has nearly 23 per cent of the area has only 15 per cent of the total population. This consequently explains the differences in the densities of population between regions (Figs 23 & 24).

TABLE 4.8: Karnataka : Relative shares of regions in area and population, 1971-81

(Per cent)

Regions	1971 Area	1971 Population	1971 Density per Km^2	1981 Area	1981 Population	1981 Density per Km^2	1981 Population Growth 71-81
Coast	5.7	7.9	212	5.7	7.6	261	22.5
Malnad	22.7	15.6	106	22.7	15.4	134	25.2
Southern Maidan	26.4	46.7	213	26.4	37.9	280	31.0
Northern Maidan	45.2	39.8	135	45.2	39.0	170	24.3
STATE	100.0	100.0	153	100.0	100.0	196	26.7

4.6 Within the Coastal region the talukas of Dakshina Kannada (southern part) are more densely populated (302 per Km^2) because of the wider coastal plains in contrast to the density in the northern part (168 per Km^2) where the coastal plains are very narrow and indented by major rivers. The cultivated area in

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the northern part of the Coastal region is also relatively less and naturally such areas become thinly populated.

4.47 Malnad is the least populous in the State. Within the region, the northern part (Khanapur, Yellapur, Mundgod, etc.) which is a thickly forested hilly terrain with poor infrastructural facilities and relatively low level of development is very sparsely populated with a density of less than 100 persons per Km^2. (Figs. 23 and 24).

4.48 In the Southern Maidan, the tracts around Mysore-Mandya and Bangalore-Kolar which have had the benefit of large scale irrigation, electrification and industrialisation are areas of high population densities. Almost the entire District of Mandya is densely populated which can be traced to a prosperous agriculture backed by a good degree of irrigation. As against this, certain areas of Chitradurga lying to the north of the region have relatively low densities of population, varying between 125 to 150 per Km^2.

4.49 The Northern Maidan on account of its semi-arid conditions and a poor infrastructural base has a low density of population next only to Malnad. However, the industrialised talukas of Belgaum, Hubli, Hospet

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KARNATAKA
POPULATION DENSITY
1971

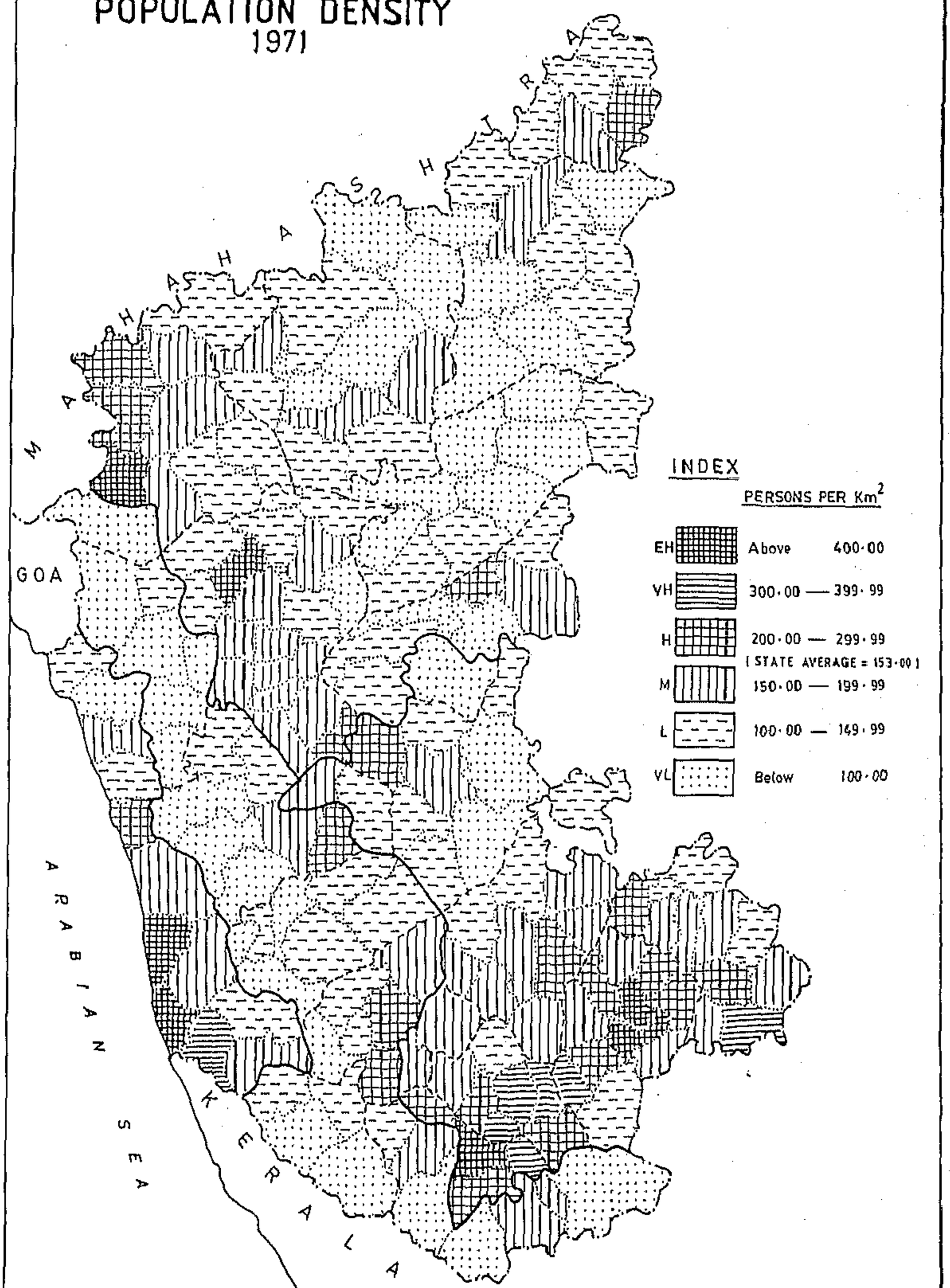

Fig. 23

KARNATAKA

POPULATION DENSITY

1981

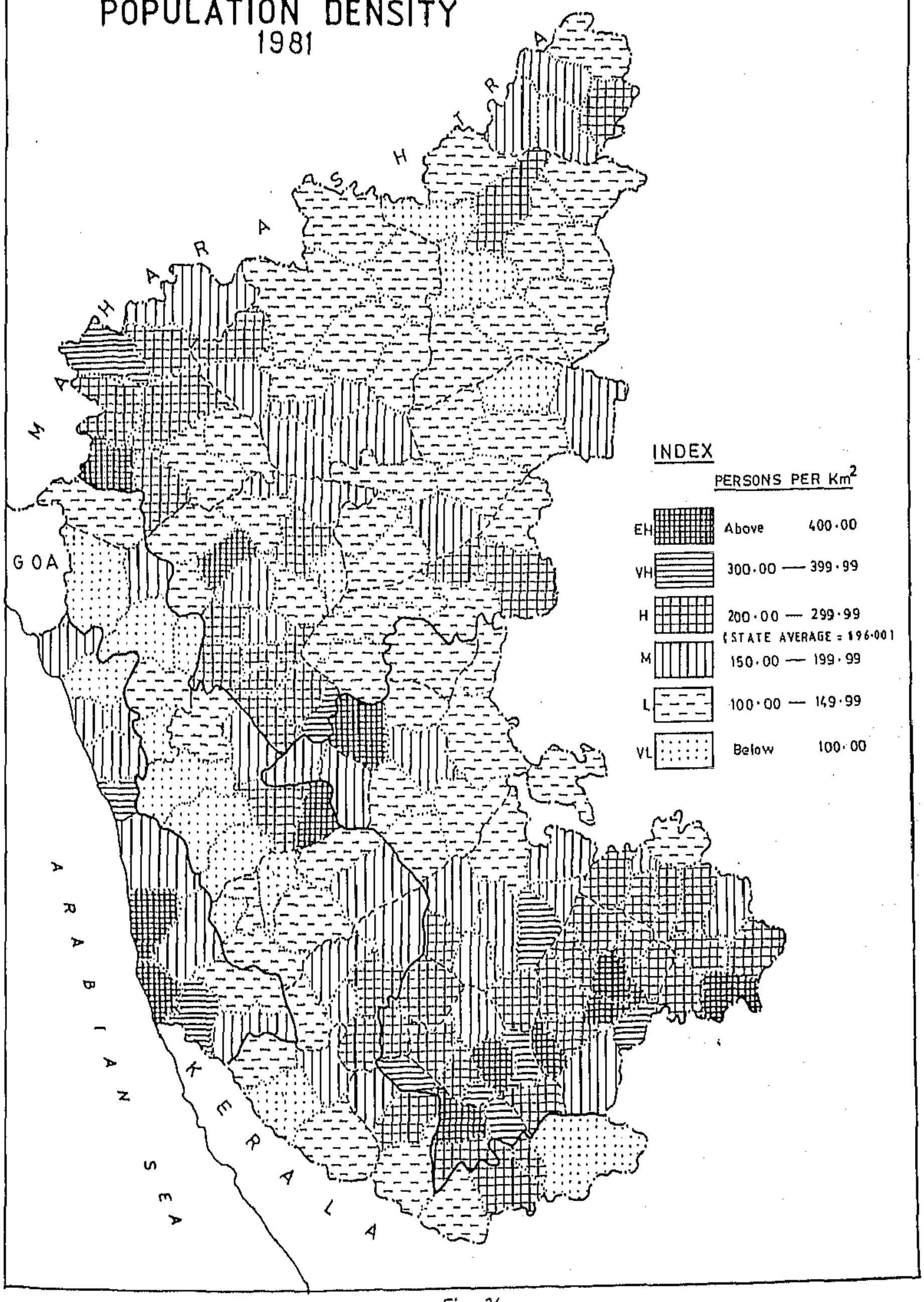

Fig. 24

and the irrigated Harihar are exceptions to the rest of the region. The Hyderabad-Karnataka region (Gulbarga, Bidur and Raichur) of the Northern Maidan has lower densities of population than the Bombay-Karnatak region (Belgaum and Bijapur) which is relatively more developed. The eastern part of the region is oriented to Hyderabad-Secunderabad-twin city in Telangana and as such is marked by low levels of industrial and urban development.

4.50 On the whole, the population density reflects strong regional contrasts on account of the physical characteristics, agricultural base and concentration of urban and industrial centres.

4.51 Rural Settlements (Table 4.9)

According to 1981 Census, nearly 71 per cent of the State's population is rural. Of the total rural population, 58 per cent lives in villages with an average population of less than 2000 persons. About 12 per cent lives in large size villages with a population of over 5000. A comparison between 1971 and 1981 brings out that the number of bigger villages as well as their share of rural population have increased in 1981. As between regions, the settlement patterns show marked differences. While the Coastal region and the Northern Maidan are characterised by large size settlements, Malnad and Southern Maidan are regions with very small villages (Figs. 25 & 26).

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KARNATAKA
DISTRIBUTION OF RURAL POPULATION
1971

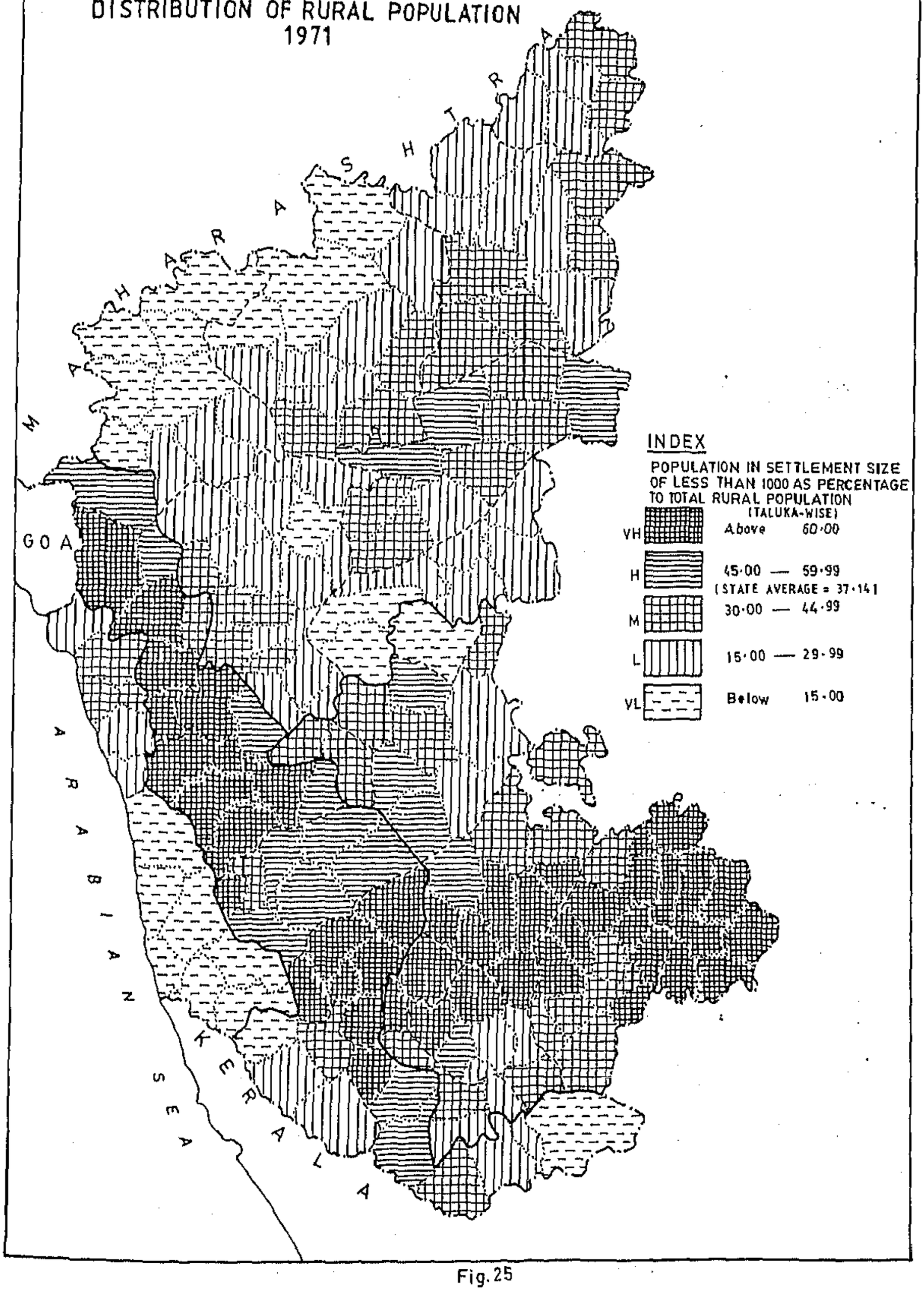

Fig. 25

KARNATAKA
DISTRIBUTION OF RURAL POPULATION
1981

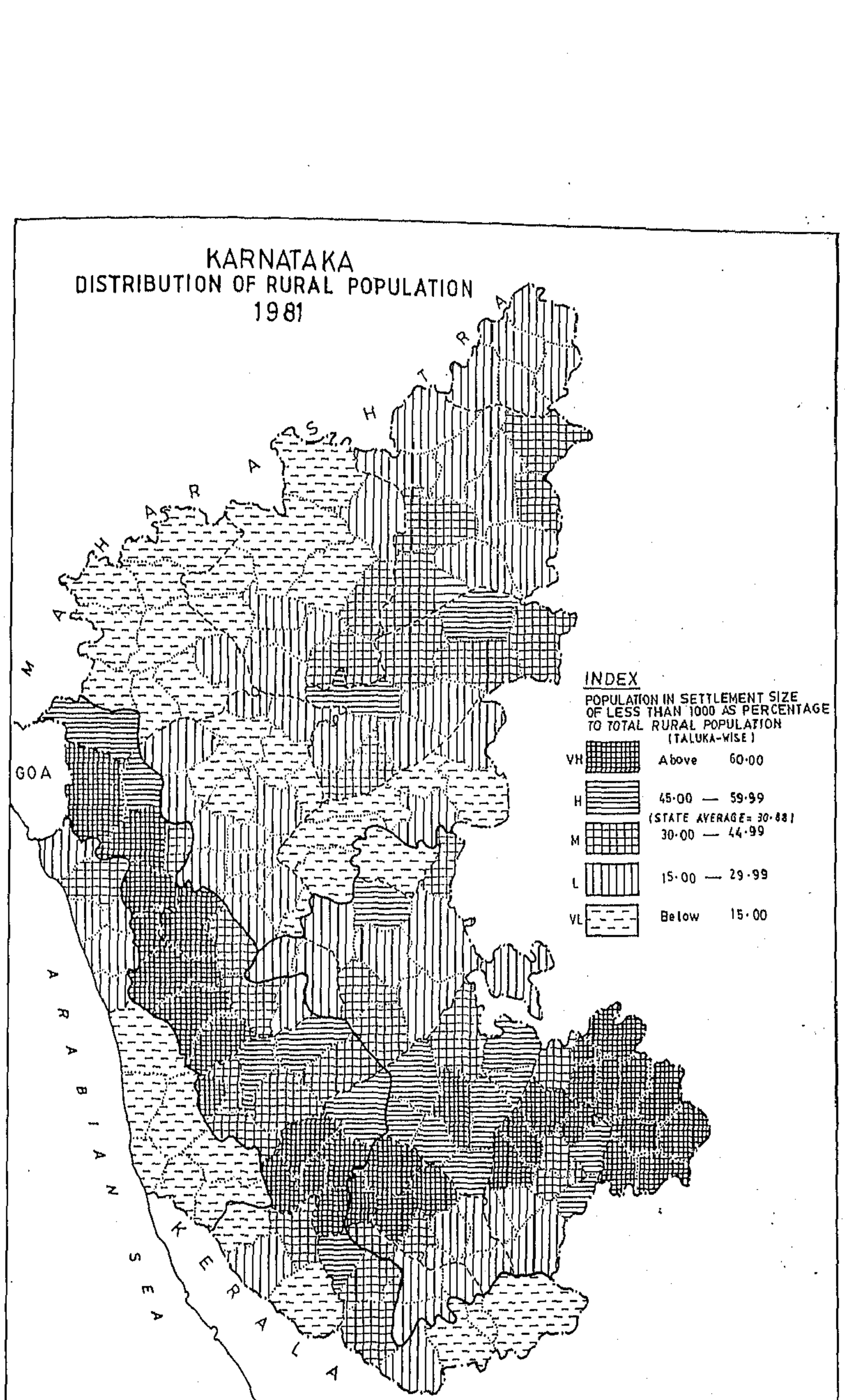

Fig. 26

4.52 Coastal region

Coastal region is characterised by large settlements. Villages with a population of over 2000 persons account for 45 per cent of the settlements in which 77 per cent of the rural population lives. Still larger villages with a population of over 5000 which constitute nearly 7 per cent of the rural population living in them. Between the northern and the southern coast, the villages are relatively bigger in the southern coastal plains. In the northern part villages with a population of less than 1000 have about 20 per cent of the rural population. The difference can be traced again to the differences in the terrain of the northern and southern parts (the foot hill region and the coastal plains). The landavailable for cultivation being low in the northern part of the coastal region, the hamlets are understandably of smaller sizes.

4.53 Malnad

Malnad is a region of very small villages. Settlements of less than 500 persons constitute 55 per cent of the total and have in them about 19 per cent of the rural population of the region. Even here, the intra-regional variations show that village sizes are much smaller in the northern Malnad as against central of southern Malnad. In certain talukas of Uttar Kannada

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TABLE 4.9: Karnataka: Rural settlements by population size class: Regional patterns(1971 and 1981)

Percentage of rural settlements

Regions	Less than 200		200-499		500-999		1000-1999		2000-4999		5000-9999		10,000+	
	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981	1971	1981
Coastal	12.6 (0.6)	11.3 (0.5)	8.4 (1.6)	8.5 (1.3)	14.7 (6.2)	11.9 (4.1)	29.5 (25.0)	23.7 (16.9)	30.7 (51.4)	38.1 (55.0)	3.9 (14.1)	6.0 (18.3)	0.2 (1.1)	0.7 (4.1)
Malnad	29.1 (5.3)	24.7 (3.6)	32.9 (19.2)	30.6 (15.1)	23.0 (28.0)	25.0 (25.7)	11.3 (26.9)	13.6 (27.4)	3.6 (17.9)	5.7 (23.9)	0.3 (2.8)	0.4 (4.0)	0.0 (0.0)	0.01 (0.3)
Southern Maidan	20.9 (3.5)	16.6 (2.3)	36.0 (18.8)	32.0 (14.7)	26.7 (29.1)	28.8 (27.2)	12.9 (27.1)	16.4 (29.8)	4.3 (18.3)	5.8 (21.7)	0.2 (1.7)	0.5 (4.1)	0.0 (0.0)	0.02 (0.2)
Northern Maidan	6.1 (0.5)	4.9 (0.4)	20.4 (5.9)	16.6 (4.1)	31.0 (18.1)	28.6 (14.4)	27.1 (30.3)	29.0 (28.0)	13.0 (30.8)	17.1 (34.5)	2.4 (12.9)	3.4 (15.9)	0.1 (0.8)	0.3 (2.7)
STATE	18.4 (2.4)	15.2 (1.6)	29.7 (12.2)	26.6 (9.4)	26.4 (22.5)	27.2 (19.9)	17.0 (28.2)	19.4 (27.6)	7.5 (26.1)	10.1 (29.9)	0.9 (7.5)	1.5 (10.0)	0.03 (0.4)	0.13 (1.6)

Note: Figures in brackets represent percentage of rural population in different size range of settlements.

constituting the central Malnad(Siddapur, Sirsi and Supa)and Shimoça District(Hosanagar, Sagar and Tirthahalli) almost 40 per cent of the rural population lives in small villages with an average population of less than 500 each. The smallness of settlements reflects the influence of topography and cultivable areas. On account of rugged terrain and shallow valleys, population and land available for cultivation are scattered in the midst of clearings in the dense forests. Intra-regional variations like these are very important for spatial planning in general and more specifically for provision of infrastructure facilities and amenities.

4.54 Southern Maidan

The Southern Maidan is also a region of small sized villages. Villages with a population of less than 1000 constitute 77.4 per cent of the settlements and 44.2 per cent of the rural population. As against this, villages in the last two size classes (with a population of over 5000) do not even account for 1 per cent of the total settlements. Over the years, however, the population shares in the larger villages (with a population of over 1000) have increased while those of the smaller villages show a reduction. The land available for cultivation around the tank irrigated area being small, the settlements in the region are also small.

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4.55 Northern Maidan

The settlements sizes in the region are generally large where villages with a population of more than 2000 have about 53 per cent of the rural population. Small villages (with a population of less than 500) are virtually absent in the region. Though they constitute 20 per cent of the settlements, less than 5 per cent of the rural population lives in these villages. The region is characterised by a number of large villages and small towns both of which have failed to act nodes for development.

4.56 Urbanisation - Regional Structure and Patterns (Table 4.10 and 4.11)

Karnataka is one of the highly urbanised States with 28.9 per cent of its population living in urban centres as per 1981 census[7]. Among the regions, Southern Maidan is the most urbanised with 36.5 per cent of its population living in towns as against Malnad which is least urbanised (19.5 per cent of its population being urban). The extent of urbanisation is 25 per cent in the coastal region and 26 per cent in the Northern Maidan. The urban structure i.e. towns of different size classes and their spatial concentration reveal the pattern of nodality or spatial organisation of the economy centred on these urban centres.

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7. Corresponding figure for India is 233 per cent.

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TABLE 4.10: Karnataka: Regional variations in growth rates of urban population, 1901-81.

