

RURAL SUSTAINABILITY AND RURAL-URBAN LINKAGES OF KERALA (1971-91)

*Dissertation Submitted to the Jawaharlal Nehru University
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Submitted by

ANIYAN P.V.

Centre for the Study of Regional Development
School of Social Sciences
Jawaharlal Nehru University
New Delhi 110067
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जवाहरलाल नेहरू विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI - 110067

CENTRE FOR THE STUDY OF REGIONAL
DEVELOPMENT
SCHOOL OF SOCIAL SCIENCES.

CERTIFICATE

This is to certify that this dissertation entitled 'Rural Sustainability and Rural-Urban Linkages of Kerala (1971-91)' submitted by Aniyam P.V. in partial fulfilment of the requirements for the award of the degree of MASTER OF PHILOSOPHY (M.Phil) of the University, is, to the best of our knowledge a bonafide work.

We recommend this dissertation be placed before the examiners for evaluation.

CHAIRPERSON

Centre for the Study of Regional Dev
School of Social Sciences
Jawahar Lal Nehru University
New Delhi-110067

Atiya Habib
4/1/96
Chairperson

Centre for the Study of Regional Dev
School of Social Sciences
Jawahar Lal Nehru University
New Delhi-110067

Atiya Habib

(PROF. ATIYA HABEEB KIDWAI)
Supervisor

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4.1.1996

Aniyan P.V.
Aniyan P.V.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Kerala is one of the states of India which has experienced a very rapid urban growth rate during 1981-91 census decade. The impact of this high urban growth on the historically well developed rural-urban linkages and on rural sustainability over the last two decades constitutes the theme of this dissertation.

This study is divided into two parts, in the first part a detailed survey of the urban structure and of rural-urban linkages is given for the period 1971-1991, and in the second part rural sustainability of the state over the same time period has been looked into. Rural sustainability has been analysed by dividing it into four component parts: i) the growth of commercial agriculture; ii) the physical carrying capacity of the land; iii) the process of deforestation; and, iv) the status of the rural manufacturing sector.

Rural-urban relations should be seen, not as processes themselves, but rather as the products of deeper structural transformations in society.¹ These two economies are highly dynamic systems and the inter linkage between them is also

1 Tim Unwin (1989). Urban-rural Interactions in Developing Countries: A Theoretical Perspective, Alan B. Mountjoy Publications, p.12.

high. Urban growth is initiated by the availability of natural resources of mainly rural origin, and it depends on the food surpluses produced in the rural areas.

1.2 Theoretical Framework

The theoretical framework of this study revolves around three concepts, viz., rural sustainability, rural-urban dichotomy/continuum and the concept of 'desakota' and "gragara". These concepts are discussed in the following sections.

1.2.1 The Concept of Sustainability

'Sustainability', the general term implies the existence of certain conditions needed to support a dynamic system. Sustainable development is the normative approach to attain this value. It refers to an integrated approach by economists and ecologists towards the environment. It conceives the realization of an acceptable quality of life for present and future generations, at the same time preserving a constant natural capital stock through wise management of natural resources and ecosystems. Economists are interested in highlighting scarcity as the underlying reality behind human choice. Environmentalists/Ecologists propound that economic growth is the reality which makes human choice less and less

possible under conditions of scarcity.² Ecologically sustainable economic development can then be thought of as changes in economic structure, organisation and activity of an economic-ecological system that are directed towards maximum welfare and which can be sustained by available resources. So sustainable development identifies an aggregate objective "welfare" and an aggregate constraint: "available resources".³

Another implication of sustainability is the search for a path of economic progress which does not impair the welfare of the future generations. The wider, highly normative view of sustainable development (endorsed by the World Commission on Environment and Development) defines the concept as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs."⁴

2 Micheal Redclift (1987). *Sustainable Development - Exploring the Contradictions*, Chapter 3, Routledge, New York, p.38.

3 Leon C. Braat and I.Streetskamp (1991), "Ecological Economic Analysis for Regional Sustainable Development", in Robert Costanzer, ed., *Ecological Economics: The Science and Management of Sustainability*, p.271.

4 World Commission on Environment and Development (WCED) (1987), *Our Common Future*, London: Oxford University Press.

Four alternative definitions of sustainability following Pezzey⁵ are given below:

1. A non-declining consumption through time;
2. A non-declining utility through time;
3. A non-declining stock of total capital (both man made and natural) through time.
4. A non-declining natural capital through time.

These four definitions are from four different views of economic development. First definition is the focus of neo-classical optimal growth models, the second is basically an immeasurable concept and it has got implications for the utility of the future generations. Third and fourth definitions are concerned with the maintenance of the opportunity for the future generations. More than the different approaches towards development these definitions underline the two main issues that are the central theme in any conception of sustainability. Firstly the responsibility of the current generations to the future generations or 'inter generational fairness; and, secondly the degree of 'substitutability' of the natural capital stock and other forms of social capital.

5 J.Pezzey (1992). "Sustainable Development Concepts - An Economic Analysis", *World Bank Environment Paper No.2*, Washington, D.C.: World Bank.

1.2.2 Intergenerational Fairness

There are several views⁶ about intergenerational fairness that have attracted considerable attention in the discussions of sustainability. One basic separation is there between theories based on maximization of an independently defined good and theories based more on natural rights and obligations.⁷ Another categorization is based on theories that emphasize current generation and its immediate descendants - presentist theories and theories that put greater emphasis on further future. Yet another categorization is based on justice concepts at the individual and community level.

The ethical implications⁸ of the present value criterion have come up against the broader concept of intergenerational economic efficiency as defined by Pareto criterion which states the impossibility of the welfare maximization of the present generation without reducing the welfare of the members

6 D.Pearce, and R. Turner (1990), *Economics of the Natural Resources and the Environment*, Baltimore, M.D.: John Hopkins University Press.

7 These are termed Teleological and Deontological theories quoted in Michael A.Toman (1994) - *Economics and "Sustainability": Balancing Trade offs and Imperatives - Land Economics*, November.

8 A.V.Kneese, and W.B.Schulze (1985), "Ethics and Environmental Economics", in A.V.Kneese and J.L.Sweeney, eds., *Handbook of Natural Resource and Energy Economics*, Amsterdam, North Holland.

of the future generation. The difficulty with the present value criterion thus is not that it requires Pareto efficiency but rather it puts greater weight on the welfare of the current generation in the social welfare criterion,⁹

1.2.3 Resource Substitutability

The problem of resource substitutability arises from the obligations to consider the well being of the future generations, and obviously it depends upon the degree of substitutability between the services provided by the natural capital and other forms of capital.

According to one view,¹⁰ sustainability presents no challenge, provided the natural capital are in some sense 'augmentable', i.e., capable of being renewed or of having damages offset by compensatory investments. Even with exhaustible resources and irreversible degradation of the services provided by the natural environment, it is still possible for consumption and welfare to grow if there is sufficient substitutability between natural resources and capital accumulation. The argument of these economists¹¹ was

9 T. Page (1977). *Conservation and Economic Efficiency*, Baltimore: Johns Hopkins University Press.

10 R.M. Solow (1986), "On the Intergenerational Allocation of Natural Resources", *Scandinavian Journal of Economics*, pp.141-49; K.G. Maler, "National Accounts and Environmental Resources", *Environmental and Resource Economics*, 1:1, 16.

11 *ibid.*

that compensatory investments for future generations in other forms of capital like investments in human knowledge, techniques of production and social organisation are especially relevant in human efforts to out race any increase in the scarcity of services, from the natural environment.

An alternate view embraced by many other economists¹² was that compensatory investments of natural capital is unfeasible because for natural life support systems, no practical substitutes are possible. If sustainability is relatively easy, the notion of scale in human activity relative to the natural environment is of limited significance, relative to efficient use of natural resources.

The distinction between global and local impacts when considering substitution possibilities is another related issue. Local impacts are easy to substitute than global impacts like trade distortions.

Viewing from the above discussions and considering the economic models practised in different countries, three different conceptions of sustainability can be identified. They are the Neo-classical view, Ecological organicism and the Marxian perspective.

12 David Pearce, W.E.Barber and A. Markandya (1990). *Sustainable Development: Economics and Environment in the Third World*, London, Earthscan; and Daly, H. (1990), "Towards some Operational Principles of Sustainable Development", *Ecological Economics*, 2 (April): 1-6.