Region	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81
Coast	37.1	10.9	22.9	21.7	53.2	17.5	32.7	47.4
Malnad	-23.6	21.5	31.2	23.6	47.4	57.5	28.8	42.6
S. Maidan	-4.6	31.0	19.0	29.5	63.3	31.4	33.8	58.0
N. Maidan	-5.3	8.2	2.0	17.3	64.8	-2.2	39.5	45.0
STATE	**-4.6**	**17.7**	**21.6**	**23.0**	**61.7**	**18.2**	**35.2**	**50.8**

Source: Compiled from the general population tables for Karnataka.

4.57 Between the years 1901-41, the urban population grew at an average annual rate of 2 per cent. The decade 1941-51 witnessed the highest growth rate (61.7 per cent) and since then it has been growing at a considerably fast rate (over 3.5 per cent). After the decade 1941-51, the State as well as the four regions recorded the second highest growth rates in 1971-81. Among the regions, the growth of urban population in 1971-81 has been the highest in Southern Maidan (58 per cent). The Districts which recorded high growth rates of urban population during the same period were Bangalore (70.6 per cent), Bellary (63.3 per cent) and Uttar Kannada (80.0 per cent).

4.58 The pattern of urbanisation shows that over the years, the class I towns have increasingly accounted for a large share of urban population. During the period 1901-41, more than 50 per cent of the urban population lived in small towns (classes IV to VI). Since 1940's, however, the share of these towns in the urban population gradually declined. In 1981, the class I towns accounted for 58.6 per cent of the urban population. As against this, the small towns had only 17.2 per cent of the urban population in them. The concentration in class I towns is also brought out by the fact that these towns constitute only 7 per cent of the total towns in the State (Figs. 27 and 28).

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TABLE 4.11 *Karnataka: Distribution of Towns and Urban population by size class* in the regions.*

(Per cent)

Regions	1901		1911		1921		1931		1941		1951		1961		1971		1981	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Coast																		
Class I	-	-	-	-	-	-	-	-	-	-	5.6	38.7	7.1	40.2	5.6	45.7	4.8	44.1
Class II	-	-	-	-	9.1	40.8	8.3	41.2	8.3	41.1	-	-	-	-	-	-	-	-
Class III	14.2	50.8	10.0	40.7	-	-	-	-	-	-	5.6	6.8	14.3	13.7	16.7	17.3	42.9	36.9
Class IV to Class VI	85.8	49.2	90.0	59.3	90.9	59.2	91.7	58.8	91.7	58.9	88.8	54.5	78.6	46.1	77.7	37.0	52.3	19.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Malnad																		
Class I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	26.1	3.4	25.3
Class II	-	-	-	-	-	-	-	-	-	-	-	-	3.9	10.5	1.9	6.6	3.4	11.8
Class III	-	-	-	-	-	-	2.4	9.8	2.4	10.6	12.5	41.0	13.7	43.9	15.7	29.3	17.2	28.9
Class IV to Class VI	100	100	100	100	100	100	97.6	90.2	97.6	89.4	87.5	59.0	82.4	45.6	78.5	38.0	76.0	34.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
S. Maidan																		
Class I	1.1	27.0	1.6	33.8	1.4	32.3	2.9	47.3	4.3	61.0	4.1	63.9	4.1	63.5	5.6	69.2	8.7	76.9
Class II	1.1	11.6	1.6	12.7	2.8	23.4	1.4	9.7	-	-	1.4	3.0	1.4	3.2	4.2	5.9	4.3	3.7
Class III	1.1	6.5	1.6	8.7	-	-	1.4	2.6	2.9	4.7	8.1	8.3	9.5	10.4	12.5	8.1	21.7	9.0
Class IV to Class VI	96.7	54.9	95.2	44.8	95.8	44.3	94.3	40.4	92.8	34.3	86.4	24.8	85.0	22.9	77.7	16.8	65.3	10.4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

contd...

TABLE 4.11 (Contd)

Regions	1901		1911		1921		1931		1941		1951		1961		1971		1981	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Northern Maidan																		
Class I	-	-	-	-	1.4	12.4	1.2	12.6	1.2	12.3	1.3	15.5	2.7	20.1	5.6	37.0	7.8	46.3
Class II	2.8	17.6	2.7	18.9	1.4	7.0	-	-	4.9	20.5	3.3	17.4	8.1	24.3	5.6	13.1	5.9	9.7
Class III	6.9	18.7	6.8	20.0	6.8	21.6	8.2	27.6	6.1	13.3	6.6	13.5	18.9	19.6	20.2	20.0	29.4	23.0
Class IV to Class VI	90.2	63.7	90.5	61.1	90.4	59.0	90.6	59.8	87.8	53.9	88.8	53.6	70.3	36.0	68.6	29.9	56.9	21.0
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
State Classs I	0.5	9.7	0.6	12.1	1.0	18.4	1.4	24.0	2.0	30.3	2.1	35.9	2.8	39.1	5.2	51.1	6.8	58.6
Class II	1.4	12.7	1.7	13.6	2.1	15.3	0.9	6.8	2.4	11.6	2.1	8.7	4.2	11.3	3.9	8.2	4.4	6.4
Class III	3.3	14.0	3.9	1.6	2.6	9.5	3.8	14.2	3.9	8.6	7.8	13.3	14.1	17.7	16.5	15.4	25.6	17.8
Class IV to Class VI	94.8	63.6	93.8	72.7	94.3	56.8	93.9	55.0	91.7	49.5	88.0	42.1	78.9	31.9	74.4	25.3	63.2	17.2
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Note : A - Percent to total towns
B - Percent to total urban population

Source : Compiled from the General Population Tables for Karnataka

Class	Population size
Classs I	100,000 +
Class II	50,000 - 99,999
Class III	20,000 - 49,999
Class IV	10,000 - 19,999
Class V	5,000 - 9,999
Class VI	Less than 5,000

4.59 Coastal Region

The Coastal region accounts for 6.5 per cent of the urban population and 8.4 per cent of the towns in the State. Of the total urban population in the region, 44 per cent lives in class I towns, 36.9 per cent in class III towns and 19 per cent in Class IV to VI towns. Mangalore is the only city in the region. The region is characterised by a number of intermediate towns (class III). The spatial organisation of the region's economy shows that these towns act as nodes with well defined hinterlands. The towns have, however, remained small because most of them are predominantly agricultural and lie along the axis connecting Karwar and Mangalore.

4.60 Malnad

The Malnad has 23. 2 per cent of the towns and 10.4 per cent of the urban population. The town in the region were small and stagnant till the middle of the century. Since 1951, bigger towns started emerging and the twin city (Shimoga-Bhadravathy) came into being in 1971. The distribution of urban population within Malnad shows that class I towns have 25.3 per cent of the urban population and class I & II towns together account for 37 per cent. The prominence of small towns (classes IV to VI) is brougnt out by the fact that tnese account for 76 per cent of the towns and 34 per cent of the urban population.

contd...

KARNATAKA
DISTRIBUTION OF URBAN CENTRES
(TALUKA-WISE)
1971

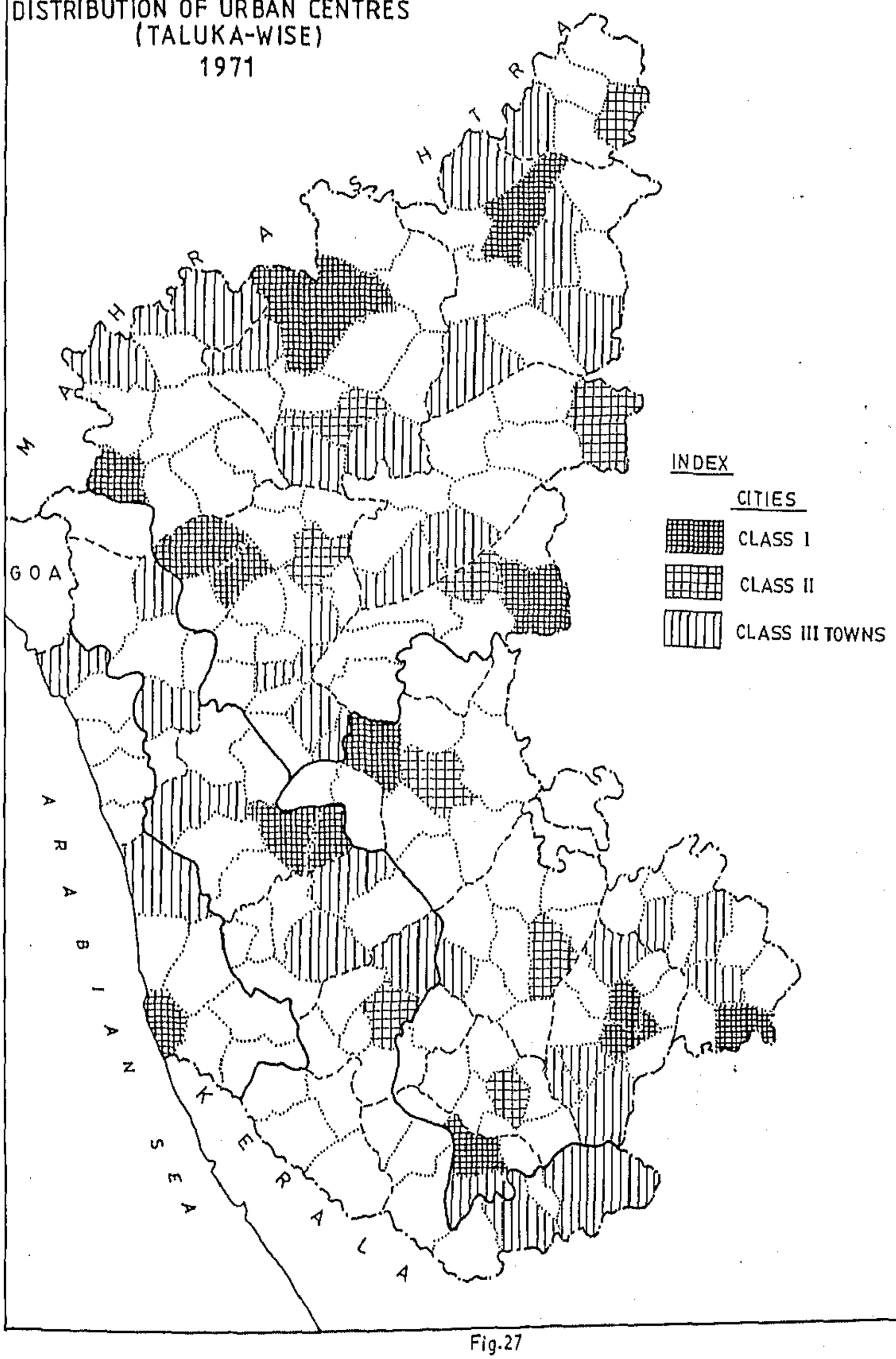

Fig.27

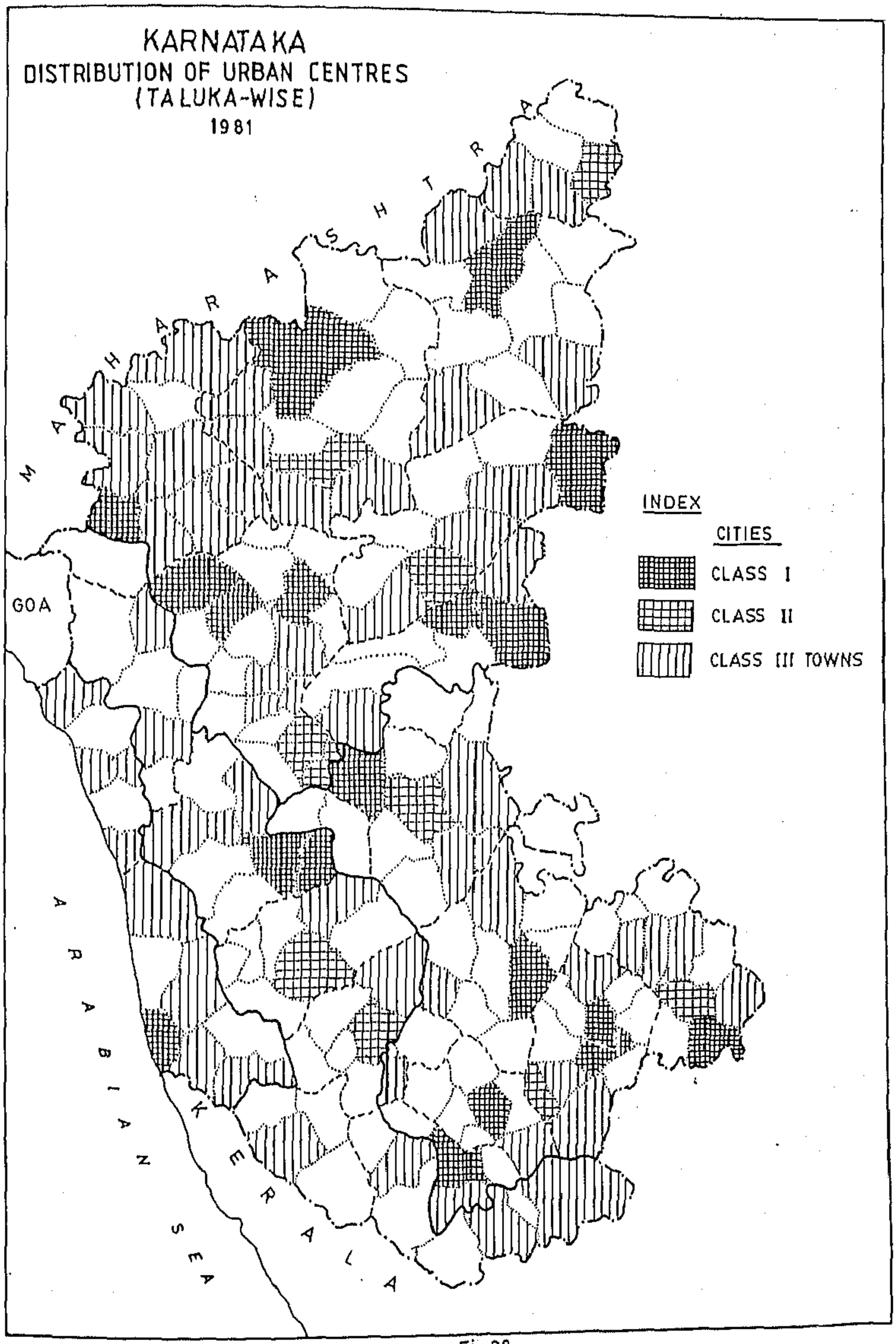
KARNATAKA
DISTRIBUTION OF URBAN CENTRES
(TALUKA-WISE)
1981
MAHARASHTRA
GOA
ARABIAN SEA
KERALA
INDEX
CITIES
CLASS I
CLASS II
CLASS III TOWNS

Fig. 28

4.61 Malnad also shows sharp intra-regional contrasts in the urbanisation pattern. The northern part of Malnad is least urbanised as compared to southern or central Malnad. Not only was the northern Malnad's share of towns very low (5 per cent) but the towns were very small till the 50's. The first class III town, Sirsi appeared in the 60's. The plantation economy with its extra-regional interactions and the Bhadravathy-Shimoga industrial belt in the central/southern Malnad have strengthened the emergence of towns in the region. On the other hand, lack of infrastructure, particularly transport has been a limiting factor in the growth of towns in the northern Malnad.

4.62 Southern Maidan

The region which has 28 per cent of the towns has 48 per cent of the urban population of the State. Southern Maidan presents a picture of imbalanced urban structure where 77 per cent of the urban population lives in class I towns with the metropolitan city of Bangalore alone having 51.2 per cent of the region's urban population. The major towns in the region are along the Bangalore-Mysore-Kolar tract. The irrigation based agriculture in the southern part (core region) and the concentration of industries around Bangalore have led to the emergence of towns in this part. Important urban centre in the northern part of the region is

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Davangere known for its textile and engineering industry. The regions urbanisation is highly skewed with the lower order urban centres (classes IV to VI) having only 10 per cent of the urban population. Excessive concentration of activities in a few cities has almost led to the stagnation of small towns.

4.63 Northern Maidan

The region has 35 per cent of the urban population and 41 per cent of the towns in the State. Of the total urban population, 56 per cent lives in class I & II towns, 23 per cent in class III towns and the remaining 21 per cent in smaller towns of classes IV to VI.

4.64 Though cities emerged in the region in the early 20's, their share of urban population started rising only since 1960's. The Bangalore-Pune highway and the beneficial impact of irrigation of upper Krishna has led to the growth of small towns around Belgaum. Similarly, the Tnunga-Bhadra project has acted as a stimulus to the development of towns around Bellary-Raichur. However, the spatial pattern of urbanisation is peripheral to the region with formation of urban-industrial clusters along the southern boundary and the north-western part of the region and emergence of isolated cities like Gulbarga and Raichur in the north-east. The region is characterised by small towns which are nothing but over grown villages and have failed to act as nodes of development.

contd...

4.65 On the whole, tne urbanisation pattern in the State shows intra-regional contrasts. While Malnad and Northern Maidan are characterised by small towns, Southern Maidan is marked by dominance of cities. The terrain, poor accessibility and Malnad lying as a corridor betweentwo developed regions have been the reasons for slow urbanisation of the region till recently. The Northern Maidan on the other hand, inspite of having the maximum number of towns does not have nodes that are strong enough to emerge as growth centres.

4.66 Thus the differences in resource base, settlement patterns and other physical characteristics have led to differing levels of urbanisation, industrialisation and the overall development of the regions. The aggregate picture emerging at the State level conceals the regional realities. For instance, the urban structure in the State as a whole is less lopsided when compared to States like Maharashtra, West Bengal or Tamil Nadu. However, there are imbalances between the regions of Karnataka. The development of agriculture and the pattern of industrialisation also bring out the imbalances at the regional level resulting in imbalances in the overall levels of development both inter and intra-regionally. Thus, the Coastal region with a linear coast line and thriving small towns shows minimum intra-regional variations in development as opposed to Malnad where the intra-regional contrasts

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are sharp. In the case of Southern Maidan, the core region is getting strengthened while other parts remain relatively less developed. Both industrially and agriculturally, Northern Maidan shows signs of stagnation. The reasons for lack of development are however ditferent as between regions and perception of the problems becomes clearer only when the process of development is analysed in a regional context.

CHAPTER - V

SPATIAL PROCESSES, PATTERNS AND VARIATIONS IN LEVELS OF DEVELOPMENT.

5.1 The proposition that a regional development strategy should be built into the national plan raises immediately the problem of transformation which in turn means spatial expression to development plans that are formulated in terms of national totals and disaggregated into sectors. The planning procedure involves first of all an assessment of the resources, existing levels of development and the potentials of each region and relating these to the goals and strategies of the national plan. In this process, working from the regional angle upwards, countries like India with their large size and sharp regional contrasts lend themselves to the identification of regions of different scales - micro, meso and macro. Empirical studies have demonstrated that the smallest administrative unit for regional analysis and planning is the taluka or Development Block in the context of planning at the State level[1].

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[1] Karnataka and Andhra Pradesh have recently (1987) introduced Mandals (village clusters) which are smaller than talukas for purposes of decentralised planning aimed at the involvement of people in the planning process.

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5.2 The regional structure, patterns and variations discussed in the earlier chapter have brought out that the four sub-regions of Karnataka have distinct characteristics and hence development strategy for the State should build into it strategies appropriate to these regions. Evolving region-specific strategies requires an understanding of the extent of association among these elements of regional structure that influence the levels of development of different sub-regions.

5.3 In order to assess the levels of development during 1971 and 1981, a set of 67 indicators have been chosen from 100 variables for the 175 talukas of the State. Since development is multi-dimensional, the indicators have been selected covering all aspects of development which can broadly be grouped under the following heads:

1. Population and Human settlements

The variables included under this are :

1.1 Density of population per km^2.

1.2 Urban population as per cent to total population.

1.3 Percentage of villages with population 200-999 to total villages.

1.4 Percentage of rural population in size class 200-999 to total rural population.

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1.5 Percentage of villages with population 1000-4999 to total villages.

1.6 Percentage of rural population in size class 1000-4999 to total rural population.

1.7 Percentage of villages with population 5000-10000 to total villages.

1.8 Percentage of rural population in size class 5000-10000 to total rural population.

1.9 Number of towns in Classes I & II as per cent to total towns.

1.10 Percentage of population in Class I & II towns to total urban population.

1.11 Number of class III towns as per cent to total towns.

1.12 Percentage of population in class III towns to total urban population.

1.13 Number of class IV to VI towns to total towns.

1.14 Percentage of population in class IV to VI towns to total urban population.

1.15 Male literates as per cent to male population.

1.16 Female literacy rate.

1.17 Total literacy rate.

The density of population has been included since population concentrations are associated with development. The intensely cultivated areas or highly industrialised areas also happen to be areas of high densities of population. The urban variable becomes important since

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urban centres act as nodes bringing in its wake a number of infrastructural facilities. However, not all towns can act as nodes of development. There are instances where small towns remaining stagnant over a long period of time have not propelled growth in the areas sorrounding them. What is therefore, relevant is not the number of towns but their size and population. Similarly, the rural settlements (villages) have also been taken by their sizes as very small villages become non-viable units for provision of any facility since a minimum threshold population is required for the introduction of facilities. Lastly, the human resource being one of the vital inputs of development, the literacy rates of population have been included.

2. Occupational pattern

The two variables under this are :

2.1 Workers in agricultural sector as per cent to total workforce.

2.2 Workers in non-agricultural sector as per cent to total workforce.

The structure of the workforce reflects the extent of diversification of the economy. With the progress of development, population shifts away from agriculture into secondary and tertiary activities. The adverse land-man ratio also necessitates creation of employment

contd...

opportunities in tne non-agricultural sectors. Where markets and agro-industrial centres have emerged, occupational diversification is an indication of a more balanced process of spatial organisation of the economy. Though ideally employment in the primary, secondary and tertiary sectors should have been included it was not possible as this kind of break up was not available for the 1981 census.

3. Agriculture

Broad Land use

3.1 Area under forest as per cent to total area.

3.2 Cultivable area (cultivable waste-current fallow and other fallow) as per cent to total area.

3.3 Net sown area as per cent to total area.

3.4 Gross cropped area to net sown area.

3.5 Net irrigated area to net sown area.

The pattern of land-use indicates the factors that hasten or inhibit the process of development. For example, in a thickly forested area where cultivation is patchy, the human settlements also tend to be small. Similarly, a hilly terrain as opposed to plains (which are intensely cultivated) will not facilitate a uniform pattern of development, giving rise to a hierarchy of settlement. Variables under land-use also bring out the intensity of

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cultivation which is related to irrigation and a developed state of agriculture.

Cropping pattern

3.6 Area under Paddy as per cent to total cropped area.

3.7 Area under Jowar as per cent to total cropped area.

3.8 Area under ragi as per cent to total cropped area.

3.9 Area under bajra as per cent to total cropped area.

3.10 Area under maize as per cent to total cropped area.

3.11 Area under pulses as per cent to total cropped area.

3.12 Area under food crops as per cent to total cropped area.

3.13 Area under groundnut as per cent to total cropped area.

3.14 Area under cotton as per cent to total cropped area.

3.15 Area under sugarcane as per cent to total cropped area.

3.16 Area under spices as per cent to total cropped area.

3.17 Area under tobacco as per cent to total cropped area.

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3.18 Area under non-food crops as per cent to total cropped area.