1.2.4 Neo Classical View

Neo-classical view in economics assumes that resources are divisible and can be owned. It fails to acknowledge the intra resources relationship in the natural environment, as part of an environmental system. The properties of ecological systems run counter to those of what Norgaard¹³ terms 'the atomistic mechanical world view' of neo-classical economics. There are two different views¹⁴ on sustainable development from the neo-classical point of view, when considering the inter-generational equity. They are the neo-classical presentism and neo-classical egalitarianism.

1.2.5 Neoclassical Presentism

This position does not place much emphasis on sustainability as an issue distinct from efficient resource use. The standard present value criterion is adopted for intergenerational welfare comparisons and natural capital scarcity is assumed to be remediable through substitution and technical advance.

13 R.Norgaard (1985). Environmental Economics: An Evolutionary Critique and a Plea for Pluralism. *Journal of Environmental Economics and Management*, 12 (4).

14 Micheal A. Toman (1994), op.cit.

1.2.6 Neoclassical Egalitarianism

Neoclassical egalitarianism adds a concern about potential shortfall of savings for the future generations to neoclassical presentism.

1.2.7 Ecological Organicism¹⁵

Economics as it adapted to the concept of 'margin', is historically pre-disposed towards a reductionist view of resources and their utility. Obviously Economic theory had difficulty in recognising both ecological and social systems over time.¹⁶

Human environmental preferences cannot be modelled by economists as environmental goods are not clearly distinguished from other goods. Human preferences for environmental goods need to take account not only of the value of the environment to human beings, but also the value of the environment itself. Ecological position addresses just this concern, which is absent in sterile economic theory. Moreover environment is an area in which, the inverse relationship between human preferences for goods and the likelihood of scarcity looms large.

15 A 'mode of thought' viewing man as a part of a global ecosystem, and subject to ecological and system laws, see David Pepper (1984). *Roots of Modern Environmentalism*, London, Routledge.

16 Micheal A. Redclift (1987). *op.cit.*, see chapter 2.

Ecological organicist view emphasizes the limits on substitution between natural capital and other assets. Like neo-classical egalitarianism, this view includes a concern for intergenerational fairness, but that concern encompasses the whole ecological system rather than mere anthropocentrism.

1.2.8 Marxist Perspective

Marxist perspective have looked upon environmental problems as the consequence of the development of capitalism. Marx has denied naturally imposed limits, in order to give more recognition to socially imposed limits. This view came under severe criticism¹⁷ as some of the processes of the earth are impervious to intentional manipulation. In some cases they are absolutely non-manipulable. Many of the Neo-Marxists¹⁸ have argued for the need for technologies which enhances the adaptability in the face of natural conditions impervious to intentional actions rather than transcendence of naturally imposed limits.

According to Marx and Engels labour process is the "everlasting nature imposed condition of human existence".¹⁹ But their later writings show a hiatus between their

17 Ted Benton (1989). *Marxism and Natural Limits: An Ecological Critique and Reconstruction*, *New Left Review* (November-December), pp.51-86.

18 Ibid.

19 Marx and Engels, *Capital*, vol.1, London, 1961, pp.183-4.

materialist premises in philosophy and the theory of history on the one hand, and some of the basic concepts of their economic theory on the other. This hiatus deprives historical materialist economic thought of the conceptual means to recognize and explain ecological crises and so of a key element in any fully rounded critique of capitalist production.²⁰ But this insufficiency comes from the traditions of classical political economy from which Marx derived many of his concepts and assumptions, and it is also partly connected with an amount of reluctance to recognize nature imposed limits to human potential due to certain political reasons.

Marx has recognised the historically transitory socially imposed limits of epistemic conservatists like Malthus by admitting the possibility of outer limits. But he was of the view that human kind were very far from having reached that limit at that time, and these reasons were certainly not responsible for the poverty and misery, prevailing at that time. This dual strategy admitting social limits and denial of natural limits has clear political undertones. As Marx himself wrote about Malthus, "If this theory is correct, then again I cannot abolish the law even if I abolish wage labour a hundred times over, because the law then governs not only

20 Ted Benton (1989), op.cit.

the system of wage labour, but every social system. Basing themselves directly in this, the economists have been proving for fifty years and more that socialism cannot abolish poverty, which has its basis in nature, but can only make it general, distribute it simultaneously over the whole surface of the society!"²¹ This was the political basis behind which Marx's criticism of natural limits developed.

But many neo-Marxists are of the view that Marx under represents the significance of non-manipulable natural conditions of labour processes and over represents the role of human intentional transformative powers vis-a-vis nature.²² The dependence of eco-regulatory practises in the labour process is very self explanatory as some of the nature given conditions are clearly impervious to intentional manipulation. But at the same time these natural limits argument can be countered effectively without going into social constructionism by transforming the prevailing pattern of nature and society interaction. Thus enhancing the 'adaptability'²³ in the face of natural conditions impervious to intentional action rather than transcending naturally

21 Karl Marx and Frederick Engels (1969-70), *Critique of the Gotha Programme in Selected Works in Three Volumes*, vol.3, Moscow: Progress Publishers.

22 Ted Benton (1989), *op.cit.*

23 *Ibid.*

imposed limits is the view held by neo-marxists like Ted Benton. Marxist theory and method divorced from orthodox dogma, still represents one of the most fertile intellectual traditions in which to locate ecological ideas, based as it is upon both the social construction of nature and the naturalization of human consciousness.²⁴

1.2.9 Rural Sustainability

Sustainability as a concept draws on two frequently opposed intellectual traditions; one concerned with the limits which nature presents to human beings and the other with the potential for human material development. Neo-classical economists have attempted to add environmental values by attaching a price externality as part of an optimization of resources. To some extent Marxists encounter the same problem of transcending the natural limits as in their terms scarcity will disappear only when the necessity to make commodities in order to realize a profit disappears.²⁵ The basic difficulty in the construction of the ecological hypothesis is that it provides only the vaguest guidelines for negotiating a more constructive relationship with nature.

In order to provide a concrete approach towards rural sustainability, it is meaningful to introduce the concept of

24 Alfred Schmidt (1971), *The Concept of Nature in Marx*, London: New Left Books.

25 Micheal Redclift (1987), *op.cit.*

sustainable resource use. Sustainable use of a renewable resource means that the rate of use is not higher than the controlled/natural regeneration rate of the resource. Three methodological²⁶ steps can be distinguished in the analysis of rural sustainability. A first step towards rural sustainability analysis is a stock taking of the characteristics and internal structure of a region. Second step involves the assessment of both feasible and uncertain developments that will cause a significant departure from the extrapolated course. A third step is the evaluation of different development paths for the regional system.

1.3 Rural-Urban Dichotomy

The theories analysing the rural-urban dichotomy are based on certain models and ideas which have been used in planning policies by government's throughout the world. The major approaches towards the interpretation of the spatial categories in the Third World, are the modernisation and dependency paradigms. The modernisation theory makes use of the traditional-modern duality thesis and its exact inversion the dependency theory puts emphasis on the fact that the underdevelopment of the Third World is in fact the negative effect of external dominance. The theories which have given

26 C.J.M. Jeron, V.D.Bergh and P.Nijkamp (1994). "Modelling Ecologically Sustainable Development in a Region: A Case Study in the Netherlands", *Annals of Regional Science*, Springer-Verlag 1994, pp.7-29.

particular attention to this are centred around the work of mainly five scholars: notably Micheal Lipton (1977), Ashok Mitra (1977), M.J. Mamalakis (1969, 1971), Rondinelli (1983) and Stohr and Taylor (1981). Liptons work was on developing countries generally: Mitra's work was based on India and Mamalakis dealt with Latin America. The works of both Rondinelli and Stohr and Taylor were concerned with pragmatic planning policies.

The roots²⁷ of some of the above said theories of rural-urban dichotomy are deeply embedded in the concept of rural-urban divide in classical political economy, in Marxian political economy and in sociological theory.

Contemporary theorists of rural-urban relations have been particularly influenced by the British political economy tradition, from which Marxian political economy developed. Sir James Steuart and Adam Smith, founders of classical political economy, were proponents of a balance between agriculture and industry which they identified with the rural and urban areas respectively.²⁸ They were attempting to correct the excessive pro-agricultural bias of the

27 Mick Moore (1984). "Development and the Rural Urban Divide", in Harriss, John and M.Moore (eds.), *Political Economy and the Rural Urban Divide 1767-1981*, London: Frankcass (pp.5-27).