3.19 Area under High Yielding varities (HYV) to total area under the crops for which HYV is available.

3.20 Agricultural implements per 100 hect. of net sown Area.

3.21 Irrigation pump-sets energised per 100 hect. of net irrigated area.

3.22 Agricultural holdings below 5 hect. as per cent to total holdings.

3.23 Agricultural holdings between 5-10 hect. as per cent to total holdings.

3.24 Agricultural holdings above 10 hect. as per cent to total holdings.

The cropping pattern indicates the changing pattern of agriculture which, with development, gets transformed from subsistence to highly commercialised activity leading to diversity in occupational pattern, emergence of market towns as nodal centres, agro-based industries, facilities and amenities.

Commercial agriculture to a large extent depends on improved technology. To assess the technological advancement and the improved agricultural practices, variables such as area under High Yielding Varities, agricultural implements and number of pumpset energised have been included. Lastly, the size of

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agricultural holdings have also been taken. As there are marked regional variations in the size of land holdings, this variable was included to see whether size had any bearing on the development of agriculture.

4. Industry

4.1 Number of Registered factories per 100 km^2.

4.2 Number of small scale units per 100 km^2.

4.3 Employment in registered factories as per cent to total non-agricultural employment.

Owing to the urban-industry-infrastructure link, the degree of industrialisation is generally taken as an indicator of development. The pattern of industrialisation discussed in the earlier chapter revealed that the major industrial centres also happen to be higher order urban centres. In addition to medium and large scale units the spread of small scale units has also been included as these are more relevant in the context of a smaller areal unit like taluka.

5. Infrastructure, social facilities & amenities.

5.1 Villages with primary schools as per cent to total number of villages.

5.2 Villages with middle schools as per cent to total number of villages.

5.3 Villages with secondary schools as per cent to total number of villages.

5.4 Veterinary hospitals and dispensaries per 100 km^2.

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5.5 Hospitals and dispensaries per 100 km^2.

5.6 Bed strength per 1000 population.

5.7 Villages with drinking water supply as per cent to total villages.

5.8 Post Office per 100 km^2.

5.9 Population served by a Post Office.

5.10 Telegraph Office per 100 km^2.

5.11 Population served by a Telegraph Office.

5.12 Commercial banks per 100 km^2.

5.13 Population served by a commercial bank.

5.14 Urban co-operative banks per 100 km^2.

5.15 Population served by an urban co-operative bank.

5.16 Co-operative societies per 100 km^2.

5.17 Population served by a co-operative society.

5.18 Telephone in use per 100 km^2.

5.19 Electrified villages as per cent to total villages.

5.20 Road length per 100 km^2.

5.21 Number of villages served by all weather roads as per cent to total villages.

Under this, both social infrastructure and economic infrastructure have been included. While the social infrastructure like schools, hospitals, drinking water, etc. reflect the quality of life, the economic infrastructure provides the base for industrialisation. The urban-industry centres in the country show that there is concentration of industrial development in places which have a high degree of infra-structural development.

In rural areas infrastructural facilities like roads play a vital role since they open up the area for further development. Strengths and weaknesses of the process of development is reflected in the emergence of nodal centres where clustering of economic activities and / or facilities and amenities emerge usually in a hierarchical order.

5.4 Pattern of relationship among the variables (Table 5.1)

Before subjecting these variables to further analysis, an examination of the correlation Matrix brings out the economic processes at work. Among the first set of variables relating to population settlements and urbanisation, the positive relationship between urbanisation, industrialisation is well brought out both in 1971 and 1981. The talukas which are urbanised are also densely populated. This explains the inherent characteristics of India's process of urbanisation which is associated with influx of population into centres having initial advantage of emerging as towns and later on industries and services begin to grow in them. The density of population has a very high positive correlation with industrialisation (0.92) and with most of the infrastructural variable like Banks (0.93), Hospitals and dispensaries (0.89), etc. The high density areas are not just urban areas but are higher order urban centres.

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5.5 Among the rural settlements, there is a direct relationship between the size of settlements and availability of certain facilities. For instance, the small villages (with a population between 200-999) have negative associations with the spread of primary schools (-0.74) and all weather roads (-0.44). This supports the view that the principle of centrality needs to be followed in the choice of "central" places so that certain threshold population is available within an area or at a location for the purpose of providing these facilities. The other variable which has negative association with a number of infrastructural facilities is the proportion of workforce in agriculture. This variable is inversely related to the percentage of urbanisation (-0.64) and has negative correlation with the infrastructural facilities like Banking (-0.56), health (-0.75) and also literacy rate (-0.67). The agricultural employment being a rural characteristic, these only further confirm the lack of essential facilities in the rural areas. Under such circumstances dichotomy between rural population and agriculture on the one hand and industry and urbanisation gets sharpened leading to accentuation of disparities in development.

5.6 Among the agricultural variables, the net sown area which is negatively related to forest area (-0.71) is also negatively correlated with area under

contd...

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.	Density of population per Km 2	1.00	0.38	0.14	0.15	0.26	-0.43	0.09	0.12	-0.04	-0.11	0.02	0.84	0.84	0.23	0.08	0.66	0.68	0.87	0.77	0.86	0.83	0.18	0.24	0.22
2.	% of Urban population to total	0.38	1.00	0.10	0.67	0.72	-0.83	0.16	0.08	-0.04	-0.11	-0.11	0.52	0.54	0.47	0.05	0.40	0.50	0.52	0.49	0.49	0.44	0.18	0.08	0.18
3.	% of villages in size 1000-4999 to total villages	0.14	0.10	1.00	0.08	0.08	-0.18	0.27	-0.07	-0.05	-0.05	-0.09	0.03	0.01	0.06	0.81	0.15	0.21	0.09	0.00	0.04	0.04	0.32	-0.13	0.22
4.	% of class I & II to total towns	0.15	0.67	0.08	1.00	0.96	-0.59	0.19	0.01	-0.08	-0.12	-0.10	0.27	0.30	0.30	0.05	0.24	0.31	0.23	0.27	0.23	0.19	0.06	0.10	0.13
5.	% of population in I&II towns to total	0.26	0.72	0.08	0.96	1.00	-0.66	0.16	0.06	-0.05	-0.11	-0.08	0.39	0.41	0.35	0.03	0.33	0.37	0.37	0.36	0.35	0.28	0.09	0.10	0.18
6.	% of agricultural workers to total	-0.43	-0.83	-0.18	-0.59	-0.66	1.00	0.06	-0.08	-0.21	-0.05	-0.06	-0.58	-0.60	0.55	-0.14	-0.47	-0.54	-0.62	-0.51	-0.57	-0.49	-0.13	-0.06	-0.14
7.	% of NSA to total area	0.09	0.16	0.27	0.19	0.16	0.06	1.00	-0.39	-0.71	-0.39	-0.65	0.02	0.02	-0.29	0.17	-0.01	0.10	-0.04	0.05	0.01	-0.01	-0.05	-0.14	0.14
8.	NIA/NSA	0.12	0.08	-0.07	0.01	0.06	-0.08	-0.39	1.00	0.54	0.08	0.50	0.04	0.08	0.20	-0.05	0.21	0.02	0.14	0.16	0.04	0.20	0.19	0.43	0.24
9.	% of area under paddy to cropped area	-0.04	-0.04	-0.05	-0.08	-0.05	-0.21	-0.71	0.54	1.00	0.48	0.59	-0.01	-0.01	0.53	0.09	0.09	0.00	0.11	-0.01	0.01	0.05	-0.10	0.16	0.05
10.	% of area under spices to cropped areas	-0.11	-0.11	-0.05	-0.12	-0.11	-0.05	-0.39	0.08	0.48	1.00	0.19	-0.04	-0.06	0.46	0.08	-0.04	0.05	-0.01	-0.10	-0.03	-0.04	-0.08	0.07	0.00
11.	Agricultural implements per 100 hect.of NSA	0.02	-0.11	-0.09	-0.10	-0.08	-0.06	-0.65	0.50	0.59	0.19	1.00	-0.02	0.00	0.33	0.04	0.11	0.02	0.06	0.05	0.00	0.08	-0.01	0.23	0.14
12.	No. of regd.factories per 100 km2	0.84	0.52	0.03	0.27	0.39	-0.58	0.02	0.04	-0.01	-0.04	-0.02	1.00	0.96	0.32	-0.01	0.61	0.71	0.96	0.82	0.98	0.85	0.10	0.10	0.17
13.	No. of small scale units per 100 Km2	0.84	0.54	0.01	0.30	0.41	-0.60	0.02	0.08	-0.01	-0.06	0.00	0.96	1.00	0.33	-0.03	0.64	0.76	0.96	0.85	0.98	0.88	0.10	0.21	0.19
14.	Literacy rate	0.23	0.47	0.06	0.30	0.35	-0.55	-0.29	0.20	0.53	0.46	0.33	0.32	0.33	1.00	0.31	0.35	0.36	0.41	0.30	0.33	0.30	0.06	0.08	0.12
15.	% of villages with middle school to total	0.08	0.05	0.81	0.05	0.03	-0.14	0.17	-0.05	0.09	0.08	0.04	-0.01	-0.03	0.31	1.00	0.12	0.19	0.06	-0.04	0.00	-0.01	0.21	-0.16	0.18
16.	Post office per 100 Km2	0.66	0.40	0.15	0.24	0.33	-0.47	-0.01	0.21	0.09	-0.04	0.11	0.61	0.64	0.35	0.12	1.00	0.70	0.70	0.74	0.62	0.73	0.19	0.33	0.23
17.	Telegraph office per Km2	0.68	0.50	0.21	0.31	0.37	-0.54	0.10	0.02	0.00	-0.05	0.02	0.71	0.76	0.36	0.19	0.70	1.00	0.76	0.75	0.74	0.82	0.12	0.19	0.21
18.	Commercial Banks per 100 Km2.	0.87	0.52	0.09	0.23	0.37	-0.62	-0.04	0.14	0.11	-0.01	0.06	0.96	0.96	0.41	0.06	0.70	0.76	1.00	0.85	0.97	0.88	0.15	0.17	0.22
19.	Co-operative societies per 100 Km2	0.77	0.49	0.00	0.27	0.36	-0.51	0.05	0.16	-0.01	-0.10	0.05	0.82	0.85	0.30	-0.04	0.74	0.75	0.85	1.00	0.82	0.86	0.11	0.39	0.30
20.	Telephones in use per 100 Km2	0.86	0.49	0.04	0.23	0.35	-0.57	0.01	0.04	0.01	-0.03	0.00	0.98	0.98	0.33	0.00	0.62	0.74	0.97	0.82	1.00	0.86	0.08	0.11	0.16
21.	Hospitals per 100 Km2	0.83	0.44	0.04	0.19	0.28	-0.49	-0.01	0.20	0.05	-0.04	0.08	0.85	0.88	0.30	-0.01	0.73	0.82	0.88	0.86	0.86	1.00	0.17	0.36	0.28
22.	% of electrified villages to total	0.18	0.18	0.32	0.06	0.09	-0.13	-0.05	0.19	-0.10	-0.08	-0.01	0.10	0.10	0.06	0.21	0.19	0.12	0.15	0.11	0.08	0.17	1.00	0.17	0.31
23.	Road length per 100 Km	0.24	0.08	-0.13	0.10	0.10	-0.06	-0.14	0.43	0.16	0.07	0.23	0.10	0.21	0.08	-0.16	0.33	0.19	0.17	0.39	0.11	0.36	0.17	1.00	0.30
24.	Villages with all amenities to																								

						5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1.	Density of population per km²	1.00	0.61	0.08	0.41	0.42	-0.49	0.05	0.17	-0.01	-0.06	0.12	0.92	0.95	0.34	0.05	0.70	0.65	0.93	0.92	0.93	0.89	0.21	0.39	0.24
2.	% of Urban population to total	0.61	1.00	0.13	0.66	0.71	-0.64	0.05	0.14	0.01	-0.07	-0.03	0.57	0.56	0.42	0.09	0.39	0.48	0.56	0.59	0.52	0.43	0.16	0.10	0.16
3.	% of villages in size 1000-4999 to total villages	0.08	0.13	1.00	0.09	0.11	-0.15	0.30	0.07	-0.14	0.05	-0.27	0.03	0.02	0.01	0.83	0.19	0.35	0.12	0.06	0.03	-0.06	0.30	-0.17	0.46
4.	% of class I & II to total towns	0.41	0.66	0.09	1.00	0.96	-0.40	0.09	0.17	-0.06	-0.12	-0.06	0.33	0.37	0.25	0.01	0.25	0.24	0.31	0.41	0.30	0.28	0.17	0.19	0.18
5.	% of population in I&II towns to total	0.42	0.71	0.11	0.96	1.00	-0.44	0.09	0.19	-0.04	-0.12	-0.04	0.36	0.37	0.29	0.04	0.30	0.31	0.35	0.43	0.31	0.29	0.18	0.17	0.19
6.	% of agricultural workers to total	-0.49	-0.64	-0.15	-0.40	-0.44	1.00	0.36	-0.13	-0.43	-0.35	-0.20	-0.49	-0.46	-0.67	-0.25	-0.47	-0.56	-0.55	-0.41	-0.46	-0.39	0.02	-0.13	-0.29
7.	% of NSA to total area	0.05	0.05	0.30	0.09	0.09	0.36	1.00	-0.33	-0.70	-0.28	-0.66	-0.01	-0.01	-0.40	0.14	-0.09	-0.05	-0.07	0.13	-0.02	-0.05	0.17	-0.15	-0.02
8.	NIA/NSA	0.17	0.14	0.07	0.17	0.19	-0.13	-0.33	1.00	0.48	0.02	0.50	0.06	0.11	0.19	0.10	0.30	0.23	0.15	0.13	0.05	0.18	0.12	0.50	0.26
9.	% of area under paddy to cropped area	-0.01	0.01	-0.14	-0.06	-0.04	-0.43	-0.70	0.48	1.00	0.39	0.66	0.00	-0.01	0.57	0.06	0.16	0.22	0.12	-0.07	0.00	0.05	-0.29	0.26	0.12
10.	% of area under spices to cropped area	-0.06	-0.07	0.05	-0.12	-0.12	-0.35	-0.28	0.02	0.39	1.00	0.17	-0.03	-0.05	0.52	0.24	0.01	0.05	0.02	-0.08	-0.02	-0.05	-0.05	0.05	0.22
11.	Agricultural implements per 100 hec.of NSA	0.12	-0.03	-0.27	-0.06	-0.04	-0.20	-0.66	0.50	0.66	0.17	1.00	0.04	0.06	0.50	-0.05	0.31	0.22	0.12	0.09	0.03	0.20	-0.03	0.43	0.08
12.	No. of regd.factories per 100 km²	0.92	0.57	0.03	0.33	0.36	-0.49	-0.01	0.06	0.00	-0.03	0.04	1.00	0.95	0.33	0.02	0.57	0.55	0.91	0.87	0.96	0.84	0.11	0.23	0.16
13.	No. of small scale units per 100 km²	0.95	0.56	0.02	0.37	0.37	-0.46	-0.01	0.11	-0.01	-0.05	0.06	0.95	1.00	0.31	-0.01	0.60	0.53	0.92	0.88	0.98	0.88	0.12	0.32	0.18
14.	Literacy rate	0.34	0.42	0.01	0.25	0.29	-0.67	-0.40	0.19	0.57	0.52	0.50	0.33	0.31	1.00	0.35	0.38	0.47	0.42	0.30	0.31	0.31	0.04	0.19	0.27
15.	% of villages with middle school to total	0.05	0.09	0.83	0.01	0.04	-0.25	0.14	0.10	0.06	0.24	-0.05	0.02	-0.01	0.35	1.00	0.22	0.44	0.14	0.04	0.01	-0.09	0.26	-0.17	0.45
16.	Post office per 100 Km²	0.70	0.39	0.19	0.25	0.30	-0.47	-0.09	0.30	0.16	0.01	0.31	0.57	0.60	0.38	0.22	1.00	0.76	0.75	0.65	0.57	0.70	0.26	0.47	0.31
17.	Telegraph office per Km²	0.65	0.48	0.35	0.24	0.31	-0.56	-0.05	0.23	0.22	0.05	0.22	0.55	0.53	0.47	0.44	0.76	1.00	0.75	0.57	0.53	0.52	0.18	0.23	0.33
18.	Commercial Banks per 100 km²	0.93	0.56	0.12	0.31	0.35	-0.55	-0.07	0.15	0.12	0.02	0.12	0.91	0.92	0.42	0.14	0.75	0.75	1.00	0.84	0.93	0.85	0.15	0.29	0.23
19.	Cooperative Societies per 100 km²	0.92	0.59	0.06	0.41	0.43	-0.41	0.13	0.13	-0.07	-0.08	0.09	0.87	0.88	0.30	0.04	0.65	0.57	0.84	1.00	0.85	0.84	0.25	0.41	0.28
20.	Telephones in use per 100 km²	0.93	0.52	0.03	0.30	0.31	-0.46	-0.02	0.05	0.00	-0.02	0.03	0.96	0.98	0.31	0.01	0.57	0.53	0.93	0.85	1.00	0.87	0.09	0.22	0.15
21.	Hospitals per 100 km²	0.89	0.43	-0.06	0.28	0.29	-0.39	-0.05	0.18	0.05	-0.05	0.20	0.84	0.88	0.31	-0.09	0.70	0.52	0.85	0.84	0.87	1.00	0.19	0.46	0.21
22.	% of electrified villages to total	0.21	0.16	0.30	0.17	0.18	0.02	0.17	0.12	-0.29	-0.05	-0.03	0.11	0.12	0.04	0.26	0.26	0.18	0.15	0.25	0.09	0.19	1.00	0.17	0.30
23.	Road length per 100 km²	0.39	0.10	-0.17	0.19	0.17	-0.13	-0.15	0.50	0.26	0.05	0.43	0.23	0.32	0.19	-0.17	0.47	0.23	0.29	0.41	0.22	0.46	0.17	1.00	0.26
24.	% of villages with all weather road to total villages	0.24	0.16	0.46	0.18	0.19	-0.29	-0.02	0.26	0.12	0.22	0.08	0.16												

Paddy (-0.7). This to a certain extent brings out the regional characteristics within the State. The net sown area as a percentage to total area is the highest in Northern Maidan which grows more of dry crops. On the contrary, the Coastal region and Malnad where the net sown area is relatively less are the principal growers of Paddy. It is this which explains the negative correlation between the percentage of net sown area to total and the area under Paddy and positive associations with areas under cotton (0.56) and Jowar (0.66).
The paddy growing areas are agriculturally developed which is brought out by a positive correlation between area under paddy and agricultural implements per 100 hect. of NSA (0.66) and net irrigated area to net sown area (0.48).

5.7 Irrigation acting as a catalyst of development is clear from the correlation matrix. The intensely cultivated areas have a high degree of irrigation and these are also better served with infrastructure facilities. Roads which are one of the vital inputs of development bears a positive association to irrigation. The correlation co-efficient between net irrigated area to net sown area and road length per 100 km^2 is 0.51.

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5.8 Generally, almost all the infrastructural variables have a high degree of association with population densities and the extent of urbanisation. The infrastructural variables are also highly correlated among themselves which is only a result of the tendency of clustering of economic activities at specific locations.

5.9 Grouping talukas on the basis of Factor-score:

Factor-Analysis

Using a variety of indicators to arrive at a single measure of development means compositing them to form a single index of development which immediately raises the problem of assigning weights to the indicators. Factor analysis in which the problem of giving weights does not arise reduces the whole body of data into a few factors (latent variables) with as little loss of information as possible. These factors among themselves account for a high degree of variation among the observations. However, factors by themselves do not guage anything.

5.10 Sometimes, individual factor scores on the observations are added up to arrive at a single measure of development which, however, is not a very meaningful exercise. Instead, in the present analysis, the factor scores on the factor-I have been taken for the purpose of scaling since Factor-I accounts for the largest variation and also has high factor loadings on a number or variables. Factor-I, however, captures less than

one-fourth of the total variation, therefore, the first ten factors accounting for about 70 per cent of the total variation have been chosen for further analysis.

5.11 Fifteen factors had eigen values exceeding 1, since much of the variation was explained by 10 factors, only 10 factors were retained out of 15. The eigen values, the cumulative eigen percentages along with the variable having the largest factor loading on the first 10 factors are given in tables 5.2 and 5.3 separately for the years 1971 and 1981. The factor loadings have been taken from the rotated factor matrix.

5.12 The cumulative percentage of the eigen value in both the years is slightly over 70 per cent. Both in 1971 and 1981 the factor-I gets represented by the industry variables. Besides this, a number of other variables like density of population, number of registered factories per 100 km^2, telegraph office per 100 km^2, co-operative societies per 100 km^2, telephone in use per 100 km^2, hospitals and dispensaries per 100 km^2 have high factor loadings (between 0.8 and 0.9) on factor-I. Since almost all the infrastructural variables have factor loadings above 0.6 on factor I, the talukas have been ranked on the basis of factor scores on factor I (Annexure I & II).

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TABLE 5.2 Eigen values, cumulative percentage of eigen values and variables, having the highest factor loading on factors, 1971.

Factor	Eigen value	Cumulative % of eigen value	Highest factor loading
I	13.11	19.6	0.96 (No. of small scale units per 100^2 km.^{2})
II	9.84	34.3	0.64*(Road Length per 100^2 km.^{2})
III	6.07	43.3	0.77 (Per cent of Villages with middle school to total villages).
IV	4.17	49.5	0.86 (Total literates to total population).
V	3.31	54.5	0.96 (Per cent of town population living in Class III towns).
VI	2.76	58.6	0.61*(Workers in agricultural sector as percent to total workforce).
VII	2.48	62.3	0.83 (Area under non-food crops as percent to total cropped area).
VIII	2.01	65.3	0.61 (Percent of rural population in village size class 5000-10,000).
IX	1.83	68.0	0.72 (Percent of villages with drinking water to total villages).
X	1.57	70.4	0.80 (Population served by a cooperative society)

* Second highest factor loading. In the case of Factor II, the variable with the highest factor loading was size of agricultural holdings. As size of holdings makes very little difference to agricultural productivity, the second highest was taken.

Factor VI: The variable with the highest factor loading was the number of Class I & II towns. As the number per-se is less important than the percentage of population living in them, the second best was chosen.

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TABLE 5.3 Eigen value, cummulative percentage of eigen values and variables having the highest factor loading on factors, 1981.

Factor	Eigen value	Cumulative % of eigen value	Highest factor loading
I	13.3	19.9	0.96 (No.of small scale units per 100^2 km.)
II	10.5	35.5	0.86 (Percent of villages with middle schools to total villages).
III	6.5	45.2	0.55 (Workers in agricultural sector as percent to total).
IV	4.2	51.4	0.82 (Agricultural implements per 100 hect. of N.S.A)
V	3.4	56.5	0.95 (Percent of Town Population in Class III town).
VI	2.9	60.9	-0.64 (Population served by an urban cooperative Bank).
VII	2.6	64.8	-0.92 (Percent of town population in class I & II town).
VIII	1.9	67.7	-0.62 (Electrified villages as percent to total villages).
IX	1.8	70.4	0.81 (Area under food crops as percent to total cropped area).
X	1.6	72.8	-0.39* (Gross cropped area to net Sown area).

* Second highest factor loading.

Factor X - The variable having highest factor loading is irrigation pumpsets energised per 100 hect. of N.S.A. which for reasons of limitation in the data does not capture ground reality.

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5.13 Based on the factor scores, the talukas have been categorised as below :

TABLE 5.4 Variations in levels of Development

	Factor Score range	Levels of Development	Ranks 1971	Ranks 1981
1.	5	Very High	1 to 7	1 to 9
2.	2.5 to 4.99	High	8 to 20	10 to 26
3.	0 to 2.49	Medium	21 to 75	27 to 78
4.	-1.5 to-0.01	Low	76 to 119	79 to 120
5.	-3 to -1.49	Very low	120 to 155	121 to 144
6.	Less than -3	Extremely low	156 to 174	145 to 174

Variations in levels of development based on Factor score (on factor I) are presented in Figs. 29 & 30.

5.14 Taxonomy

The factor score ranking on factor I gives a measure of the extent of industry-infrastructure development which is only one aspect of development. As development is multi-faceted, variables representing all aspects of development need to be included in the analysis. The technique of taxonomic ranking has therefore been used where the first 10 factors accounting for 70 per cent of the variation have been included for further analysis. Each factor has been represented by that variable which has the highest factor loading on the factor. The ten variables along with their factor loadings are given in Tables 5.2 and 5.3.

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KARNATAKA
LEVELS OF DEVELOPMENT
-FACTOR SCORE RANKING
1971

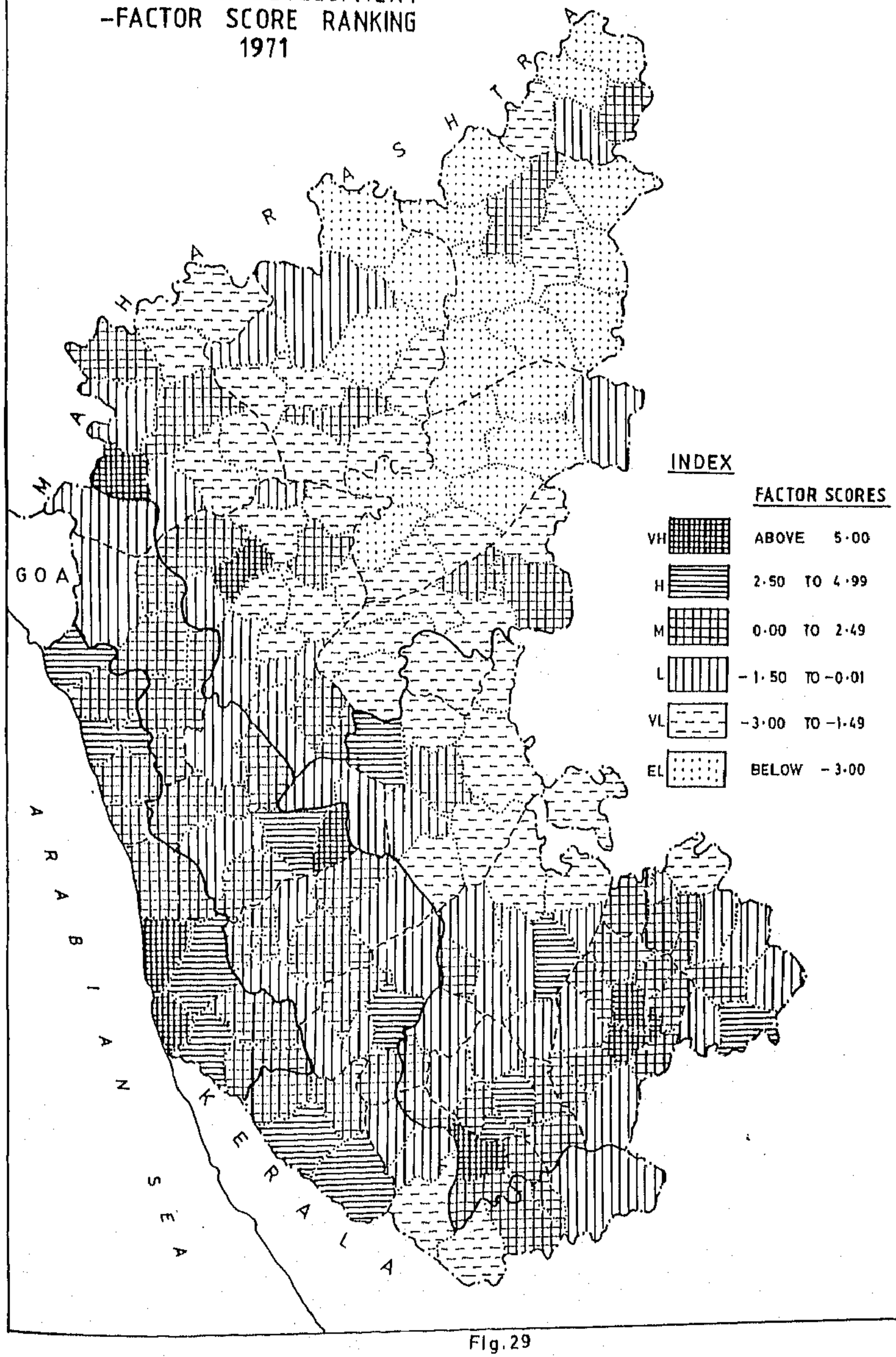

Fig. 29

KARNATAKA
LEVELS OF DEVELOPMENT
-FACTOR SCORE RANKING
1981

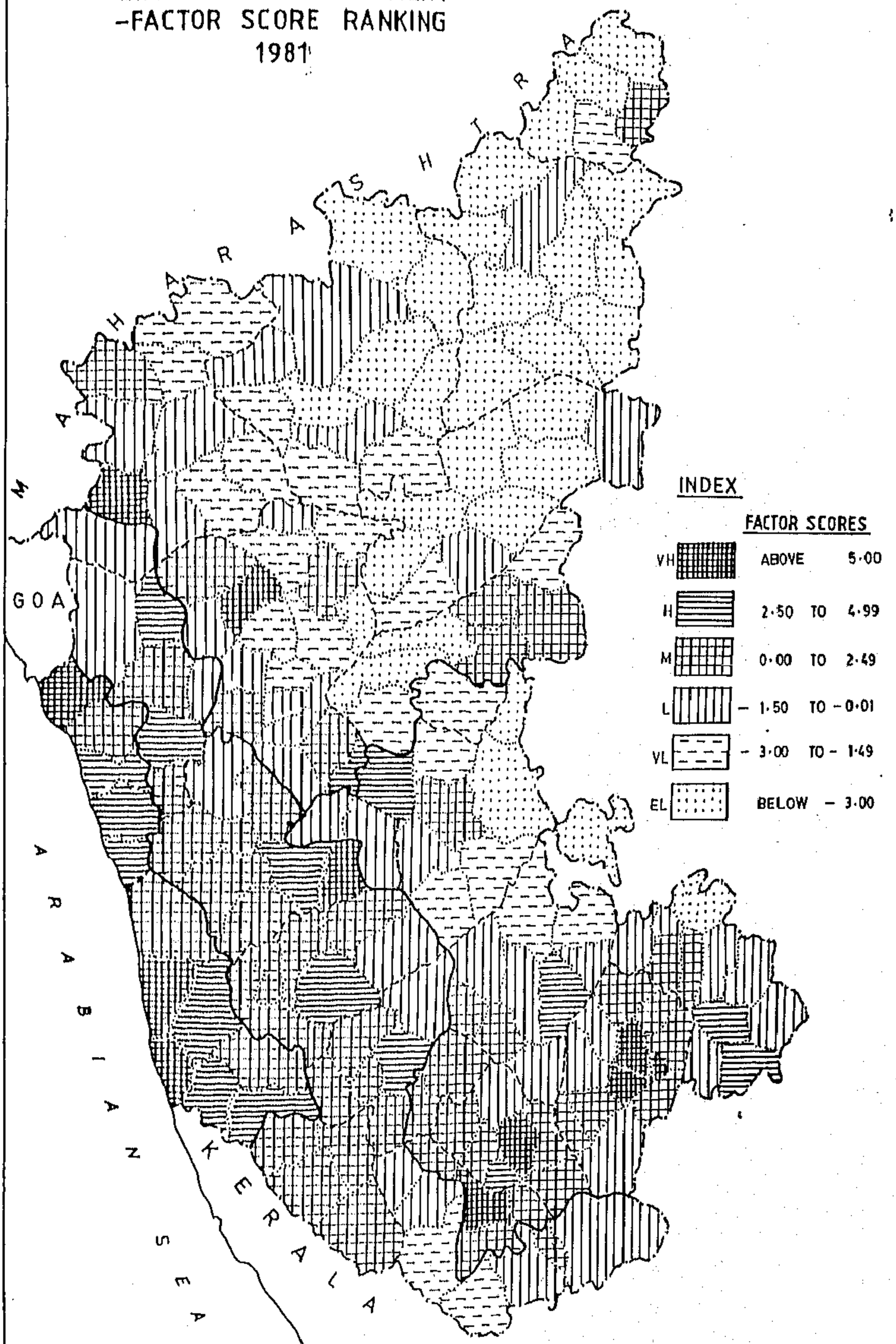

Fig. 30

5.15 This method is a departure from the usual method of working out a composite index of development. A consolidated index of development at once raises the problem of weighting the variables which may turn out to be quite arbitrary. Assigning uniform weights to individual variables across the regions may distort facts as regions differ in their structure and pattern of development. For example, even among the developed areas, Bangalore, Hubli and Mysore talukas will have a lower weighting for agriculture as compared to areas like Belgaum, Mandya and Shimoga. An irrigated agriculture is as much a reason for development as industries in the latter set of talukas.

5.16 Instead of working out a consolidated index of development, under this method an 'ideal taluka' is identified for each of the variables and the distance of each taluka is measured from the 'ideal'. The 'norm' or 'ideal' is a real one since it is from among the given observations. Depending on the variable under consideration, the ideal is either a 'maximum' or 'minimum'. For instance, if the measure is industrial spread, the taluka with the maximum number of industrial units would be taken as ideal. On the other hand, if the variable is workforce in primary sector, the 'minimum' is taken as ideal as a high proportion of workforce in the traditional sector is a sign of under development.

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However, care has been taken to put a numerical restriction on the maximum as well as minimum. For any maximum,

$$\text{Ideal } j \leq 1.5 \text{ Sigma } j$$

and for any 'minimum'

$$\text{Ideal } j \geq -1.5 \text{ Sigma } j$$

$$j = 1 \ldots\ldots\ldots 10.$$

After identifying the 'ideal', the deviations between the 'ideal' and 'actual' (for the standardised variables) are calculated and the distances are consolidated by using the following formula :

$$\sum_{j=1}^{10} (x_j - x_j^*)^2$$

x_j^* - ideal for jth variable

For all i's,

i = 1.....174

The talukas have been ranked according to their distance from the 'ideal'. The smaller the difference, the higher will be the rank of any taluka and vice versa[2].

5.17 Between the two sets of variables for 1971 and 1981, while 50 per cent of the variables are same, certain agricultural variables like gross cropped area

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2 For detailed discussion see Technical note appended to the Chapter, pp 203 - 212.

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as per cent to net sown area and agricultural implements per 100 hect. of net sown area have got included in the year 1981. Besides tnis, there are certain significant changes. In 1971, among the human settlements variables, villages population size of 5000-10,000 emerged as one of the variables whereas, the urban variables became more important in 1981.

5.18 In the case of area under food crops, the areas under food crops and non-food crops have high factor loadings on the factor they represent (with alternating signs). Since one is a derivative of the other, in 1971 area under food crops and in 1981 area under non-tood crops is taken. However, tne ideal for non-food crops is minimum since in major parts of the State, the non-food crops (excepting plantation and sugarcane) are dry crops grown in the low rainfall, low irrigated areas.

5.19 Interpretation of the variables in levels of development

The factor score ranking are given in Annexures I & II and the results of taxonomy in Annexures III & IV. Though the results of the two analyses are strictly not comparable, there is a remarkable similarity between the results, particularly at the two extremes.

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Both in 1971 and 1981, the'very highly developed' talukas in Factor analysis and the top ranking 10 talukas of taxonomy are nearly the same. Similarly, at the bottom rung of development, areas with 'very low' and 'extremely low' levels of development (about 50 to 60 talukas) coincide with the last 50-55 talukas in the taxonomic ranking.

5.20 The overall picture emerging very prominently at the level of the State is that the highly developed areas appear as isolated spots amidst vast areas of under development. Areas with low levels of development emerge almost as extensive and contiguous areas covering a major portion of Northern Maidan and parts of Southern Maidan. In between the two extremes are areas with varying degrees of development (Figs 29 & 30). The least developed areas accounted for 39.6 per cent of the State's area and 27.2 per cent of the total population in 1971. The corresponding figures for 1981 were 39 per cent and 25 per cent, respectively. As against this, the highly developed areas accounted for less than 5 per cent (4.4) of the area and 19 per cent of the population in 1981. Among the regions, the Northern Maidan accounts for 79 per cent of the least developed areas and 80 per cent of the population living in them.

5.21 Between the two years, while there are certain additions to the developed areas, areas that had very low

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levels of development in 1971 by and large have remained the same in 1981 as well. Among the regions, a higher level of development overall is noticeable in the case of Malnad wnich has been made possible by better accessibility, increasingly commercialised agriculture and the emergence of certain nodes within the region. Even in Northern Maidan, the areas that have benefited from the irrigation projects have moved up in the scale ot development. Such variations in the levels and patterns of development across regions over a period of time are better captured within the spatial framework of each region. The changing profile ot development as brougnt out by the results of the analyses is discussed in the following paragraphs.

5.22 Coastal region

Both in 1971 and 1981 the region emerges by far the most developed in terms of factor scores as well as taxonomic ranking. Over the years, the intra-regional variations in the region have also become less pronounced. Even as of 1971, all the talukas of the region were 'developed' which further improved in 1981. Similarly, in terms of taxonomic ranking, the coastal talukas which ranked within the first 50 in 1971 have further improved with 10 out of 12 talukas of the region appearing within the first 20.

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5.23 The elongated coastal tract has a continuous belt of population and cultivated area connected by the west-coast highway. As such this spatial arrangement of human settlements and land-use has provided easy access to infrastructural facilities and other amenities. The region is characterised by high densities of population and a high degree of urbanisation. Karwar and Mangalore, the two major urban centres of the region acting as nodes at the two extremes, the interlying area has given rise to a number of small towns. As discussed earlier, the Coastal region is better served by towns (2 per 1000 km^2) than any other region in the State. These towns also have a good industry base using regional resources;e.g. tile manufacturing, coffee curing and other food processing including fishing.

5.24 In addition to the small growing towns, the villages are also large in size and linear in spatial arrangement. These in turn have provided an impetus for the provision of infrastructural facilities. In 1981, the region had the largest number of villages (65 per cent) connected by all weather-roads. More than 16 per cent of its villages had secondary school which was once again the highest in the State. The literacy level of the region was also the highest (53 per cent in 1981).

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5.25 On the whole, a strong agricultural base, intra/inter regional accessibility (North-South and West-East), a coast line providing external links and the emergence of Marmagoa-Panaji as economic nodes have resulted in the overall development of the region.

5.26 Malnad

Unlike the Coastal region, Malnad depicts sharp intra-regional variations in the levels of development. The northern and the southern extremes and the areas towards the east along the Maidan are relatively less developed than the rest of the region. These include the talukas of Khanapur, Supa, Kadur, Arsikere, Hunsur, H.D. Kote, Kollegal and Gundlupet.

5.27 During the decade 1971-81, the upward movement of the region is quite noticeable. Large parts of central Malnad around chickmagalur and Shimoga and parts of northern Malnad have moved upward in the scale of development in 1981 compared to 1971. In addition to Bhadravathy-Shimoga, Chickamagalur and Sirsi in the Central Malnad and Haliyal in the northern Malnad are emerging as nodes in the region. All these places have had impressive growth of industries, particularly small scale. Haliyal which had no industrial unit in 1971 had more than 7 units per 100 km^2. in 1981. Likewise, Chickmagalur which had just about 3 small scale units had over 12 units in 1981. The setting up of the

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West-Coast paper mills in Dandeli (Haliyal) has provided a further stimulas to growth in the region. Apart from a good industrial spread, places like Shimoga and Bhadravathy also have a productive agriculture. In these two places, the net irrigated area as per cent of net sown area was 76.3 and 50.9, respectively, in 1981.

5.28 The region's agriculture to a large extent is commercial and diversified owing primarily to the plantation crops in southern parts and the spice gardens in the Central Malnad. While the area under spices increased by 6.5 per cent, the area under plantation crops registered a rise of about 37 per cent in 1981 over 1971. Sugarcane, the other commercial crop grown in the region also recorded an increases of almost 50 per cent in its area. Commercialisation of agriculture has given rise to a few trading centres like Sirsi (for arecanut and other plantation crops) and Chickmagalur (for coffee) in the Central Malnad.

5.29 Besides these, the region also witnessed considerable improvement in the infrastructural facilities. Accessibility within the region measured in terms of road length per 100 km^2 showed an increase of 27 per cent during 1971-81. The newly constructed West-Coast Highway, the Poona-Bangalore national highway and a parallel road running north-south through the Malnad are intersected in and around some of the old trading centres which are now emerging as new centres

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of economic activity. This is a healthy trend in arresting to some extent what appears to be otherwise the impact of larger economic forces that threaten to accentuate the role of Malnad as a transitional region. The State highway from Mysore to Bhadravathy and the National highway between Bangalore and Mangalore have contributed to the development of central Malnad with Sirsi, Shimoga and Sagar as commercial and industrial centres. Nonetheless, the northern part of the region still remains to be connected with the central and southern parts by a direct highway. The region as such is ill served by rail. The two major railway lines are the Bangalore-Shimoga-Sagar line and Mysore-Hassan-Mangalore line. Development of railways has more or less remained peripheral to the northern Malnad in general.

5.30 In both the analyses, the northern and southern most parts come out as relatively less developed than the rest of the region. There are, however, qualitative differences between these two areas. The northern Malnad is a thickly forested hilly part with manganese and bauxite minerals that await systematic exploitation. The settlements are generally small; and the small towns in the region have not emerged as centres of economic activities. The area being close to the developed centres of Dharwad and Belgaum in the Northern Maidan is perhaps a limiting factor for the emergence of regional centres within. The region requires stepping up of infrastructural facilities and particularly a good net-work of roads which would increase the

accessibility. As against this, the southern most part of Malnad (Hunsur, Periyapatna, Kollegal, Chamrajnagar and H.D. Kote) falls in the rain shadow area of the Western Ghats and consequently has a poor agricultural base. As discussed in the earlier chapter, this part of the region grows more of dry crops. The area also has very low level of industrial development with the exception of Kollegal. Strengthening of the agricultural base with better irrigation facilities is required for this part of the region.

5.31 Southern Maidan

This region shows striking contrasts in the levels of development. Southern Maidan which has the most developed areas in the State also has areas with very low levels of development. The Southern most part of the region comprising the Mysore-Mandya-Bangalore-Kolar tract comes out as the most developed while the northern part around Chitradurga has less impact of the overall development in the region.

5.32 The northern part of the region falling in the transition zone between the Malnad and Maidan, has been in the category 'extremely low' in terms of overall development, both in 1971 and 1981. Excepting Davangere and Chitradurga, the rest of the talukas in this area appear to be an extension of Northern Maidan,

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characterised by very low levels of urbanisation (less than 10 per cent) and practically no industrialisation. Population being predominantly rural, dependence on agriculture is very high (over 75 per cent). Even the state of agriculture is none too good with less than 10 per cent of the net sown area being irrigated (e.g. Kudligi Molkalmuru, Jagalur, Hiriyur, Sira, Madhugere, and Pavagada talukas). As such these are dry farming areas with millets-groundnut and cotton crop association. Though Davangere in the area has grown into an urban-industrial centre, the spread effects have not been felt in the sorrounding areas. The spread of industrial units, on the contrary shows that activities such as cotton ginning, textile manufacturing and oil processing have got concentrated in Davangere itself.

5.33 As against this, the core region from Kolar to Mysore comes out as an area with a high degree of infrastructural and industrial development. The region also has the benefit of a well laid irrigation system which is particularly relevant in the development of Mandya and the surrounding areas. Situated in between Bangalore and Mysore (the erstwhile seat of administration) development of roads, communication and other infrastructure in the region are good. For example, road length per 100 km^2 ranges between 150 and 200 kms.

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in this belt which is very much above the State average. Development of the area around Mandya is mainly attributable to a highly productive agriculture, a diversified cropping pattern and the setting up of agro-based industries. In the case of areas sorrounding Bangalore, development has primarily been due to the centrifugal forces emanating from a well developed node like Bangalore.

5.34 Northern Maidan

This region excepting for a few places like Belgaum, Hubli-Dharwar, Harihar and Bellary-Hospet appear to be a vast stretch of under developed area. 68 per cent of the region comes out as backward in the factor analysis and even in the taxonomic ranking the talukas at the bottom end belong to Northern Maidan. Though almost the whole region comes out as less developed, the Hyderabad-Karnataka (the north eastern part) is relatively less developed than the rest of the region and incidentally this area is the least developed in the State as a whole. 60 per cent of the talukas which were in the 'extremely low category in 1981 were from Hyderabad-Karanataka (Gulbarga-Raichur and Bidar) region of the State. Over the ten year period, 1971-81, this part of the region has remained stagnant. The developed parts of the region are found along the Ghats edge in the South-Western parts from Belgaum to Harihar. Hubli and Belgaum are the major industrial centres in the Northern Maidan.

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Areas around Belgaum with their commercial agriculture (sugarcane and tobacco) have also benefited from the Ghataprabha irrigation project.

5.35 Between the two years, upward movement of certain parts of the region is mainly due to irrigation. Bellary, Hospet and Gangavathy which have had considerable growth registered a rise in their net irrigated area owing to the Thungabhadra project (Figs. 17 & 18, Chapter IV). In the case of Harihar whose rank in the scale of development has gone up has had the benefit of industrial development in addition to irrigated agriculture.

5.36 However, barring these few exception, the rest of the region has remained nearly the same. The core of under developed area is in between Gulbarga and Raichur and these two cities inspite of their growth into higher order urban centres have not been able to exert any influence in the areas sorrounding them. The spatial organisation also suggests that this part of the region is yet to be integrated with the rest of the region and the state as economically and socially it is still oriented to Hyderabad. Though, the human settlements are large, they lack bothsocial and economic infrastructure. In the two Districts of Gulbarga and Raichur, more than 60 per cent of the villages were not

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connected by all weather roads in 1981. Even the road mileage at an average of 25 km. per 100 km^2. was very low. Less than 25 per cent of the villages in this part of the region as against 50-60 per cent of the villages in the Bombay-Karnataka have secondary schools. The level of literacy is low (less than 20 per cent) and it is the lowest in the State according to 1981 census. More than 50 per cent of the villages in the Districts of Gulbarga and Raichur were without electricity in 1981. Lack of infrastructural facilities has resulted in the near absence of industries in this part. Situated in the drought prone zone and with a poor irrigation (less than 5 per cent of the net sown area is irrigated)agriculture remains largely subsistence in nature. This is further worsened by an excessive dependence of the population on agriculture.

5.37 Overall, the pattern of development brought out in both the analyses is that the areas with a populatio of 1 lakh and more stand out in a category of their own showing relatively higher levels of development. Among the regions, the Coastal region comes out as the most developed with very little intra-regional differences and the northern Maidan the least developed. In the case of Malnad, a trend towards reduction of the intra-regional differences is visible whereas in the Southern Maidan, the intra-regional contrast appears to be as sharp in1981

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as they were in 1971. The under developed core in the Northern Maidan remains untouched by the development efforts of planning process. Between the two years, the areas that have moved up are those with a strong agricultural base. Both in the case of Malnad and parts of Northern Maidan, it comes out clearly.