28 Rural manufacturing was very sizeable at that time in Britain.

physiocrats, in their defence of the new urban industrialism. The rural-urban sectoral division was even devoid of the service sector as it was relegated to the non-productive category.²⁹

In many of the brief sections in the 'Wealth of Nations' Smith³⁰ argued in favour of agriculture and even said that urban producers succeeded in raising their own selling prices above free market levels and in persuading governments for import restrictions in favour of them.

"The enhancement of price occasioned by both is every where finally paid by the land lords, farmers and labourers of the country who have seldom opposed the establishment of such monopolies. They have commonly neither inclination nor fitness to enter into combinations: and the clamour and sophistry of merchants and manufacturers easily persuade them that the private interest of a part, and of a subordinate part of the society, is the general interest of the whole".³¹

The rural-urban dichotomy is regarded by Marx as the surface manifestation of the division of labour. Many

29 It was a fundamental postulate of the classical political economy: that productive activities were defined by the production of goods.

30 His famous argument which was later on dismissed as quirky, was, "returns to capital investment are greater in agriculture than in non-agriculture" [Smith (1776): Book 2, Chapter 5] reproduced from Moore, Mick (1984).

31 Adam Smith (1776), Book 1, Chapter 10, Part II.

scholars³² who are propounders of the urban bias theories have taken this stand, as an urban biased one, since Marx fails to give credit to rural manufacturing sector. Harvey also emphasizes this point³³ that the division of labour is the fundamental concept in Marxian thought and not the rural-urban dichotomy, which he says is just a particular form of its expression.

The theories of Lipton, Mitra and Mamalakis try to explain macro economic features in their respective countries through the rural urban view. As Mamalakis tries to explain the low growth in Latin America since 1930s, Mitra tries to explain the falling-off of the rate of economic growth in India in the 1960s and Lipton tries to explain both low growth and more importantly the persistence of mass poverty in most of the Third World since the second world war. The works of Rondinelli and Stohr and Taylor deal with certain themes of development planning within the urban-rural framework.

1.3.1 Micheal Lipton's Theory

Lipton argues that urban bias - the diversion of resources to the urban areas - is the fundamental cause of low growth and poverty in the Third World countries. "The most

32 Notably Micheal Lipton (1977), *Why Poor People Stay Poor!* - *Urban Bias in World Development*, London: Temple Smith.

33 David Harvey (1985). *Urbanisation of Capital*, Oxford: The Johns Hopkins University Press, Chapter 1, p.14.

important class conflict in the poor countries of the world today is not between labour and capital; nor is it between foreign and national interests. It is between the rural classes and the urban classes."³⁴ The main propositions of Lipton's work can be listed as,

1. Unlike other analyses of Third World under development Lipton finds 'insitu' reasons for it.
2. His argument is that countries can be clearly divided into rural and urban sectors and there are major conflicts of interests between these two sectors.
3. These two sectors can again be divided into two main class categories with divergent interests and they are internally coherent actors in pursuing their class interest in politics.
4. The urban sector elite are generally more successfully active in politics and they are tied up with the rural elite.
5. The resultant resource allocation pattern increases the inequality in rural areas.

1.3.2 Ashok Mitra's Class Conflict Model (1977)

Mitra³⁵ gave a class conflict model where urban and rural sectors were important parameters for defining classes. He

34 Micheal Lipton (1977), op.cit.

35 Ashok Mitra (1977). *Terms of Trade and Class Relations*, London: Frankcass.

argued that there emerged in India in the 1960s a political alliance between the rural elite and the urban bourgeoisie in which the rural elite trade their command over the rural poor for policies which helped to increase the market prices for their agricultural products. He concluded that the terms of trade were in favour of agriculture and that this was the single reason for industrial quasi-stagnation of the 1960s. He further noted that the shifting of terms of trade had been instrumental in eroding the real income of both urban and rural dwellers and the spurt in income had gone into the hands of a small agricultural community and had resulted in the high consumption of some luxury consumer goods. Because of the high degree of built-in indivisibilities, investments in these new industries had been disproportionately large, which resulted in high prices. In his own words "what has thus emerged is a syndrome of high capital intensity - large indivisibilities - high cost-high price-low demand-low output in the industrial sector". Thus Mitra hits out at the rural biased planning policies of the state, contradicting Lipton's view.

1.3.3 Other Relevant Theories

Mamalakis³⁶ attempted to explain how a policy of import substituted industrialisation, which started in Latin America

36 M.J. Mamalakis (1969). "The Theory of Sectoral Clashes", *Latin American Research Review*, vol.4, no.3.

from 1930s until 1960s, favoured an urban bias in Latin America. He gave a model of urban privilege very much like Lipton's and presented a far wider range of potential political alliances (four classes within four sectors) than Lipton and Mitra outlined.

The theories of Rondinelli and Stohr and Taylor deal with practical planning measures for better rural-urban linkages. Rondinelli³⁷ suggested that creating a systematic "deconcentrated, articulated and integrated system of cities", in the Third World countries would lead to their widespread development. Central to this approach was the argument that neither the diffusion pole nor the parasitic view³⁸ of small cities is appropriate, and instead of that "decentralised investment in strategically located settlements can create the minimal conditions that enable rural people to develop their own communities through 'bottom up' and autonomous processes. Thus Rondinelli argued for the implementation of change through the manipulation of the urban settlement hierarchy implicitly based on a 'free market'.

37 D.A.Rondinelli (1983). *Secondary Cities in Developing Countries: Policies for Diffusing Urbanisation*, Beverly Hills, Sage.

38 B.F.Hoselitz (1957). *Generative and Parasitic Cities. Economic Development and Cultural Change*, 3: 278-94.

The work of Stohr³⁹ and Taylor represents a complete contrast to Rondinelli's approach. For them 'development from below' considers development to be based primarily on maximum mobilization of each area's natural, human and institutional resources with the primary objective being the satisfaction of the basic needs of the inhabitants of that area".

1.3.4 The Indian Experience of the Rural-Urban Divide

Two of the above mentioned theories dealt exclusively with the Indian case of the rural-urban divide. Although Lipton's work covered the whole Third World, it had got much of its empirical evidences from India. As Seers⁴⁰ noted, India's size and the resilience of its traditions and institutions meant that external influences impact less heavily and the rural-urban contrast was both strong and central to the social organisation of the country. Mitra's work on the other hand is in stark contrast with that of Lipton. While Lipton sees India as a valid example of urban bias, Mitra concludes a rural bias which pushed the Indian industries into a quasi stagnation in the 60s.



39 W.B.Stohr (1981). "Development from Below: The Bottom-up and Periphery Inward Development Paradigm", in W.B.Stohr and D.R.F.Taylor (eds.).

40 D.Seers (1977), "Indian Bias"? in 'Urban Bias' - Seers versus Lipton. Discussion paper No.116, Institute of Development Studies, Brighton.

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Y,33;7:7.44 N9:8
N6

Since 1951, there has been a remarkable growth of larger cities (metropolitization) in India. Their contribution to the total urban population has increased from 44 percent in 1951 to 60 percent in 1981. But this metropolitization, for which the major reason is rural-urban migration, is mainly due to the lure of the cities. The reality is that the number of people below poverty line is only marginally higher in rural areas. The growth rate of population in metropolitan cities during 1981-91 works out to be less than that of previous decades, as their annual exponential growth rate during the eighties is 3 percent compared to figures of 3.36 and 3.4 during seventies and sixties respectively. The number of new towns, 25 percent of which are around metropolises, has gone up by over 800 in 1991 census. It is an indication of the withering of the top heavy structure⁴¹ of urbanisation in India. A decline in rural-urban migration is noted, although the disparity in income, infrastructure and amenities has widened over the years. The ratio of urban to rural per capita income was 1.83 in 1950-51 which has gone up to 2.80 in the early eighties.⁴²

While looking at the spatial spread of settlement systems, although primacy at the national level is absent,

41 Amitabh Kundu (1980). *Measurement of Urban Processes - A Study in Regionalisation*, Bombay: Popular Prakashan.

42 *Monthly Statistical Review*, CSO.

regional/state level primacy exists. This also encourages a core periphery relationship with urban and rural areas. Urban areas stand out as "enclaves" of development poles with sharp distance decay in the levels of development.