5.38 Cluster Analysis

Though the factor scores and taxonomic ranking bring out the level of development of different areas, an understanding of the similarities or difference in the spatial structure and processes as between areas is very important for the purpose of planning and evolving suitable strategies. Two uniformly developed areas may have differing resources bases giving rise to differing patterns of economic activities. Even in the case of underdevelopment, it has already been brought out that the less developed areas in the Malnad for instance vastly differ in their characteristics than the less developed areas of Northern Maidan. Cluster analysis is therefore used to bring together members of the same group and to understand the relationship between the factors at work. The cluster formations sometimes bring to notice aspects which would have otherwise missed our attention. An explanation of the methodology is given in the appendix. The set of variables used in the cluster analysis are the same as those of taxonomic ranking. Because of a technical limitation in the

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programme, (i.e. the number of observations should be divisible by the number of clusters) the number of clusters have been restricted to 6.

5.39 The clusters for the years 1971 and 1981 are given at annexure V and VI. There is strictly no hierarchy (ranking) in the formation of clusters. However, the clusters have been numbered here for the purpose of identification. Though, there is no ranking, the very highly developed and the least developed talukas have fallen into two distinct clusters of their own. In between these two, there are combinations of developed talukas getting grouped with the not so developed ones.

5.40 Over the years, 1971-81, the clustering reveals certain uniformity in the development patterns of contiguous areas which is evidenced by the fact that neighbouring talukas have got into one cluster. Though, this is observable in 1971, it is more pronounced in the year 1981. For instance, the whole of northern coast (Bhatkal, Honavar, Kumta, Ankola and Karwar) and the northern part of Malnad with the exception of Khanapur have got grouped together which was not so in 1971. These perhumid thickly forested areas have similar cropping pattern and it is this relative homogeneity and spatial contiguity which seems to be the cause for

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similarity in the processes and patterns of development. However, both in 1971 and 1981, the Coastal region though similar in several attributes of the regional structure has not emerged as a region of uniform development as brought out by cluster analysis in that all the talukas of the region are not in one cluster. This is partly because of the initial advantage of the Southern part of the Coastal region having a higher level of development[3]. Within as small a region as the coast, such differences in the village/town sizes, urbanisation and pattern of industrialisation based on their differing resource structure only emphasise the intra-regional differences which have to be taken note of while planning.

5.41 As against this, in the Northern Maidan, certain talukas which were in one group in 1971 have got into different clusters in 1981. For example, Koppal and Gangavathy which were in the same cluster in 1971 (group 5) have got into two different clusters in 1981. Similarly, certain talukas of Bellary like Sandur, Kudligi, Jagalur, Molkalmuru, Harpanahalli which were all in group 6, the most backward group were no longer together in 1981. Between 1971 and 1981, though there

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[3] The Southern Coastal region as stated in the earlier pages has a wider coastal plain which is better developed in agriculture, its development further aided by a port town such as Mangalore. This area was part of the former Madras Province whereas the northern part of the Coastal region was the periphery of the former Bombay Province.

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KARNATAKA
DEVELOPMENT CLUSTERS
1971

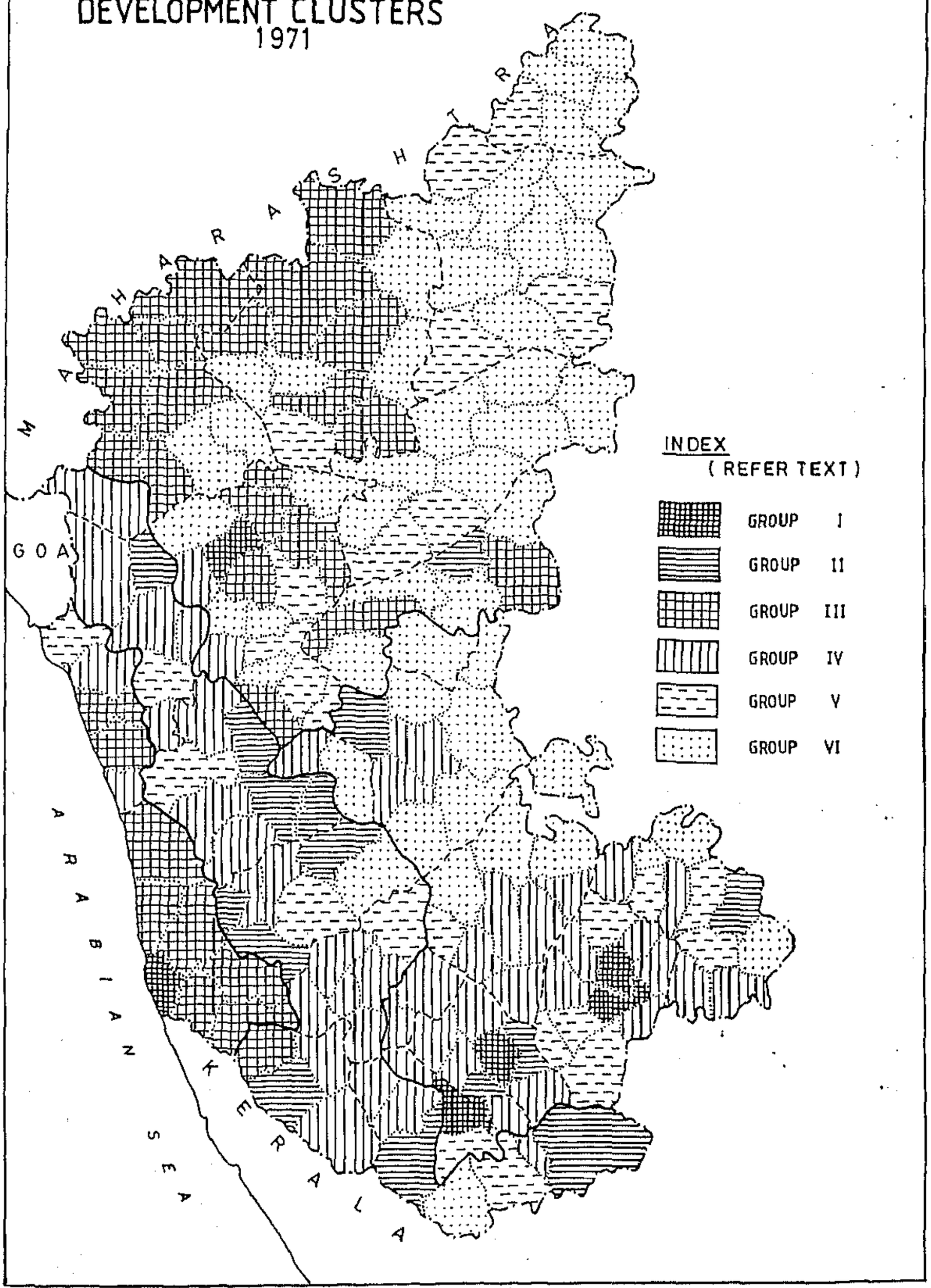

Fig. 31

KARNATAKA
DEVELOPMENT CLUSTERS
1981

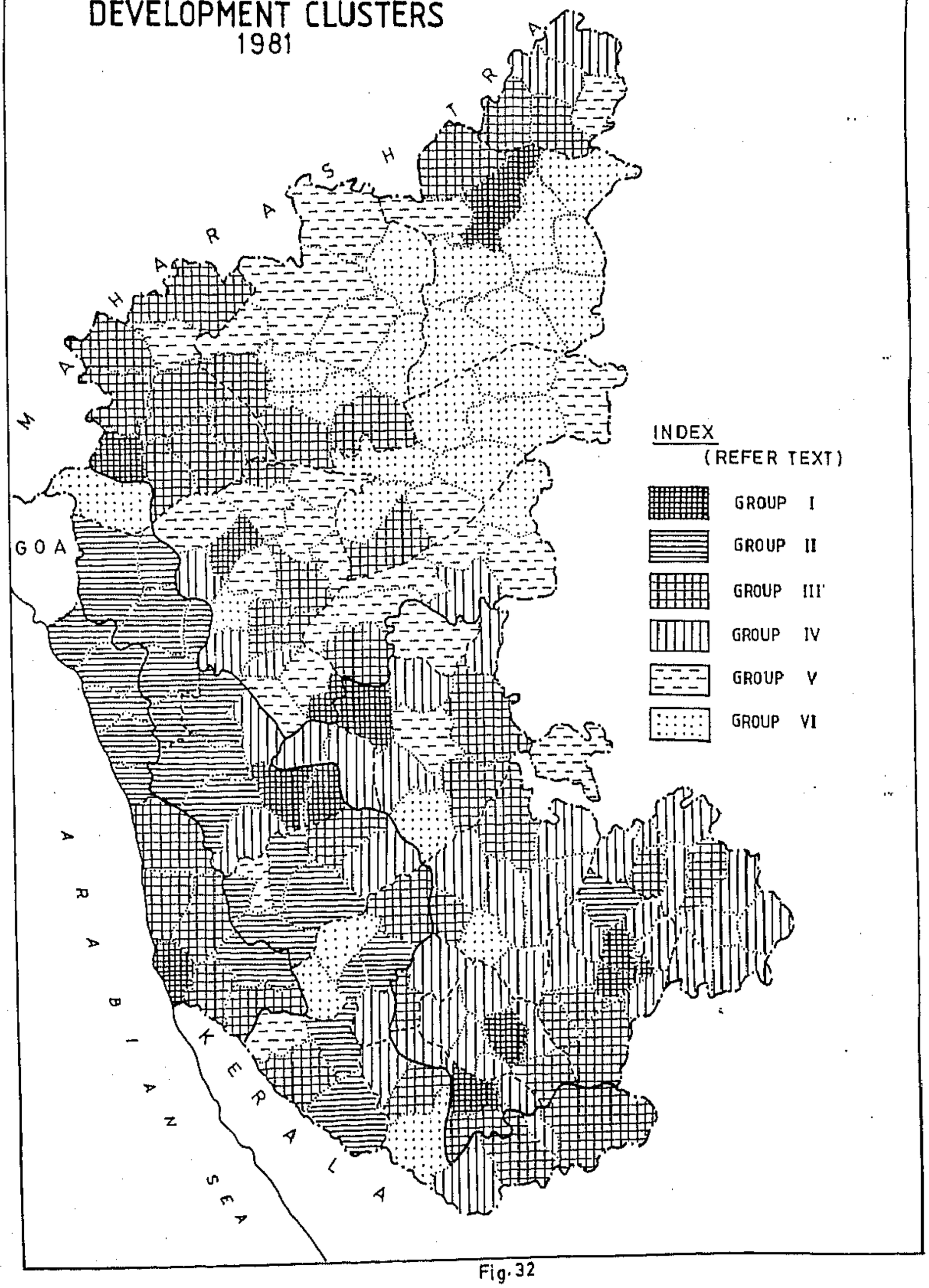

Fig. 32

is a reduction in the number of talukas in group 6 which is a clustering of the least developed talukas, it can be seen that most of the talukas in this group even in 1981 are from the north eastern part of the state. The salientfeatures of each of the clusters is discussed here. As already mentioned while the clusters at the two extremes are easily identifiable, the clusters in between have both developed and less developed talukas. However depending on the extent of development of an average taluka within each group they have been placed in a discending order.

5.42 Pattern of clustering (1971, 1981)

Group (I)

In both the years, this group emerged as a cluster of very highly developed, urbanised and industrialised talukas. In 1971, this group comprised Mangalore from the Coastal region, Bangalore, Mandya and Mysore from the Southern Maidan, Hubli from Northern Maidan and none from Malnad. These were also the first 5 talukas in the taxonomic ranking for the year 1971. The whole of urban population in these talukas in 1971 was in class I towns except Mandya which was a Class II town. The spread of industrial units was also very high with the average number of small scale units per 100 km^2. for the group as a whole at 82.7. This incidentally

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explains the occupational pattern in these talukas where less than one-third of the total workforce was engaged in the primary sector. Even here, Mandya was an exception with more than 70 per cent of its workforce engaged in agriculture. As stated elsewhere, Mandya provides a classic example of a rich agricultural base leading on to diversification of the economy with industry and agriculture mutually reinforcing each other. The high rate of urbanisation had also made possible a high level of literacy which was well over 40 per cent in most of these talukas.

5.43 In 1981 also, this cluster was having a group of very highly developed talukas, the additions however being Shimoga and Badhravathy from Malnad, Davangere from Southern Maidan, Gulbarga and Harihar from Northern Maidan. The emergence of Shimoga and Badravathy as nodes in Malnad explain their inclusion in the cluster. As against 1971, both the population settlement variables in 1981 are urban settlement (which only signifies the importance of urbanisation in the process of development) variables in addition to which two agricultural variables have also got in. As in 1971, while these talukas are highly urbanised and industrialised talukas, the talukas which have got into the group for the first time in 1981 are also agriculturally very developed.

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This explais the relatively high dependence of population on agriculture in Bhadravathy, Shimoga, Davangere, Harihar and Mandya which are among the most highly irrigated talukas of the state with net irrigated area to net sown area at over 50 per cent. The minor differences not withstanding, a uniformly high degree of urbanisation coupled with a good industrial spread (most of which are agro-based) and infrastructural development have brought these talukas together. The presence of Gulbarga which is not as developed as the others in the group can only be explained by its high urbanisation (urban population to total was 55 per cent) and low dependence on agriculture.

5.44 Group (2)

This cluster which appeared almost like a regional cluster in 1971 where 10 out of the 15 talukas wer from Malnad included a larger part of Malnad (Central Part) in 1981. While certain talukas like Bhadravathy, Shimoga and Davangere and moved on to group 1 from group 2 in 1981, a notable addition to this group in 1981 is the northern part of the Coastal region which bears striking similarities with the northern part of Malnad. These talukas of the northern part (Ankola, Bhatkal, Honavar, Karwar and Kumta) unlike the southern part were in different groups in 1971. Though, the coastal region as a whole is developed, the differences are prominent in terms of settlement patterns (both rural and urban) and infra-structural development between the north and south which

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accounts for the two parts falling in two different groups.

5.45 In both the years much of the villaage population of this group (nearly 50 per cent) was concentrated in very small villages with an average population of less than 1000 each. As for urban population, excepting a few places like Shimoga, Bhadravathy and Davangere in 1971 and Chickmagalur and Hassan in 1981, they lived in smaller towns , there being no development of intermediate towns as in the Coastal region. Even the density of population ranges from very low to low in most of these talukas. Compared to 1971, there has been an impressive growth of industrial units (small scale units) in the group where, in a number of talukas, the number of small scale units per 100 km^2. is more than 10. The northern part of the coastal region falling within the group in particular has registered a spurt in industrial activity and an examination by type of industries shows that most of these are forest based. As for agriculture, a good many of the talukas in this group in 1971 as well as 1981 were very highly irrigated. Certain others like Sringeri, Mudigere and Mercara where the net irrigated area to net sown area was not very high fall in the high rain fall region. In spite of a prosperous agriculture, the gross cropped area to net sown area not being very high in the group is because of the cropping pattern. These areas grow

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plantation crops (Somwarpet Virajpet, Mudigere, Chickmagalur,N.R.Pura), and also acrecanut and coconut (sagar, sorab, Haliyal, Sirsi, Supa & Yellapur) which are perennial crops.

5.46 On the whole, this group is a clustering of developed talukas in spite of low levels of urbanisation and industrialisation. The plantation economy in certain parts, a productive agriculture in the others and a high level of awareness among the people reflected in the high rates of literacy have made development possible. As it is, the occupational pattern shows less dependence on primary sector and if further infrastructural base is provided making it possible to use the local resources for the local benefit, the groups holds potential for further development.

5.47 Group (3)

The composition of this group appears a little unique because the high rainfall, paddy growing southern coast (talukas of Dakshina Kannada) has got grouped with the north western part of Northern Maidan. The composition remained more or less the same in 1981 with this difference that southern Malnad and a part of Southern Maidan got added on to the group. The two most important variables that appear to have brought them together in 1971 and 1981 are the sizes of their villages

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and towns. These are areas where the villages are large sized (5000-10,000 persons) and the urban population lives in smaller towns (less than 20,000 persons). However, in 1981 the whole of urban population in the cluster was in class III towns (20000-50000 persons).

5.48 The Southern part of the coastal region (Buntwal Coondapur, Karkal, Puttur and Udupi) stands out from the rest of the members in the group in terms of a more productive agriculture as brought out by the cropping intensity, usage of agricultural implements and a diversified occupational pattern with less of dependence on agriculture. However, it bears a marked similarity with the rest of the group in terms of rural settlements and pattern of urbanisation and it is this similarity which has brought them together. It is, therefore, in this group more than any other group that the pull of settlement variables (i,e. village/town sizes) emerge prominently. The influence of this factor is further brought out by the fact that of the three talukas in the plantation district of Coorg, while irajpet and Somwarpet are in one group in 1981, ercara falls in this group all because of a different rbanisation pattern from the other two.

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5.49 Rural settlements being large, certain infrastructural facilities like number of villages having middle school (in a majority of the talukas more than 50 per cent of the villages) and villages with drinking water facilities are good. Even the literacy level of population which on an average was at 30 per cent in 1971 has slighly improved in 1981. Except in the talukas of Dakshina Kannada, Belgaum and Bellary, the industrial spread in the group was quite sparse in 1971. However, in 1981 with the average for the group moving up from 3.9 units per 100 km^2. to 7.12 units per 100 km^2. the position has become better. With the exception of Tarikere and Mercara, the part of Malnad which appears in this group is the Southern Malnad which like most other talukas in the group falls in the low rainfall region and grows dry crops.

5.50 Group (4)

In 1971, 2 talukas from the coastal region, 2 talukas from Northern Maidan, major parts of Malnad and Southern Maidan were in the group. The extent of industrialisation in the group was very poor in 1971 with the number of small scale units per 100 km^2 on an average being a little over 2. The smallness of the village size was also responsible for the absence of certain facilities. For instance, not even 1/3 of the total villages had middle schools in them.

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situated as it were between a highly developed coastal region and the Maidan region, the Malnad was a transitional region in many respects. Though, the plantation areas of Coorg were relatively better off, the low level of urbanisation, once again exerting its influence, had put them among with the rest.

5.51 In 1981, there is a noticeable change in the composition of the group which appears almost like a grouping of Southern Maidan talukas with 34 out of 47 talukas from Southern Maidan. Another change that has taken place is the upward movement of the Malnad talukas which were in this group in 1971 moving on to group2 in 1981. Inspite of the similarities between this group and group 2 in 1981, they have got separately clustered. The composition of the cluster in 1981 reveals that these areas which are neither in the high rainfall zone nor highly irrigated are agriculturally not as rich as the talukas of group 2 with of course a few exception like S.R. Patna, K.R. Nagar, Maddur etc. Leaving aside these few talukas, the cropping intensity of the cluster is also low and the principal crops grown are ragi and groundnut. Between 1971 and 1981 this group shows an improvement in the extent of industrialisation and spread of units are notably high in places like Tumkur, Maddur, Anekal, Bangarpet, S.R. Patna and Pandavpura.

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5.52 Group (5)

This group consisted of Karwar from the Coastal region, a few talukas from Malnad and the rest from the Southern and the Northern Maidans. In 1981 there were just two talukas from the Malnad, three from Southern Maidan and the rest were from Northern Maidan in the group. In other words as against the clustering of 1971, this group was a clustering of mostly Northern Maidan talukas in 1981 and the part of Southern Maidan which got into the group was less developed. The talukas showed a remarkable similarity in the pattern of urbanisation with almost the whole of urban population living in class III towns in 1971. Inspite of the population living in middle order towns, very low levels of industrialisation was responsible for heavy reliance on the primary sector. Harihar (which in 1981 has moved upto a group I) was the only taluka with good spread of small scale units (12.3 per 100 km^2.) in a group which on an average had less than 3 units for every 100 km^2. As a result a little over 75 per cent of the workforce was in agriculture; With the exception of Karwar, Sagar, Sirsi and Harihar, the rest of the talukas were growing only dry crops. The area under non-food crops was also quite high in a number of talukas - mainly groundnut and cotton grown under dry conditions which once again was indicative of low levels of irrigation.

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5.53 In 1981, this clustering is more or less restricted to the Northern Maidan where 23 out of the 28 talukas are from this region. A number of talukas in the group in 1981 are also higher order urban centres (Chitradurga, Bellary, Bidar, Bagalkote, Bijapur, Gadag & Dharwad). Inspite of urbanisation in these talukas, the dependence on the primary sector is very high. A significant share of area under non-food crops, a low cropping intensity (gross cropped area to net sown area) a relatively smaller number of agricultural implements per 100 hect. of net sown area are some of the indicators of a not so developed agriculture. The cluster on the whole is not very industrialised and the industrial activity is by and large restricted only to those talukas where the urban population lives in class I & II towns.

5.54 Group(6)

Just as the group on top (group I) was a concentration of very highly developed talukas, this group at the bottom, in 1971 was a clustering of all the underveloped areas numbering 49 in all, majority of them being the talukas of Northern Maidan. In addition to these, that part of Southern Maidan falling in the transitional zone between the Northern and Southern Maidans (Challakere, Hiriyur, Hosadurga, Jagalur,

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Kudligi and Mokalmru) and two talukas of Malnad (Kadur and Gundlepet) were also in the cluster. The pattern largely remained the same even in 1981 where the talukas in the developmental scale ranged from low to extremely low category. However a noticeable change between 71 and 81 is that the group has become much smaller (from 49 to 23) with much of the talukas moving on to higher groups. Even the composition of Southern Maidan in the cluster has greatly shrunk in 1981 with only Hosadurga and Turuvekere appearing in the group. The upward movement of Gulbarga from group (6) in 1971 to group 1 in 1981 is also remarkable and this has been made possible by a high rate of urbanisation and an appreciable increase in the spread of industrial units from 6 per 100 km^2. in 1971 to 17 per 100 km^2. in 1981.

5.55 In both the years, this cluster has most of its talukas from Raichur-Gulbarga stretch, the economic condition of the area remaining vastly unchanged. It has already been brought out that agriculture in these areas is not capable of supporting the population dependent on it. The alternative avenues of employment are also nearly absent. The average industrial spread for the cluster comes out to be less than 2 per 100 km^2. The lack of infra-structural facilities is one of the major reasons for the stagnation of its economy.

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It is the same area which comes out as the least developed in terms of the other two analyses as well.

5.56 In the cluster formation between 1971 and 1981, there is a clearer delineation of areas in 1981 with most of the group emerging as regional groupings. For instance, while the southern part of the Coastal region gets grouped separately from the northern part, the northern coast along with northern and Central Malnad are in one group the reasons for which were discussed earlier. Similarly, most of the Southern Maidan fell in one group and almost the whole of Northern Maidan in the last 2 groups. The fact, however, remains that different groupings are still found inside a region which only brings out the differences in the patterns of development intra-regionally.

5.57 By and large, the higher order urban industrial centre where population densities are also very high have got grouped together. But the one most important factor in the grouping of talukas turn out to be the size of towns and rural settlements. The purpose of introducing this variable, namely, size of villages and towns with their respective shares of population was only to understand its importance in the developmental context. The fact that this comes out as a dominant

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variable only means that spatial planning ought to take note of the type and size of human settlements since the kind of facilities a place acquires is largely a function of its size. For example, Udupi, though not very highly urbanised is infrastructurally as developed as Mangalore, Mysore and Hubli[4] which is explained by the largeness of its villages. On the contrary, the Malnad villages because of their smallness are devoid of many facilities.

5.58 Summing up the results of the different techniques, it can be said that the talukas at both the extremes appear to be the same in all the analyses. The talukas which get high scores on factor I and also high ranking in taxonomy appears in one cluster in the cluster analysis. Similarly, the low scoring, low ranking talukas get clustered into one group. The purpose of the exercise being identification of less developed areas, it can be said that whatever be the test applied same areas more or less emerge as the least developed.