1.4 Rural-Urban Continuum

Several theories on rural-urban dichotomy have been presented but there are very few theories about rural-urban continuum. The concept of 'desakota' is one among them, put forth by McGee⁴³ to explain the mixed rural-urban settlement patterns in South East Asia, specifically Java, Indonesia and Taiwan. About the same time Issac⁴⁴ used the neologism 'gragara' to explain the settlement patterns in Kerala. McGee later on came out with a detailed extended metropolitan

43 T.G.McGee (1987). "The Urban Transition in Asia: The Emergence of New Regions of Economic Interaction in Asia". Paper presented at the only one Earth Forum, Renedubois Centre for Human Development, May 13-15, New York.

44 Thomas Issac (1986). An Introduction to the Study of Agrarian Relations in Kerala, in Golden Jubilee Souvenir of the Kerala Karaka Samitiya (Malayalam), Cochin, K.K.S.

region/gragara concept⁴⁵ to hypothesise the emerging Asian urbanisation trends.

1.4.1 McGee's Concept of 'Desakota'

The concept of desakota, was propounded by McGee, in examining the mixed rural-urban settlement patterns in Java and Indonesia. In Bahasa Indonesia 'desa' means rural and 'kota' means urban. The mixture of agricultural and non-agricultural activities are critical to the characterisation of desakota. McGee's definition of desakota includes some more characteristics like high rural population densities in association with small holder cultivations mainly rice; intensive use of land by agriculture and industry; increasing participation of women in non-agricultural activities; extreme fluidity and mobility of people and commodities within desakota regions and to urban centres outside, facilitated by easy transport; and the attraction of desakota regions for new

45 T.G.McGee (1991). "The Emergence of Desakota Regions in Asia: Expanding a Hypothesis", in N.Ginsburg, B.Koppes and T.G. McGee (eds.), *The Extended Metropolis in Asia*, Honolulu: University of Hawaii Press; and McGee, T.G. and Greenberg, Charles (1991). Emergency of EMR's in ASEAN: An Exploratory Outline, Paper presented at joint Thai-Canadian Symposium held at Chulalongkoru University, December 1991, quoted in Rex Casinader, "Enigma of Kerala Spatial Formations: Gragara as an Invalidation/ Recovery of the Desakota Hypothesis." Paper presented at the International Congress on Kerala Studies, A.K.G.Centre for research and studies, Thiruvananthapuram, 27-29 August 1994.

non-agricultural enterprises uncomfortable with urban regulations.