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4 In the infrastructural clustering attempted separately Udupi got into the same cluster as these talukas.

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5.59 The foregoing analyses bring out the varying levels and processes of development as between regions. In brief, the regions of the State can be summed up as a uniformly highly developed coastal tract, a developing Malnad, the Southern Maidan with its highly developed core-region as against the less developed parts falling in the transitional zone and the least developed Northern Maidan. Vast stretches of the Northern Maidan comprising the Hyderabad-Karnataka region emerges the least developed in 1971 as well as 1981, establishing, thereby, the failure of planning in general and the spatial approach to planning in particular. The least developed areas are characterised by very low levels of urbanisation-industrialisation, an unproductive agriculture, low levels of literacy and lack of infrastructural facilities. The fact that these areas had harly any impact of development reinforces the need for 'area planning' to bring about an economic integration of these areas with the more developed ones, first within the region and then across the regions.

(ii) Development of the less developed areas does not mean provision of infrastructural facilities or promotion of any 'adhoc' scheme. Without economic inputs, increase in social or infrastructural expenditure has not contributed to development. This is clear from the experience of the Malnad which has moved up in the scale

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of development in 1981 compared to 1971. The factors that have principally been responsible for the improvement of the Malnad have been a diversified cropping pattern/commercial agriculture, industrialisation based on local resources, emergence of small towns as nodes in the wake of creation of market centres and lastly improved accessibility within and across the regions. Even in the Northern Maidan, areas around Raichur-Bellary and Belguam have witnessed considerable progress mainly due to additional areas coming under irrigation.

(iii) Integration of areal and locational components implied in the spatial approach to planning has to be understood and accordingly, activities based on the local resources should be located in an area so that they benefit the sorrounding region. The location of certain activities besides benefitting the areas also helps in reducing concentration of activities at the major industrial centres. A case in point would be the sericulture industry in the State. While the mulberry growing areas are ground Kollegal (Southern Malnad), almost the whole of silk manufacturing is done in Bangalore. If instead part of the processing activities are shifted to smaller places, it would help in the growth of smaller towns in the region.

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(iv) A mere recognition of the fact that certain areas are lagging behind the others in the development process and drawing up schemes for their development either at the centre or at the State capital without understanding the causes for their lack of development will not be an answer to the problems of less developed areas. Even within the region, the developmental needs are different as it is in the case of Malnad. While the northern and southern extremities of the Malnad are both underdeveloped, reasons and remedies are vastly different. The northern Malnad requires more of infrastructural facilities and better exploitation of natural resources whereas the southern part of Malnad requires augmentation of irrigation facilities. Thus, the problems of underdevelopment are varied and a uniform package to tackle backwardness will not produce any result. If regional imbalances have to be set right, plans for small units/areas like group of talukas specific to their local needs in the light of their underlying characteristics ought to be made. What is required for these areas is not any one-time, piece-meal assistance but an integrated approach towards providing an economic structure/base that could give rise to a self sustaining process and create functional integration in space bringing them on to the main stream of development.

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Annexure -I

Talukas arranged in descending order, on the basis of factor scores (on factor I), 1971.

Region	S.No.	Talukas	Levels of Development	Rank
(1)	(2)	(3)	(4)	(5)
Coastal region	1.	Mangalore	VH	(2)
	2.	Udipi	VH	(4)
	3.	Buntwal	H	(9)
	4.	Karwar	H	(12)
	5.	Kumta	H	(16)
	6.	Karkal	H	(17)
	7.	Coondapur	M	(22)
	8.	Puttur	M	(23)
	9.	Bhatkal	M	(24)
	10.	Belthangady	M	(30)
	11.	Honavar	M	(32)
	12.	Ankola	M	(49)
Malnad	1.	Bhadravathy	VH	(7)
	2.	Shimoga	H	(10)
	3.	Hassan	H	(11)
	4.	Virajpet	H	(18)
	5.	Mercara	H	(19)
	6.	Yelandur	M	(31)
	7.	Somwarpet	M	(33)
	8.	Sirsi	M	(35)
	9.	Haliyal	M	(38)
	10.	Sullia	M	(41)
	11.	Chickmagalur	M	(42)
	12.	Sagar	M	(46)
	13.	Tirthahalli	M	(47)
	14.	Sringeri	M	(54)
	15.	Siddapur	M	(55)
	16.	Koppa	M	(60)
	17.	Mundgod	M	(61)
	18.	Tarikere	M	(64)
	19.	Shikaripura	M	(66)
	20.	Arkalgud	M	(67)
	21.	Chamrajnagar	M	(72)
	22.	Belur	M	(73)
	23.	Yellapur	M	(74)
	24.	Arsikere	L	(79)
	25.	Kollegal	L	(81)

contd...

(1)	(2)	(3)	(4)	(5)
	26.	Alur	L	(82)
	27.	Hunsur	L	(84)
	28.	Sorab	L	(89)
	29.	Periyapatna	L	(90)
	30.	Sakleshpur	L	(91)
	31.	Kadur	L	(97)
	32.	Narasimharaja - pura	L	(98)
	33.	Hosanagar	L	(99)
	34.	Supa	L	(100)
	35.	Mudigere	L	(115)
	36.	Khanapur	L	(116)
	37.	Heggada - Devannakote	VL	(124)
	38.	Gundlupet	VL	(134)
Southern Maidan	1.	Bangalore	VH	(1)
	2.	Mysore	VH	(3)
	3.	Mandya	H	(8)
	4.	Davangere	H	(13)
	5.	Bangarpet	H	(14)
	6.	Tumkur	H	(15)
	7.	Srirangapatna	H	(20)
	8.	Kolar	M	(21)
	9.	T.N. Pur	M	(25)
	10.	Maddur	M	(26)
	11.	K.R. Nagar	M	(27)
	12.	Pandavpura	M	(37)
	13.	Channapatna	M	(39)
	14.	Chickaballapur	M	(40)
	15.	Doddaballapur	M	(45)
	16.	Anekal	M	(50)
	17.	Ramnagaram	M	(51)
	18.	Malavalli	M	(52)
	19.	Chitradurga	M	(53)
	20.	Holenarasipura	M	(56)
	21.	Devanahalli	M	(58)
	22.	Hoskote	M	(59)
	23.	Nanjangud	M	(62)
	24.	Nelamangala	M	(65)
	25.	Siddlaghatta	M	(68)
	26.	Gowribidanur	M	(69)
	27.	Tiptur	M	(70)
	28.	Chintamani	L	(80)
	29.	Honnali	L	(86)
	30.	Magadi	L	(92)
	31.	Turuvekere	L	(93)
	32.	Kunigal	L	(94)
	33.	Gudibanda	L	(96)
	34.	Malur	L	(101)
	35.	Channarayapatna	L	(102)

contd...

(1)	(2)	(3)	(4)	(5)
	36.	K.R. Pet	L	(105)
	37.	Mulabagal	L	(106)
	38.	Channagiri	L	(108)
	39.	Chickanayakanahalli	L	(110)
	40.	Holalkere	L	(111)
	41.	Nagamangala	L	(112)
	42.	Kanakapur	L	(113)
	43.	Gubbi	L	(117)
	44.	Koratagere	L	(118)
	45.	Srinivasapur	L	(119)
	46.	Madhugiri	V.L.	(122)
	47.	Sira	V.L.	(138)
	48.	Pavagada	V.L.	(140)
	49.	Jagalur	V.L.	(142)
	50.	Hiriyur	V.L.	(145)
	51.	Hosadurga	V.L.	(146)
	52.	Challakere	V.L.	(147)
	53.	Bagepalli	V.L.	(149)
	54.	Mokalmuru	V.L.	(151)
	55.	Kudligi	V.L.	(152)
Northern Maidan	1.	Hubli	V.H.	(5)
	2.	Belgaum	V.H.	(6)
	3.	Hospet	M	(28)
	4.	Gadag	M	(29)
	5.	Harihar	M	(34)
	6.	Bellary	M	(36)
	7.	Gulbarga	M	(43)
	8.	Dharwar	M	(44)
	9.	Chikkodi	M	(48)
	10.	Bagalkote	M	(57)
	11.	Bidar	M	(63)
	12.	Gokak	M	(71)
	13.	Renebennur	M	(75)
	14.	Bijapur	L	(76)
	15.	Nargund	L	(77)
	16.	Jamkhandi	L	(78)
	17.	Hangal	L	(83)
	18.	Raichur	L	(85)
	19.	Hukkeri	L	(87)
	20.	Hirekerur	L	(88)
	21.	Haveri	L	(95)
	22.	Bailhongal	L	(103)
	23.	Byadgi	L	(104)
	24.	Homnabad	L	(107)
	25.	Kalghatgi	L	(109)

(1)	(2)	(3)	(4)	(5)
	26.	Shiggaon	L	(114)
	27.	Hungund	VL	(120)
	28.	Kundgol	VL	(121)
	29.	Bilgi	VL	(123)
	30.	Soundatti	VL	(125)
	31.	Badami	VL	(126)
	32.	Shirahatti	VL	(127)
	33.	Navalgund	VL	(128)
	34.	Mudhol	VL	(129)
	35.	Raibag	VL	(130)
	36.	Ron	VL	(131)
	37.	Gangavathy	VL	(132)
	38.	Koppal	VL	(133)
	39.	Athani	VL	(135)
	40.	Savannur	VL	(136)
	41.	Ramdurg	VL	(137)
	42.	Basavakalyan	VL	(139)
	43.	Chitapur	VL	(141)
	44.	Harpanahalli	VL	(143)
	45.	Sandur	VL	(144)
	46.	Hagaribommanahalli	VL	(148)
	47.	Hadagalli	VL	(150)
	48.	Muddebihal	VL	(153)
	49.	Mundargi	VL	(154)
	50.	Siraguppa	VL	(155)
	51.	Aurad	EL	(156)
	52.	Bhalki	EL	(157)
	53.	Yadgir	EL	(158)
	54.	Sedam	EL	(159)
	55.	Aland	EL	(160)
	56.	Yelburga	EL	(161)
	57.	Sindhanur	EL	(162)
	58.	Bagewadi	EL	(163)
	59.	Lingsagur	EL	(164)
	60.	Kushtagi	EL	(165)
	61.	Afzalpur	EL	(166)
	62.	Chincholi	EL	(167)
	63.	Indi	EL	(168)
	64.	Manvi	EL	(169)
	65.	Shorapur	EL	(170)
	66.	Sindgi	EL	(171)
	67.	Deodurg	EL	(172)
	68.	Shahapur	EL	(173)
	69.	Jewargi	EL	(174)

Note:

	Levels of Development	Factor score range
1. VH	Very High	5
2. H	High	2.5 to 4.99
3. M	Medium	0 to 2.49
4. L	Low	-1.5 to-0.01
5. V.L.	Very Low	-3 to -1.49
6. E.L.	Extremely Low	Less than -3.

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Annexure-II

Talukas arranged in descending order, on the basis of factor scores (on factor I), 1981.

Region	S.No.	Talukas	Levels of Development	Rank.
(1)	(2)	(3)	(4)	(5)
Coastal Region	1.	Mangalore	VH	(2)
	2.	Udipi	VH	(5)
	3.	Karwar	VH	(9)
	4.	Buntwal	H	(12)
	5.	Bhatkal	H	(13)
	6.	Kumta	H	(14)
	7.	Honavar	H	(19)
	8.	Karkal	H	(22)
	9.	Puttur	H	(23)
	10.	Coondapur	M	(34)
	11.	Ankola	M	(44)
	12.	Belthangady	M	(53)
Malnad	1.	Bhadravathy	VH	(8)
	2.	Shimoga	H	(11)
	3.	Hassan	H	(16)
	4.	Sirsi	H	(24)
	5.	Chickmagalur	H	(25)
	6.	Haliyal	H	(26)
	7.	Mercara	M	(27)
	8.	Somwarpet	M	(28)
	9.	Sagar	M	(35)
	10.	Sullia	M	(36)
	11.	Siddapur	M	(37)
	12.	Virajpet	M	(39)
	13.	Thirthahalli	M	(40)
	14.	Koppa	M	(45)
	15.	Alur	M	(46)
	16.	Srinageri	M	(49)
	17.	Yellapur	M	(50)
	18.	Shikaripur	M	(51)
	19.	Arkalgud	M	(62)
	20.	Mudigere	M	(63)
	21.	Sakleshpur	M	(65)
	22.	Yelandur	M	(69)
	23.	Hosangar	M	(70)
	24.	Tarikere	M	(72)
	25.	Belur	M	(73)

contd...

(1)	(2)	(3)	(4)	(5)
	26.	Narasimharajpura	M	(77)
	27.	Sorab	L	(79)
	28.	Hunsur	L	(81)
	29.	Mundgod	L	(86)
	30.	Supa	L	(87)
	31.	Arsikere	L	(89)
	32.	Periyapatna	L	(95)
	33.	Chamrajnagar	L	(97)
	34.	Kadur	L	(103)
	35.	Kollegal	L	(107)
	36.	Khanapur	L	(110)
	37.	Gundlupet	VL	(128)
	38.	Heggadadevannakote	VL	(132)
Southern Maidan	1.	Bangalore	VH	(1)
	2.	Mysore	VH	(3)
	3.	Mandya	VH	(7)
	4.	Davangere	H	(10)
	5.	Bangarpet	H	(15)
	6.	Tumkur	H	(17)
	7.	Srirangapatna	H	(20)
	8.	Kolar	H	(21)
	9.	Maddur	M	(29)
	10.	Channapatna	M	(31)
	11.	K.R. Nagar	M	(32)
	12.	Anekal	M	(33)
	13.	Chickkaballapur	M	(41)
	14.	Doddaballapur	M	(43)
	15.	Hoskoke	M	(48)
	16.	Nanjangud	M	(52)
	17.	Malavalli	M	(54)
	18.	Pandavpura	M	(55)
	19.	Holenarasipura	M	(56)
	20.	Chitradurga	M	(57)
	21.	T.N. Pur	M	(58)
	22.	Siddlaghatta	M	(61)
	23.	Devanahalli	M	(64)
	24.	Ramnagaram	M	(67)
	25.	Tiptur	M	(68)
	26.	Channarayapatna	M	(71)
	27.	Turuvakera	M	(74)
	28.	K.R. Pet	M	(76)
	29.	Nelamangala	L	(80)
	30.	Honnali	L	(82)
	31.	Kunigal	L	(84)
	32.	Mulabagal	L	(90)
	33.	Malur	L	(91)
	34.	Gowribidanur	L	(99)
	35.	Chintamani	L	(101)

contd...

(1)	(2)	(3)	(4)	(5)
	36.	Channagiri	L	(104)
	37.	Magadi	L	(105)
	38.	Srinivasapur	L	(111)
	39.	Nagamangala	L	(112)
	40.	Gubbi	L	(113)
	41.	Gudibanda	L	(115)
	42.	Holalkere	L	(116)
	43.	Koratagere	L	(117)
	44.	Chickanayakenahalli	L	(119)
	45.	Kanakpura	L	(120)
	46.	Madhugiri	VL	(121)
	47.	Sira	VL	(123)
	48.	Hiriyur	VL	(133)
	49.	Hosadurga	VL	(138)
	50.	Jagalur	VL	(142)
	51.	Kudligi	VL	(144)
	52.	Challakere	EL	(148)
	53.	Molkalmuru	EL	(151)
	54.	Bagepalli	EL	(153)
	55.	Pavagada	EL	(156)
Southern Maidan	1.	Hubli	VH	(4)
	2.	Belgaum	VH	(6)
	3.	Harihar	H	(18)
	4.	Hospet	M	(30)
	5.	Bellary	M	(38)
	6.	Dharwar	M	(42)
	7.	Ranebennur	M	(47)
	8.	Chikkodi	M	(59)
	9.	Gadag	M	(60)
	10.	Sandur	M	(66)
	11.	Hangal	M	(75)
	12.	Bidar	M	(78)
	13.	Nargund	L	(83)
	14.	Raichur	L	(85)
	15.	Bagalkoke	L	(88)
	16.	Gokak	L	(92)
	17.	Gulbarga	L	(93)
	18.	Hukkeri	L	(94)
	19.	Byadgi	L	(96)
	20.	Jamkhandi	L	(98)
	21.	Hirekerur	L	(100)
	22.	Kalghatgi	L	(102)
	23.	Haveri	L	(106)
	24.	Gangavathy	L	(108)
	25.	Bailhongal	L	(109)
	26.	Bijapur	L	(114)
	27.	Shiggaon	L	(118)
	28.	Raibag	VL	(122)
	29.	Homnabad	VL	(124)
	30.	Shirahatti	VL	(125)

contd...

(1)	(2)	(3)	(4)	(5)
	31.	Kundgoal	VL	(126)
	32.	Ron	VL	(127)
	33.	Mudhol	VL	(129)
	34.	Navalgund	VL	(130)
	35.	Harpanahalli	VL	(131)
	36.	Athani	VL	(134)
	37.	Badami	VL	(135)
	38.	Hungund	VL	(136)
	39.	Ramdurg	VL	(137)
	40.	Soundatti	VL	(139)
	41.	Savannur	VL	(140)
	42.	Koppal	VL	(141)
	43.	Siruguppa	VL	(143)
	44.	Hadagalli	EL	(145)
	45.	HB Halli	EL	(146)
	46.	Bilgi	EL	(147)
	47.	B. Kalyan	EL	(149)
	48.	Sindhanur	EL	(150)
	49.	Mundargi	EL	(152)
	50.	Chitapur	EL	(154)
	51.	Bhalki	EL	(155)
	52.	Muddebihal	EL	(157)
	53.	Yadgir	EL	(158)
	54.	Bagewadi	EL	(159)
	55.	Aurad	EL	(160)
	56.	Kushtagi	EL	(161)
	57.	Shorapur	EL	(162)
	58.	Sedam	EL	(163)
	59.	Aland	EL	(164)
	60.	Lingsagur	EL	(165)
	61.	Indi	EL	(166)
	62.	Manvi	EL	(167)
	63.	Yelburga	EL	(168)
	64.	Afzalpur	EL	(169)
	65.	Sindgi	EL	(170)
	66.	Chimcholi	EL	(171)
	67.	Deodurg	EL	(172)
	68.	Shahapur	EL	(173)
	69.	Jewargi	EL	(174)

Note:

	Levels of Development	Factor score range
1.	VH - Very High	5
2.	H - High	2.5 to 4.99
3.	M - Medium	0 to 2.49
4.	L - Low	-1.5 to -0.01
5.	VL - Very low	- 3 to -1.49
6.	EL - Extremely low	-3.

contd...

Annexure -III

Taxonomic Ranking, 1971

Names of regions	Sl. No.	Names of Talukas	Rank
Coastal region	1.	Mangalore	(1)
	2.	Udupi	(6)
	3.	Buntwal	(8)
	4.	Karwar	(9)
	5.	Karkal	(20)
	6.	Kumta	(22)
	7.	Coondapur	(25)
	8.	Puttur	(31)
	9.	Honavar	(41)
	10.	Ankola	(45)
	11.	Belthangady	(60)
	12.	Bhatkal	(64)
Malnad	1.	Yelandur	(19)
	2.	Virajpet	(24)
	3.	Somwarpet	(28)
	4.	Sagar	(39)
	5.	Chickmagalur	(40)
	6.	Sringeri	(42)
	7.	Sullia	(44)
	8.	Hassan	(47)
	9.	Siddapur	(49)
	10.	Mercara	(55)
	11.	Sirsi	(56)
	12.	Haliyal	(61)
	13.	Shimoga	(65)
	14.	Tirthahalli	(66)
	15.	Chamrajnagar	(69)
	16.	Bhadravathy	(72)
	17.	Yellapur	(74)
	18.	Koppa	(78)
	19.	Hunsur	(81)
	20.	Mundgod	(86)
	21.	Supa	(87)
	22.	Arsikere	(91)
	23.	Tarikere	(95)
	24.	Khanapur	(100)
	25.	Sakleshpur	(102)
	26.	Kadur	(106)
	27.	Mudigere	(107)
	28.	Periyapatna	(108)
	29.	Shikaripura	(109)
	30.	Arkalgud	(119)

contd...

(1)	(2)	(3)	(4)
		31. Gundlupet	(124)
		32. Kollegal	(127)
		33. Alur	(129)
		34. Narasimharajapura	(133)
		35. Hosanagar	(135)
		36. Belur	(137)
		37. Sorab	(153)
		38. Heggadadevannakote	(167)
	Southern Maidan	1. Bangalore	(2)
		2. Mandya	(3)
		3. Mysore	(4)
		4. Srirangapatna	(11)
		5. K.R. Nagar	(13)
		6. Kolar	(14)
		7. Maddur	(15)
		8. Tumkur	(16)
		9. Pandavpura	(18)
		10. Doddaballapur	(30)
		11. Bangarpet	(35)
		12. Chickkaballapur	(36)
		13. Chitradurga	(37)
		14. Malavalli	(38)
		15. T.N. Pur	(48)
		16. Channapatna	(51)
		17. Davangere	(57)
		18. Tiptur	(58)
		19. Nanjangud	(67)
		20. Anekal	(70)
		21. Nelamangala	(71)
		22. Ramanagaram	(73)
		23. Chintamani	(84)
		24. Holenarasipura	(89)
		25. Siddaghatta	(96)
		26. Gowribiddanur	(101)
		27. Chickanayakanahalli	(103)
		28. Hoskote	(104)
		29. Turuvekere	(105)
		30. Honnali	(110)
		31. Devanahalli	(112)
		32. Magadi	(117)
		33. Sira	(120)
		34. Kunigal	(125)
		35. Holakere	(126)
		36. Gubbi	(128)
		37. Kanakapura	(130)
		38. Malur	(131)
		39. Channarayapatna	(136)
		40. Nagamangala	(138)

contd...

(1)	(2)	(3)	(4)
	41.	K.R.Pet	(140)
	42.	Mulabagal	(141)
	43.	Molkalmuru	(144)
	44.	Madhugiri	(147)
	45.	Koratagere	(148)
	46.	Hiriyur	(149)
	47.	Kudligi	(150)
	48.	Challakere	(152)
	49.	Hosadurga	(156)
	50.	Pavagada	(160)
	51.	Jagalur	(162)
	52.	Gudibanda	(164)
	53.	Srinivaspur	(166)
	54.	Bagepalli	(168)
	55.	Channagiri	(171)
Northern Maidan	1.	Hubli	(5)
	2.	Belgaum	(7)
	3.	Bellary	(10)
	4.	Gadag	(12)
	5.	Harihar	(17)
	6.	Gokak	(21)
	7.	Chikhodi	(23)
	8.	Ranebennur	(26)
	9.	Nargund	(27)
	10.	Jamkhandi	(29)
	11.	Hungund	(32)
	12.	Athani	(33)
	13.	Bijapur	(34)
	14.	Bidar	(43)
	15.	Hirekerur	(46)
	16.	Bagalkote	(50)
	17.	Dharwar	(52)
	18.	Haveri	(53)
	19.	Bailhongal	(54)
	20.	Gulbarga	(59)
	21.	Hukkeri	(62)
	22.	Raibag	(63)
	23.	Soundatti	(68)
	24.	Byadgi	(75)
	25.	Hangal	(76)
	26.	Navalgund	(77)
	27.	Muddebihal	(79)
	28.	Hadagalli	(80)
	29.	Shirahatti	(82)
	30.	Ramdurg	(83)
	31.	Badami	(85)
	32.	Bagewadi	(88)
	33.	Mudhol	(90)
	34.	Koppal	(92)
	35.	Kalghatgi	(93)

contd...

(1)	(2)	(3)	(4)
	36.	Chitapur	(94)
	37.	Mundargi	(97)
	38.	Gangavathy	(98)
	39.	Indi	(99)
	40.	Homnabad	(111)
	41.	Bilgi	(113)
	42.	Harpanahalli	(114)
	43.	Aurad	(115)
	44.	Raichur	(116)
	45.	Shiggaon	(118)
	46.	Kundgol	(121)
	47.	Hospet	(122)
	48.	Yelburga	(123)
	49.	Basavakalyan	(132)
	50.	Ron	(134)
	51.	Kushtagi	(139)
	52.	Lingsagur	(142)
	53.	Sandur	(143)
	54.	Aland	(145)
	55.	Bhalki	(146)
	56.	Sindgi	(151)
	57.	Sedam	(154)
	58.	Yadgir	(155)
	59.	Afzalpur	(157)
	60.	Siruguppa	(158)
	61.	Savannur	(159)
	62.	Shorapur	(161)
	63.	Chincholi	(163)
	64.	Manvi	(165)
	65.	Deodurg	(169)
	66.	Hagaribommanahalli	(170)
	67.	Sindhanur	(172)
	68.	Shahapur	(173)
	69.	Jewargi	(174)

Annexure -IV

Taxonomic Ranking, 1981

Regions	S.No.	Names of Talukas	Rank
(1)	(2)	(3)	(4)
Coastal region	1.	Mangalore	(2)
	2.	Buntwal	(5)
	3.	Udupi	(6)
	4.	Karkal	(7)
	5.	Belthangady	(13)
	6.	Karwar	(14)
	7.	Honavar	(16)
	8.	Puttur	(17)
	9.	Kumta	(18)
	10.	Bhatkal	(19)
	11.	Ankola	(32)
	12.	Coondapur	(46)
Malnad	1.	Bhadravathy	(11)
	2.	Shimoga	(15)
	3.	Sirsi	(23)
	4.	Hassan	(24)
	5.	Chickmagalur	(27)
	6.	Sullia	(28)
	7.	Sagar	(38)
	8.	Yelandur	(42)
	9.	Virajpet	(45)
	10.	Somwarpet	(47)
	11.	Shikaripur	(48)
	12.	Tarikere	(51)
	13.	Koppa	(52)
	14.	Arsikere	(55)
	15.	Hosanagar	(60)
	16.	Narasimharajapura	(62)
	17.	Tirthahalli	(63)
	18.	Kollegal	(66)
	19.	Siddapur	(67)
	20.	Mercara	(69)
	21.	Sringeri	(71)
	22.	Alur	(74)
	23.	Haliyal	(77)
	24.	Mudigere	(79)
	25.	Chamrajnagar	(83)
	26.	Periyapatna	(87)
	27.	Kadur	(110)
	28.	Hunsur	(121)
	29.	Yellapur	(123)
	30.	Sorab	(125)
	31.	Belur	(128)
	32.	Supa	(134)
	33.	Arkalgud	(140)
	34.	Mundgod	(145)
	35.	Khanapur	(148)
	36.	Sakleshpur	(153)

contd...

(1)	(2)	(3)	(4)
	37.	Gundlupet	(154)
	38.	Heggadadevanna Kote	(159)
Southern Maidan	1.	Bangalore	(1)
	2.	Mysore	(3)
	3.	Mandya	(4)
	4.	Davangere	(9)
	5.	Srirangapatna	(20)
	6.	Tumkur	(21)
	7.	Maddur	(22)
	8.	Bangarpet	(30)
	9.	Malavalli	(31)
	10.	Nanjangud	(35)
	11.	Ramanagaram	(37)
	12.	K.R. Nagar	(39)
	13.	Pandavpura	(41)
	14.	Kolar	(43)
	15.	Anekal	(44)
	16.	Chitradurga	(56)
	17.	Challakere	(58)
	18.	Chickkaballapur	(61)
	19.	Channarayapatna	(64)
	20.	Tiptur	(65)
	21.	Nagamangala	(70)
	22.	Channapatna	(80)
	23.	Mulabagal	(85)
	24.	Kunigal	(86)
	25.	Siddlaghatta	(88)
	26.	Nelamangala	(89)
	27.	K.R.Pet	(91)
	28.	Holenarasipura	(92)
	29.	Devanahalli	(93)
	30.	Kanakapura	(95)
	31.	Honnali	(99)
	32.	Hoskoke	(101)
	33.	Magadi	(103)
	34.	Hiriyur	(105)
	35.	Mokalmuru	(107)
	36.	Channagiri	(108)
	37.	Chintamani	(112)
	38.	Doddaballapur	(113)
	39.	Holalkere	(116)
	40.	Sira	(124)
	41.	Malur	(126)
	42.	Chickanayakanahalli	(129)
	43.	Srinivaspur	(130)
	44.	T.N. Pur	(131)
	45.	Kudligi	(135)

contd...

(1)	(2)	(3)	(4)
	46.	Gudibanda	(139)
	47.	Turuvekere	(142)
	48.	Hosadurga	(143)
	49.	Gubbi	(152)
	50.	Koratagere	(155)
	51.	Jagalur	(157)
	52.	Gowribidanur	(158)
	53.	Madhugiri	(162)
	54.	Bagepalli	(169)
	55.	Pavagada	(171)
Northern Maidan	1.	Hubli	(8)
	2.	Belgaum	(10)
	3.	Harihar	(12)
	4.	Bellary	(25)
	5.	Gulbarga	(26)
	6.	Nargund	(29)
	7.	Hospet	(33)
	8.	Bidar	(34)
	9.	Jamkhandi	(36)
	10.	Gadag	(40)
	11.	Gokak	(49)
	12.	Bijapur	(50)
	13.	Mudhol	(53)
	14.	Dharwar	(54)
	15.	Bagalkote	(57)
	16.	Byadgi	(59)
	17.	Sandur	(68)
	18.	Homnabad	(72)
	19.	Ramdurg	(73)
	20.	Bailhongal	(75)
	21.	Ranebennur	(76)
	22.	Bhalki	(78)
	23.	Hangal	(81)
	24.	Gangavathy	(82)
	25.	Badami	(84)
	26.	Basavakalyan	(90)
	27.	Raichur	(94)
	28.	Chikkodi	(96)
	29.	Hukkeri	(97)
	30.	Kalghatgi	(98)
	31.	Hungund	(100)
	32.	Harpanahalli	(102)
	33.	Siruguppa	(104)
	34.	Shirahatti	(106)
	35.	Hirekerur	(109)
	36.	Haveri	(111)
	37.	Shiggaom	(114)
	38.	Soundatti	(115)
	39.	Raibag	(117)
	40.	Bilgi	(118)

contd...

(1)	(2)	(3)	(4)
Northern Maidan	41.	Savannur	(119)
	42.	Aurad	(120)
	43.	Athani	(122)
	44.	Chitapur	(127)
	45.	Navalgund	(132)
	46.	Koppal	(133)
	47.	Ron	(136)
	48.	Indi	(137)
	49.	Hadagalli	(138)
	50.	Bagewadi	(141)
	51.	Yadgir	(144)
	52.	H.B. Halli	(146)
	53.	Afzalpur	(147)
	54.	Sedam	(149)
	55.	Muddebihal	(150)
	56.	Aland	(151)
	57.	Mundargi	(156)
	58.	Sindnanur	(160)
	59.	Manvi	(161)
	60.	Chincholi	(163)
	61.	Kundgol	(164)
	62.	Lingsagur	(165)
	63.	Kushtagi	(166)
	64.	Sindgi	(167)
	65.	Yelburga	(168)
	66.	Shorapur	(170)
	67.	Shahapur	(172)
	68.	Deodurg	(173)
	69.	Jewargi	(174)

Annexure-V

Development Cluster - 1971

Group 1.	Group 2.	Group 3.
Coastal region	Coastal Region	Coastal Region
Mangalore	Nil	Belthangady
Malnad		Buntwal
Nil	Malnad	Coondapur
Southern Maidan	Mudigere	Karkal
Bangalore	Sringeri	Puttur
Mandya	Tarikere	Udipi
Mysore	Mercara	Honavar
	H.D. Kote	Kumta
Northern Maidan	Kollegal	
Hubli	Bhadravathy	Malnad
	Shikaripur	Sullia
	Shimoga	Southern Maidan
	Haliyal	Nil
	Southern Maidan	Northern Maidan
	Davangere	Athani
	Srinivaspur	Belgaum
	Maddur	Chikkodi
	Srirangapatna	Gokak
	Northern Maidan	Hukkeri
	Hospet	Raibag
		Bailongal
		Bellary
		Hadagalli
		Bagalkote
		Bagewadi
		Bijapur
		Hungund
		Indi
		Jamkhandi
		Gadag
		Hirekerur
		Kundagol
		Mundargi
		Nargund
		Navalgund

contd...

Development Cluster -1971 (Contd.)

Group 4.	Group 5.	Group 6.
Coastal region	Coastal Region	Coastal region
Ankola	Karwar	Nil
Bhatkal		
	Malnad	Malnad
Malnad		
	Chickmagalur	Kadur
Khanapur	Arsikere	Gundlupet
Koppa	Chamrajnagar	
Narasimharajapura	Sagar	Southern
Alur	Sirsi	Maidan
Arkalgud		
Belur	Southern	Kudligi
Hassan	Maidan	Challakere
Sakeshpura		Hiriyur
Somwarpet	Channapatna	Hosadurga
Virajpet	Doddaballapur	Jagalur
Hunsur	Kanakpura	Mokalmuru
Periyapatna	Ramnagaram	Begapalli
Yellandur	Chickkaballapur	Gudibanda
Hosanagar	Chintamani	Mulbagal
Sorab	Kolar	Channagiri
Tirthahalli	Tiptur	Chickanayakanahalli
Mundgod	Nanjangud	Madhugiri
Siddapur		Pavagada
Supa	Northern	Sira
Yellapur	Maidan	
		Northern
Southern	B. Kalyan	Maidan
Maidan	Badami	
	Harihar	Soundatti
nekal	Haveri	Ramdurga
anahalli	Ranebennur	Harpanahalli
skote	Shirahatti	Hagaribommanahalli
gadi	Aland	Sandur
lamangala	Shorapur	Siruguppa
tradurga	Yadgir	Aurad
lkere	Gangavathy	Bhalki
narayapatna	Koppal	Bidar
narasipur		Homnabad
garpet		Bilgi
ribidanur		Muddebihal
ur		Mudhol
dlaghatta		Sindgi

contd...

Development Cluster - 1971 (Contd.)

Group 4.	Group 5.	Group 6
K.R Pet		Byadgi
Malavalli		Dharwar
Nagamangala		Ron
Pandavpura		Shiggaon
K.R. Nagar		Afzalpur
T.N. Pur		Chincholi
Honnali		Savannur
Gubbi		Chitapur
Koratagere		Gulbarga
Kunigal		Jewargi
Tumkur		Sedam
Turuvekere		Shahapur
		Deodurg
Northern		Lingsagur
Maidan		Manvi
		Raichur
Hangal		Sindhanur
Kalghatgi		Yelburga
		Kusthagi.

contd...

Annexure -VI

Development Cluster - 1981

Group 1.	Group 2.	Group 3.
Coastal region	Coastal region	Coastal region
Mangalore	Belthangady	Buntwal
Malnad	Ankola	Coondapur
Bhadravathy	Bhatkal	Karkal
Shimoga	Honavar	Puttur
Southern Maidan	Karwar	Udipi
Bangalore	Kumta	Malnad
Davangere	Malnad	Tarikere
Mandya	Chickmagalur	Arsikere
Mysore	Mudigere	Mercara
Northern Maidan	Narasimharajapura	Chamrajnagar
Belgaum	Sringeri	Hunsur
Harihar	Alur	Kollegal
Hubli	Hassan	Southern Maidan
Gulbarga	Somwarpet	Kanakpura
	Virajpet	Ramanagaram
	Hosanagar	Challakere
	Sagar	Hiriyur
	Sorab	Holenarasipur
	Haliyal	Chickkaballapur
	Mundgod	Chintamani
	Siddapur	Malavalli
	Sirsi	Nanjangud
	Supa	Sira
	Yellapur	Tiptur
	Southern Maidan	Northern Maidan
	Doddaballapur	Athani
		Chikkodi
		Gokak
		Hukkuri
		Soundatti
		Ramdurg

contd...

Development Cluster - 1981 (Contd.)

Group 1.	Group 2.	Group 3.
		Bailhongal
		Harpanahalli
		Basavakalyan
		Homnabad
		Badami
		Hungund
		Mudhol
		Haveri
		Nargund
		Savannur
		Aland
		Koppal
		Shirahatti

contd...

Development Cluster - 1981 (Contd.)

Group 4.	Group 5.	Group 6.
Malnad	Malnad	Malnad
Kadur	Koppa	Khanapur
Arkalgud	Sullia	Belur
Gundlupet		Sakleshpur
Periyapatna	Southern Maidan	Heggadadevannakote
Yellandur		
Shikaripura	Kudligi	Southern Maidan
Tirthahalli	Chitradurga	
	Pavagada	Hosadurga
Southern Maidan		Turuvekere
	Northern Maidan	
Anekal		Northern Maidan
Channapatna	Raibag	
Devanahalli	Bellary	Sirguppa
Hoskote	Hadagalli	Muddebihal
Magadi	Hospet	Sindgi
Nelamangala	Hagaribommanahalli	Shiggaon
Holalkere	Bidar	Chincholi
Jagalur	Bagalkote	Chitapur
Molkalmuru	Bagewadi	Jewargi
Channarayapatna	Bijapur	Sedam
Bagepalli	Bilgi	Shahapur
Bangarpet	Indi	Shorapur
Gowribidanur	Jamkhandi	Yadgir
Gulibanda	Dharwar	Deodurg
Kolar	Gadag	Kushtagi
Malur	Hirekerur	Lingsagur
Mulabagal	Kundgol	Manvi
Siddlaghatta	Mundargi	Sindhanur
Srinivaspur	Navalgund	Yellburga
K.R. Pet	Ranebennur	
Nanjanagudur	Ron	
Nagamangala	Afzalpur	
Pandavpura	Gangavathy	
Srirangapatna	Raichur	
T.N. Pur		
K.M. Nagar		
Chennagiri		
Honnali		
Shickanayakanahalli		
Hubli		
Honnatagere		
Hunigal		
Nadhugere		
Gurkur		

contd...

Development Cluster - 1981 (Contd.)

Group 4.	Group 5.	Group 6.
Northern Maidan		
Sandur		
Aurad		
Bhalki		
Byadgi		
Hangal		
Kalghatgi		

contd...

Appendix

Technical Note

Factor Analysis

The technique of factor analysis reduces the original set of variables to a much smaller set which accounts for most of the reliable variance of the initial variable pool. The smaller set of variables can be used as operational representatives of the constructs underlying the complete set of variables. The basic factor analysis may be put as follows :-

$$Z_j = a_{j1} F_1 + a_{j2} F_2 + \text{-------} + a_{jm} F_m + d_j u_j .$$

$$(j = 1\text{------}n)$$

Where each of the n observed variable is described linearly in terms of m (m n) usually common factors and a unique factor. The common factors which are uncorrelated between themselves account for the correlation among the variables while each unique factor accounts for the remaining variance (including error) of that variable. The model may be explicity written for variable j for individual i as -

$$Z_{Ij} = \sum_{k=1}^{r} f_{jk} h_{ik} + d_j u_{ij}$$

Zij = subject i's Z Score on variable j

hik = subject i's Z Score on hypothetical variable k

contd...

u_{ij} = Subject I's Z score on the unique variable associated with the original variable j.

f_{jk} and d_j are co-efficients to be estimated from the data.

$f_{jk}\ h_{ik}$ represents the contribution of the corresponding factor to the linear composite. It is assumed that the factors have zero means and unit variances which simplifies the equations and results in little loss of generality. The unique factors are independent of one another and also independent of the 'm' common factors.

Written in matrix form, this becomes

$$Z = \begin{bmatrix} z_{11} & z_{12} & \cdots & z_{1m} \\ z_{21} & z_{22} & \cdots & z_{2m} \\ & & & \\ z_{n1} & z_{n2} & \cdots & z_{nm} \end{bmatrix} = \begin{bmatrix} z_1 & z_2 & \cdots & z_m \end{bmatrix} = \begin{bmatrix} H/U \end{bmatrix} \begin{bmatrix} F \\ D \end{bmatrix}$$

Where F (the common factor pattern) is an m x p matrix giving the factor co-efficients f_{jk}; D is a diagnol matrix whose ith main diagnol entry is d_j ;

$$H = \begin{bmatrix} h_1 & h_2 & \cdots & h_p \end{bmatrix}_{N \times P}$$

giving the subjects (observations) score on the p common factors and U is N x m matrix giving subjects score on the m unique factor.

contd...

The purpose of unique factors is to eliminate the unique variance from the description of the relationship among the original variables for which description only the P (usually m) common factors are employed. The first principal factor (PF_1) accounts for as large a percentage of the common variance as possible, with its associated eigen value being equal to the sum of the aquared loadings. The principal factor extraction procedure is such that each factor accounts for the maximum possible amount of the variance of the variables being factored. The first factor from the correlation matrix consists of that weighted combination of all the variables which will produce the highest squared correlations between the variables and the factor since the squared correlation is a measure of the variance accounted for. The second factor is extracted so that it is uncorrelated with the first factor. This factor maximises the amount of variance extracted from the residual matrix after the first factor has been removed. Each succeeding factor is extracted such that a given number of factors account for as much of the variance as possible.

The factor analysis also yields a structure which gives the correlation of the original variables with the factors. The factor structure can be written as;

contd...

$$S = FR_h$$

where $R_h = (r_{hi}\ h_j)$; $F = 1 \text{ ----- } p$

and $S = \begin{bmatrix} s_{11} & s_{12} & s_{1p} \\ s_{21} & s_{22} & s_{2p} \\ & & \\ s_{n1} & s_{n2} & s_{np} \end{bmatrix}$

This relationship implies that S and F are identical in the case of orthogonal vectors (i.e. when the factors are uncorrelated among themselves) in which case $R_h = I$.

Taxonomy

Taxonomy is only a technique of ranking or clustering of objects, entities etc. If only one aspect or attribute of an entity is considered and if that attribute is quantifiable, then the arithmetic magnitude of the attribute determines its rank. But if more than one attribute is to be considered, then ranking becomes quite complex. Take for instance, a class of students and the problem of ranking them according to the marks they have scored in an examination. The usual method adopted here is to add the marks obtained by student in different subjects and rank him on the basis of aggregate marks. The tacit assumption made here is that the

contd...

intellectual calibre required to score a unit mark say, in English is the same for another like mathematics which is not a correct assumption.

Development is not a uni-dimensional process. On the contrary, it is composed of many sub processes each relating to a concrete component. When viewed from a multi-dimensional angle, inequalities become difficult to measure. Let us imagine that at a given historical moment, several countries are placed as points in a two-dimensional space described in terms of two coordinates X and Y. Let us also suppose that the two coordinates relate to variables which characterise the development level of every country. If the operation of locating countries in such space is conducted for successive historical moments t_1, t_2-----t_n, then successive situations will be seen which arise out of the race. For every such situation, one can identify the winning post or the 'ideal country'. The concept of such a point of reference in n-dimensional space for measurement of development levels was introduced by Z.Hellwig in the paper "procedure of evaluating high level manpower data and typology of countries by means of the taxonomic method." This was also popularised by Zyqmunt Gostkowski of the polish academy who used it in a study "on the evolution of developmental gaps between rich and poor countries, 1955-65".[1]

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[1] UNESCO, International Social Science Journal, Vol. XXVII, No. 1, 1975.

In our case, the unit of analysis being talukas, suppose it is possible to posit an 'ideal taluka' and suppose further that it is possible to measure the distance of an actual taluka from the 'ideal', then obviously the distance is a measure of the rank of the taluka. Now which is the ideal taluka ? The ideal taluka is one whose value equals the highest (or lowest if the variable in question is an indicator of backwardness) for the variable x and so on for the other variables. Thus the ideal taluka is built, as it were from theactual talukas and is therefore, a practical ideal. The arithmetic of finding the distance of an actual taluka from the ideal taluka is the same as finding the distance of one corner of a room from its diagnolly opposite corner, given the leggth, breadth and height of the room. This is called Euclidean distance. The formula for arriving at the distance is -

$$d\ (c,\ I) = \sqrt{(c_x - I_x)^2 + (c_y - I_y)^2 + \text{----} + (c_n - I_n)^2}$$

where c_x----c_n are values of variables x to n for any one taluka.

I_x---- I_n are the ideal values for the variables x to n.

It can be seen that this is simply pythogoras theorem for the derivation of the hypotenuse from the two adjacent sides of a right-angled triangle. Since the numerical values are in different units and are to different scales the whole exercise is carried out on standard variates.

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Cluster Analysis:

The objective of cluster analysis is to group either the date units or the variables into clusters such that the elements within a cluster have a high degree of natural association among themselves while the clusters are relatively distinct from one another. Cluster analysis may be used to reveal structure and relations in the data. The results of a cluster analysis are an aid to reasoning from the date to explanatory hypotheses about the data. The clusters may also contain elements of novel interpretation for what is already known, as well as suggestions about previously unnoticed regularities and relations. In other words, the set of clusters generated by a cluster analysis procedure will produce combinations of entities which otherwise might never be considered for examination but reveal aspects of the data which are self evident in retrospect. After the talukas, in our exercise, have been brought together, we are able to perceive the structural similarities in them. Such a grouping requires no specialised technique if the variable under consideration is only one. But in our analysis where we are taking together more than one variable, resorting to a tool like cluster analysis becomes necessary.

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The clustering technique used here does not bring out hierarchic clusters since by the method of taxonomy and factor scores, we have already ranked the talukas. Given the fact that our interest is to understand the basic similarities between groups of talukas, we have adopted 'Euclidean cluster' analysis as developed by Beale in which, the clusters are formed around a cluster centre[2]. This method is also called the nearest centroid sorting where a set of seed points can be computed as the centroids of a set of clusters and a set of clusters can be constructed by assigning each data unit to the cluster with the nearest seed point (or centroid).

The input requirements for this method are the matrix of observations, the number of clusters and the initial cluster centres. Because of a specific requirement in the programme, namely, the talukas should be a multiple of the number of clusters, the number of clusters was restricted to 6. Initially each observation is allocated to its closest cluster centre. The means of the clusters are then calculated and are taken to be the new cluster centres. At the same time, the sum of squared deviations of the observations from their respective cluster centres is computed and checked in turn

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2. Sparks D.N - Euclidean cluster analysis, Applied Statistics, Vol. 22, Royal Statistical Society, London.

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to see if an allocation to a different cluster centre reduces the sum of squares. It is clearly an improvement to reassign an observation from cluster 'k' to cluster 'i' if it is nearer the centre of the latter. That is if,

$$d_i^2 < d_k^2$$

Where d_i is the distance from the centre of cluster 'i'. A more effective criterion involves reassigning the observation if the squared deviation from the cluster'i' is less than that from the centre of cluster 'k' even when the cluster centres are simultaneously repositioned. That is when

$$\frac{n_i}{n_i+1} d_i^2 < \frac{n_k}{n_k+1} d_k^2$$

where n_i is the number of observations in cluster 'i'.

The usual method involves, starting from a specified number of clusters and decreasing (or increasing) by one cluster at a time until a pre-determined lower (or upper) number of clusters is reached. Beale also suggests a pseudo P-test for comparison of significance of different solutions.

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The criterion for choosing two clusters to be merged is that the increase in the sum of squares of deviation shall be minimised. That is, clusters 'k' and 'i' are chosen such that,

$$n_k n_i d_{ki} \; / (n_k + n_i)$$

is a minimum where d_{ki} is the distance between cluster centres. It should be borne in mind that the clusters so formed do not reveal a hierarchic structure.

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CHAPTER VI

SUMMARY AND CONCLUSIONS

6.1 The foregoing study has been an attempt at understanding the spatial element in regional planning. An attempt is first made to elaborate some of the important concepts and theories in regional development as are applicable to clarify the aspects of spatial organisation of the economy. Economic development takes place spatially around nodes and these nodes by their interaction with the surrounding areas give rise to a hierarchy of nodes which are functionally integrated. Thus, nodality and the hierarchic features of the space element are central to planning at different levels of the political administrative framework involved in the planning process. In order to assess how far India's economic development plans have built in the space element, a review of the Five Year Plans has been attempted.While examining the theoretical aspects, an analysis of the studies undertaken so far in the measurement of regional disparities has also been attempted[1]

6.2 Spatial planning has to integrate the areal and locational components, without which disparities set in at the grass-root level and get accentuated at

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1. Ref. pp 24-30 for details

higher levels. Such an approach provides for integrated development of physical and human resources. Spatial inequality is inherent in the development process. Hence regional disparities that are caused by the development strategy need to be evaluated by systematic study of the regional structure and processes of development.

6.3 Keeping this aspect in view, the study formulated the following objectives and used Karnataka as a study area -

(i) To trace the interaction between the structure and process of economic development of sub-regions within Karnataka;

(ii) To evaluate the levels of development of the regions at two points of time-1971 and 1981; and

(iii) To examine whether planning has succeeded in bridging the gap between the 'developed areas' and the 'less developed' ones over the years and also evaluate factors that have narrowed or accentuated regional disparities in development related to spatial organisation of the economy.

6.4 Planning in India is on the basis of a multi-level framework of administrative units with linguistic States as the most powerful regions within

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the nation. Inter-State comparison of the structure and variations in levels of development was attempted first with a view to providing a background to the problem of development and disparities. An inter-State comparison of Karnataka with other States brought out that in terms of overall development, the State was among the developed ones with a progressive rate of industrialisation and a relatively balanced urbanisation. However, the intra-regional variations within the State appear to be quite sharp. In a spatial temporal development process, a State which already has sharp intra-regional contrasts will have widening disparities as it is happening in the case of Maharashtra where the Bombay-Pune tract continues to grow at the expense of the rest of the regions in the State. As against this, a homogeneous State like Punjab with uniform levels of land quality and irrigation facilities has a more balanced development of its parts. In cases where either due to resource availability or the presence of certain other advantages, economic activities get clustered in certain areas resulting in stagnation of others, the regional development policy has to bring about dispersal of activities and a balanced spatial organisation of the economy.

6.5 The sub-regions of Karnataka

The sub-regions of the State identified on the basis of their physical characteristics and resource

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bases show marked homogeneity within and sharp variations in their spatial processes and patterns of development.These are, traceable to the fact that the sub-regions were part of different provinces before the States' reorganisation. This is also evident from the economic linkages of the different regions like the Bombay-Karnataka's orientation to Maharashtra and Hyderabad-Karnataka's links with Hyderabad.

6.6 The four sub-regions of the State are the Coastal region, the Malnad, the Southern Maidan and the Northern Maidan. Regional structure brought out by the analysis of secondary data against large scale topographical maps showed the following characteristics. The Coastal region is a narrow elongated strip adjoining the Malnad with wider coastal plains in the south and a rugged, forested foot hill region in the north. The dominant crops of the region are paddy, groundnut, coconut and spices. Spatial organisation of the economy of the region is centred on small towns (port towns) which are strung along the coast longitudinally. Though the region is homogeneous in many ways, the northern part is economically oriented to Bombay and the southern part to the former Princely State of Mysore and parts of Tamil Nadu[2].

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2. Ref. pp 72-74 for details.

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6.7 The Malnad, a forested hilly region is one with sharp intra-regional contrasts. Due to its terrain, the cultivable land is scattered amidst forests or along the narrow valley plains. The region's cropping pattern comprises paddy, coconut, plantation and horticulture. The villages are very small and inaccessible in places. Malnad is also the least urbanised in the State - an indication of a weak spatial organisation of the economy. Inspite of having a rich resource base (Iron Ore, Manganese and Hydro-electric Power), industrialisation has remained peripheral to the region. The three different sub-regions of Malnad also differ in their economic interaction as these were parts of different provinces before the reorganisation of the State[3].

6.8 Southern Maidan is a region with distinct patterns and processes of socio-economic development as it represents the core region of the former Princely State of Mysore. The socio-economic development of the region has been aided by large scale irrigation, electrification and industrialisation. The important crops of the region are ragi, millets, groundnut and sugarcane. The level of urbanisation is very high with the urban-industrial centres, by and large, confined

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3. Ref pp 74-76 for details.

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to the axis along Bangalore-Mysore-Kolar. As against the southern part of the region around old Mysore, the northern part is relatively less developed [4].

6.9 The Northern Maidan is marked by a vast expense of rich black soil under semi-arid conditions. The settlements are generally large in size. Though, the region has a number of small towns, these have not emerged as ubran-industrial centres. Owing to poor irrigation, the Northern Maidan has a crop combination of millets, groundnut and cotton. The economy of the region is externally oriented to Hyderabad-Secunderabad and Bombay as the eastern part was part of Hyderabad Karnataka and the Western portion part of Bombay-Karnataka region[5].

6.10 <u>Measuring levels of Development - Factor analysis, taxonomy and cluster analysis.</u>

In order to assess the levels of development and understand the reasons for disparities as between the sub-regions of the State, variables representing land-use, human-settlements, urbanisation, extent of industrialisation and infrastructure development were selected and these were subject to factor analysis,

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4. Ref. pp 76-78 for details.

5. Ref. pp 78-79 for details.

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taxonomic ranking and cluster analysis. These data were collected and analysed in respect of 175 talukas of the State. Use of small administrative units such as the taluka served to reflect regional realities in spatial organisation and processes of development. The exercise was carried out at two points of time, namely, 1971 and 1981 so as to capture the changing patterns of development in the regions and also evaluate the progress of relatively less developed areas within the State[6].

6.11 Before analysing the results of factor analysis and taxonomy, an examination of the correlation coefficients brought out the positive association between urbanisation and industrialisation. The densely populated areas were infrastructurally well developed and this was reflected in the high positive correlation between density and infrastructural variables like spread of banks, co-operative societies, hospitals, dispensaries and communication facilities. As against this, small rural settlements had negative associations with infrastructural facilities like schools, all weather roads, etc. underlying thereby, the principle of a minimum'threshold population'being available within an area for provision of facilities. The patterns of

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6. Ref. pp 129 - 137 for details.

contd...

association as brought out by the correlation coefficients also showed that the well irrigated agriculturally developed areas were better served with infrastructural facilities[7].

6.12 In the factor analysis, the first ten factors explain 70 per cent of the variation in the levels of development of the talukas. The talukas were then ranked on the basis of their scores on factor-I which accounted for the largest percentage of variation. However, factor I essentially represented industry - infrastructure development which is only one aspect of development. Therefore, variables representing all the 10 factors were subjected to further anlysis of taxonomy. Under this an 'ideal' taluka is identified from among the observations and the distance of each taluka from the ideal is calculated. The talukas are then ranked in terms of distances where the shorter the distance, higher will be the rank of the taluka and vice-versa. The cluster analysis was also attempted to understand the similarities or differences in the spatial structure and process of development as between areas. For example, two equally developed areas may be having a totally different resource base giving rise to differing patterns of development. Cluster analysis brings together talukas

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7. Ref. pp 137 - 141 for details.

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with similar characteristics which is important for evolving different strategies for different areas [8].

6.13 Results of the analyses

The results of factor analysis and taxonomic ranking are similar in many respects. The 'very highly developed' areas brought out by factor analysis and the first ten talukas of the taxonomic ranking were more or less the same. Likewise, areas at the bottom end of the scale in taxonomy and the 'least developed' in terms of factor scores were similar. In the cluster analysis, though there is no ranking of the clusters as such, the highly developed and the least developed talukas have formed distinct clusters of their own. The results of the three analyses brought out the following : -

(i) The spatial structure and the process of development are distinctly different among the sub-regions of Karnataka and these to a large extent explain the variations in levels of development within and between the sub-regions. While the Coastal region shows minimum intra-regional variations, there are striking variations in the levels of development within Malnad. However, Malnad as a whole shows higher level of development

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8. Ref. pp 142 - 144 for details.

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in 1981 compared to 1971. The southern part of Southern Maidan (the core region) is very highly developed in relation to the rest of the region. Northern Maidan by far comes out as the least developed in the State both in 1971 and 1981 accounting for 79 per cent of the least developed areas in the State and 80 per cent of the population living in them. (Figs. 29 to 32).

(ii) In the Coastal region, with all the talukas falling in the 'developed' category, the region as a whole comes out as developed. As such, the spatial arrangement of human settlements and land use has provided easy access to infrastructural facilities and other amenities. The overall development of the region has also been made possible by a strong agricultural base, intra/inter regional accessibility (with a coast line providing external links) and the emergence of Marmagoa - Panaji as economic nodes [9].

(iii) The Malnad which has wide intra-regional variations in the resource structure, human

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9. Ref. pp 151 - 153 for details.

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settlements etc. is a region with differing levels of development within. The northern and the southern extremes and the areas towards the east along the Maidan are relatively less developed than the rest of the region. Between 1971 and 1981, the upward movement of the region is quite noticeable. Large parts of central and northern Malnad have moved upward in the scale of development which is primarily due to a diversified agriculture, emergence of certain towns as market centres and also industrialisation to some extent. Though, the northern and the southern extreme parts are less developed, the causes for lack of development are quite different[10].

(iv) Southern Maidan which has the most developed areas in the State also has areas with low levels of development. The core region from Kolar to Mysore comes out as the most developed with a high degree of industrial and infra-structural development. This part of the region also has the benefit of a well laid irrigation system. As against this, the northern part of the region falling in the

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10. Ref. pp 153 - 156 for details.

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transitional zone between Malnad and Maidan falls in the category of extremely low in terms of overall development. With the further strengthening of the core region, the disparities within the region show signs of widening [11].

(v) The Northern Maidan with the exception of areas around Belgaum, Hubli-Dharwar, Harihar and Bellary-Hospet appears to be a vast stretch of underdeveloped area. The Hyderabad-Karnataka (north-eastern part) is relatively less developed than the rest of the region and also happens to be the least developed in the State. The region is characterised by low level of agricultural productivity, low levels of irrigation, low industrialisation and lack of infrastructural facilities. Though the region has the largest share of towns in the State, they have not acted as nodes of development. The human settlements inspite of being large lack both social and economic infrastructure[12].

(vi) In the cluster analysis, the highly developed talukas and the least developed talukas have got into two separate clusters. While the highly developed areas, as in the other two

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11. Ref. pp 156 - 158 for details.

12. Ref. pp 158 - 160 for details.

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analyses appear as isolated spots, the least developed areas are a cluster of talukas in the Northern Maidan. In between the two extremes, there are combinations of developed talukas getting grouped with the less developed ones.

(vii) Between the years 1971 and 1981, the clustering pattern reveals certain uniformity in the development pattern of contiguous areas which is due to the fact that neighbouring talukas (cutting across regions) have got into one group. For instance, whole of Northern Malnad and the northern part of the Coastal region appear in one group in 1981. Similarly, most parts of Southern Maidan have fallen into a single group. Equally important, however, is the fact that even within a small region like the Coast, talukas fall in different clusters (the northern and southern part of the coastal region are in different clusters) which only highlights the need for micro level area planning and aggregation of plans from lower levels [13].

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13. Ref. pp 162 - 163 for details.

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(viii) An important aspect of cluster analysis has been that the nodality as the basis of spatial organisation and the resultant variations in levels of development has been brought out very well. This is clear from the southern part of the Coastal region getting grouped with the talukas of Belgaum and Bijapur (i.e. north-western part of Northern Maidan). These two areas differ widely in their resource structure and even levels of development. However, there is similarity in the spatial organisation of economic activities in these two areas where middle order towns (class-III) act as nodes of development. Both these areas have large villages (with a population of 5000-10,000) and medium towns - class III(with a population of 20,000-50,000). Spatial planning, therefore, ought to take note of the type and size of settlements for provision of infrastructure facilities and amenities so that some of thememerge as nodal centres. This takes us on to the principle of 'centrality' whereby central places have to be so chosen that a minimum threshold population is available to make the provision of facilities viable[14].

14. Ref. pp 168 - 170 for details.

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(ix) In addition to class I cities (over 100,000 population) registering considerable progress, the areas that have moved from 'highly developed' to 'very highly developed' or 'medium' to 'high' categories are those that have either had a spurt in their industrial growth (Sirsi, Chickmagalur in the Malnad and Harihar and Tumkur in Southern Maidan) or a productive agriculture made possible by augmentation of irrigation facilities (Raichur, Bellary, Gangavathy, Sindhanur and areas around Belgaum in Northern Maidan). Creation of market centres have also led to the emergence of towns which have acted as nodes of development in the Malnad(Sirsi and Chickmagalur - trading in plantation crops and spices) and these are directly the results of a commercialised agriculture. Area development, therefore, ought to mean provision of economic inputs which bring into being a self-sustaining process of economic development and not merely the promotion of adhoc schemes.

(x) Overall, the development profile brings out the emergence of relatively small areas of high levels of development around high order urban

contd...

centres with strong industrial base. This is only indicative of the inherent urbanisation pattern, namely, influx of population in to areas having initial advantages of developing as towns which start growing further with the coming in of services and industries, e.g. Bangalore-Mysore-Kolar; Hubli-Dharwar; Belgaum; and Shimoga-Bhadravathy. As against this, development has nearly by-passed the least developed areas of the State which have remained static over the ten year period 1971-81. The north-eastern part of Northern Maidan (Gulbarga-Raichur), the transitional zone around Chitradurga in Southern Maidan and the southern most part of Malnad emerged as the least developed both in 1971 and 1981. All the industry concentrations are also cities which are situated along the major transport routes in the State. The development of transport which is one of the vital inputs has nearly by-passed large areas in the Northern Maidan and these also happen to be in the least developed areas in the State (Ref. fig 33).

contd...

KARNATAKA
DISTRIBUTION OF TOWNS & INDUSTRIES
1981

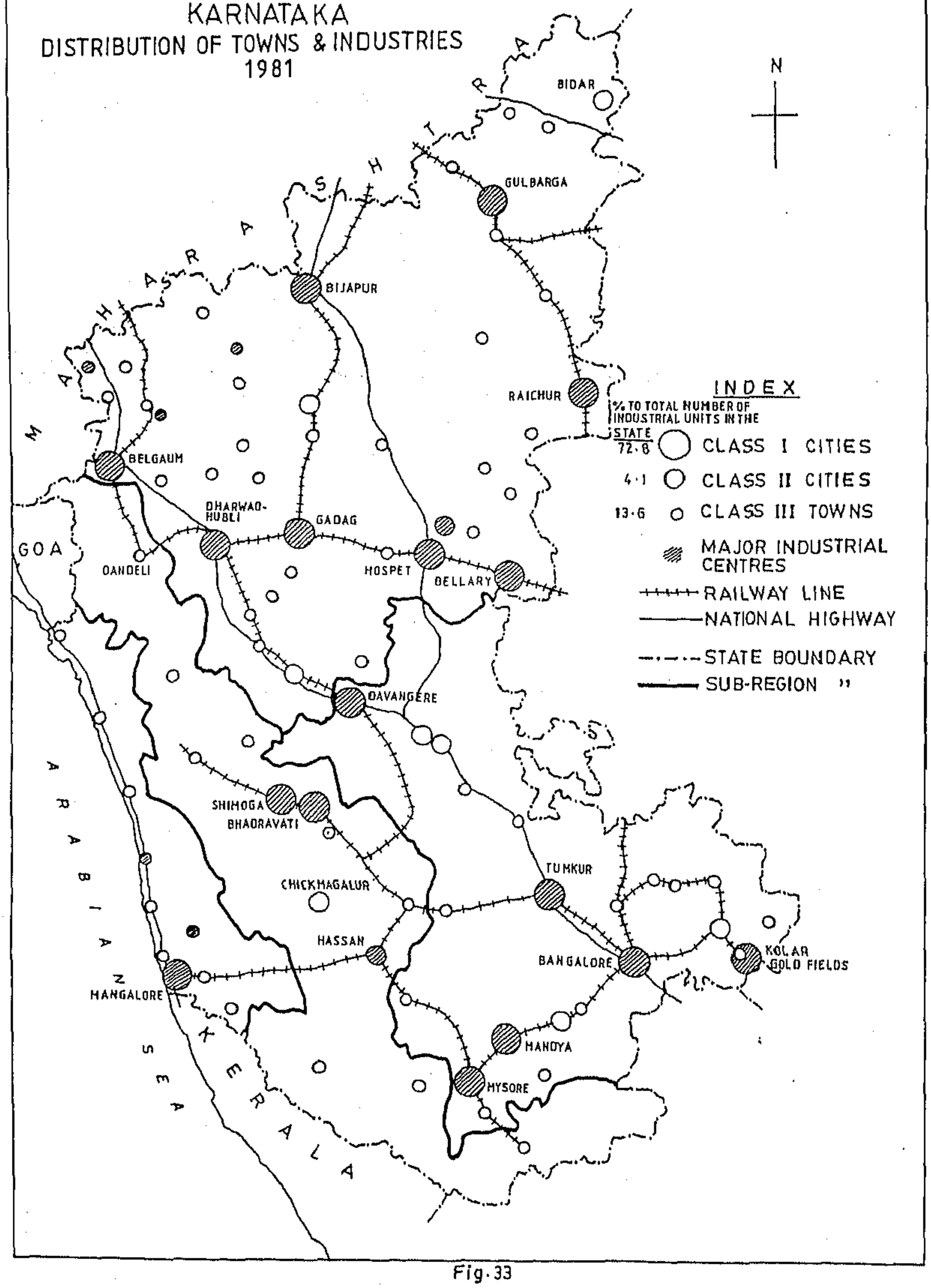

Fig. 33

6.14 Need for spatial approach

The lopsided pattern of development with the least developed areas remaining stagnant is primarily because our regional development strategies have been adhoc measures aiming either at creation of income or employment in the short run without providing the necessary economic inputs. Regional development plan class for simultaneous tackling of'sectoral'and'spatial'aspects. Given the fact that the backward area is part of a larger region, the activities for a backward region should be so planned that the region developes forward and backward linkages with its surrounding areas. Even the concept of 'Growth Centres' which was introduced in the Fifth Plan and is once again being emphasised will not produce the desired results unless the Growth Centres are developed as nodes around which economic activities get organised, and in doing this, the resources of the region have to be given due weightage.

6.15 In planning for the less developed region, there can be no uniform solution as developmental problems differ from region to region and sometimes even within a region. It has earlier been brought out that the reasons for lack of development of the Malnad are vastly different from that of Northern Maidan. Even within a region, the resource structure and the differing nature of problems necessitate different approaches as in the case of northern and southern Malnad. A uniform set of prescriptions administered at the level of Districts

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will serve no purpose unless sub-regional plans are drawn up for smaller units like groups of talukas to be built into the State Plan. The two way process, namely, disaggregation from above and aggregation from below with due regard to the needs and potentials of an area is the essence of area planning which is totally missing in our regional plans. The District plan as it exists now is only a disaggregation of financial resources with no assessment or evaluation of local needs and priorities. The failure to take into consideration, the local needs have resulted in thestagnation of less developed areas.

6.16 Policy implications for planning for less developed regions.

Spatial integration of the sub-regions of Karnataka will have the following policy implications:-

Coastal Region:

The northern part of the region which is relatively less developed than the coastal plains requires development of towns with the provision of economic inputs, particularly industrialisation based on local resources - development of fishery and forest based industries. Also strengthening of Karwar into an urban-industrial town would lead to a balanced development by bringing about north-south integration within the region.

contd...

Malnad:

The northern and southern extremities which are less developed are qualitatively different. The northern Malnad, given its rich resource base requires fuller exploitation of resources which calls for provision of infrastructure facilities(particularly transport) as well as setting up of industries based on local resources. Efforts should be made to arrest the region's resources from going out.

The southern Malnad (Gundlupet, H.D. Kote, Hunsur, Kollegal) which is close to the urban/metropolitan centres falls in the rain-shadow region. Provision of irrigation facilities and creation of linkages with the urban centres by setting up support facilities would pave the way for development.

Overall, improvement in accessibility and development of transit centres into urban centres could bring about spatial organisation of the economy around nodes. The external orientation of the Malnad economy till recently has been one of the limiting factors for development. Emergence of strong nodes, therefore is imperative to internally integrate the economy. This is possible if local resources are used for the benefit of the local people. In other words, the region requires an integration of resources to the human settlements.

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Northern Maidan and the transition Zone

The main reason for backwardness of these areas has been identified as drought and famine. This area requires more of drought proofing measures such as afforestation, contour bunding, soil conservation etc. As agriculture is not very productive, promotion of allied activities like animal husbandry, sericulture etc. which may bring in its wake related services needs to be given priority.

Though the region has the advantage of a number of large villages and small towns, these do not act as centres of development. Spatial organisation around nodes is nearly absent in the region. The rural settlements should be made more dynamic by setting up of market centres and provision of infrastructural facilities. The newly irrigated areas around Raichur and Bellary are gradually emerging to be nodal areas in the region with a good degree of urban-industrial growth. Regional development policy, by suitably locating activities has to integrate these emerging nodal areas with other growth points within the region. This would stop the external orientation of the region. Minor irrigation facilities and promotion of small scale industries (particularly agro-processing) are other measures that can promote development.

6.17 Thus areal planning is essentially an exercise in bringing about spatial integration of economic

contd...

activities and not just promotion of schemes that have no areal component in them. The integrated approach to planning besides integrating sectoral and spatial dimensions should aim at integrating the region's resources to the development of its people. The problems of backward areas and those of the people living there have not been tackled simultaneously. In India, there is a close affinity between poverty which is an inter personal concept and backward areas which is an inter-regional concept. It is, therefore, necessary to examine the environment-resources and people in an integrated manner. Poverty alleviation programmes like the Integrated Rural Development Programme or the National Rural Employment Programme only aim at creation of employment opportunities by operating a continuous stream of projects and are only beneficiary oriented. Instead of tackling the problem piece-meal, the regional physical plan, by locating activities in tune with the resources of the region should set in motion mutually supporting activities with forward and backward linkages. The regional plan in the context of planning for less developed areas should aim at creating and strengthening nodal points within these areas to begin with which gradually start interacting with bigger nodes bringing in its wake a chain of activities.

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6.18 In the case of Karnataka, the attempted decentralisation of planning in the form Zilla Parishad and Mandal Panchayat plans is a welcome step. The decentralised planning process aims at planning from the grass-root level where the State plan will be drawn up on the basis individual Zilla Parishad plans based on the local conditions and requirements. The renewed attempt at decentralisation is out of the realisation that District Planning exercises which were plans imposed from the State level did not pay adequate attention to the local needs. If the decentralisation has to succeed, the smaller unit level plan should be based on a careful resource inventory and should integrate the sectoral and spatial aspects of planning. There is also a need for case studies of selected areas like Malnad or the Hyderabad-Karnataka region in order to understand the typologies of backwardness and formulating programmes specifically to suit the requirements of these areas.

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