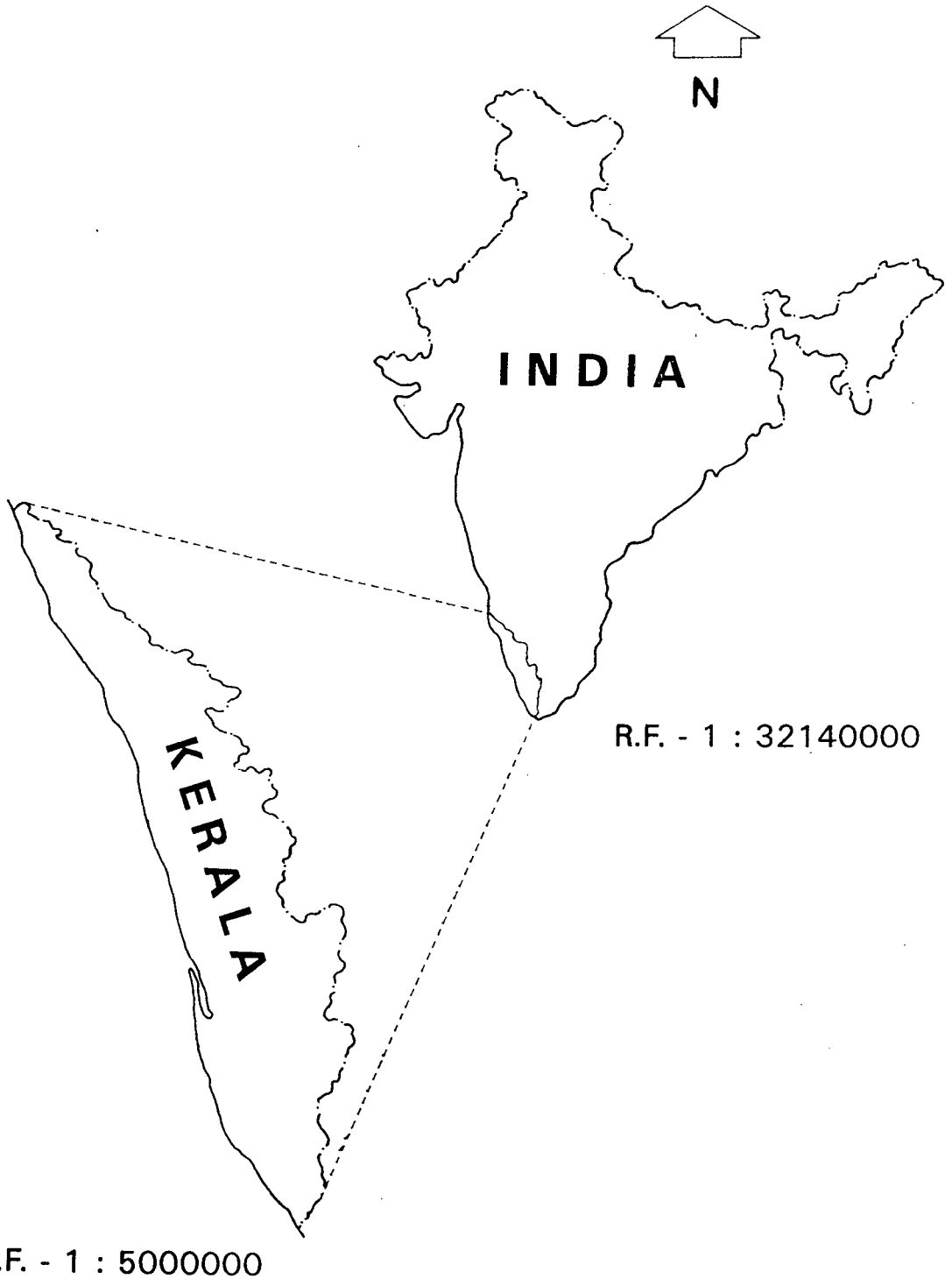
McGee later linked up the desakota hypothesis with the emerging Asian urbanisation trend as he argues that Asian urbanisation is increasingly becoming region based rather than city based. He suggests the term 'extended metropolitan regions' and it is principally within that he locates his 'desakota'. He recognised three types of 'desakota' categories. Firstly the 'desakotas' around Asian mega cities in high density, mostly rice growing areas, for example, cities of Japan and South Korea. Second category is also around megacities but has a lower income and productivity than the first one, for example, cities in China, Bangkok, Calcutta, Bombay and Delhi. The case of Java, Taiwan and Kerala constitutes the third category of high rural population densities in areas around smaller secondary cities.

1.4.2 Issac's Concept⁴⁶ of Gragara

Gragara concept, combining "gra" from 'gramam' (rural) and "gara" from 'nagara' (urban) was first used to explain the mixed urban-rural settlement patterns and mix of agricultural and non-agricultural activities in Kerala's spatial formations. Thus the characteristics of Gragara are the characteristics of the states settlement pattern itself. They

46 Although it was first used by Issac (1986) additions to it were made by Rex Casinader, op.cit.

LOCATION MAP



are, a dispersed settlement pattern; high mobility of people and commodities; high population density; minimal spatial differentiation in collective consumption; cultural economic institutions such as forced commerce facilitating the down sizing and decentralization of industries; and features⁴⁷ of the labour process in agro processing industries of Kerala. Gragara has got direct implications for Kerala's ecology and with some of its socio-cultural dimensions.

1.4.3 Implications of Extended Metropolitan Regions/Desakota Hypothesis in India and Kerala

Desakota is absent in the Ganga basin, except in lower Ganga where due to the influence of the Calcutta-extended metropolitan region a high percentage of rural non-agricultural work force thrives. It does not have a dominating presence in any of the extended metropolitan regions and is present only in the three metros in India. Bombay, Bangalore and Calcutta accounts for 12.1, 10.5 and 6.4 percentage of their population in desakota regions.⁴⁸ This is due to differences in economic policy, definitional problems, and the historical geography of India.⁴⁹

47 Last two characteristics are quoted in Rex Casinader (1994), op.cit.

48 Census of India 1991, Series 1, Table 2 (Paper 2 of 1991), 6 and 8 (Paper 3 of 1991).

49 Rex Casinader (1994), op.cit.

1.5 Kerala's Specificity and Implications of 'Gragara' in the State

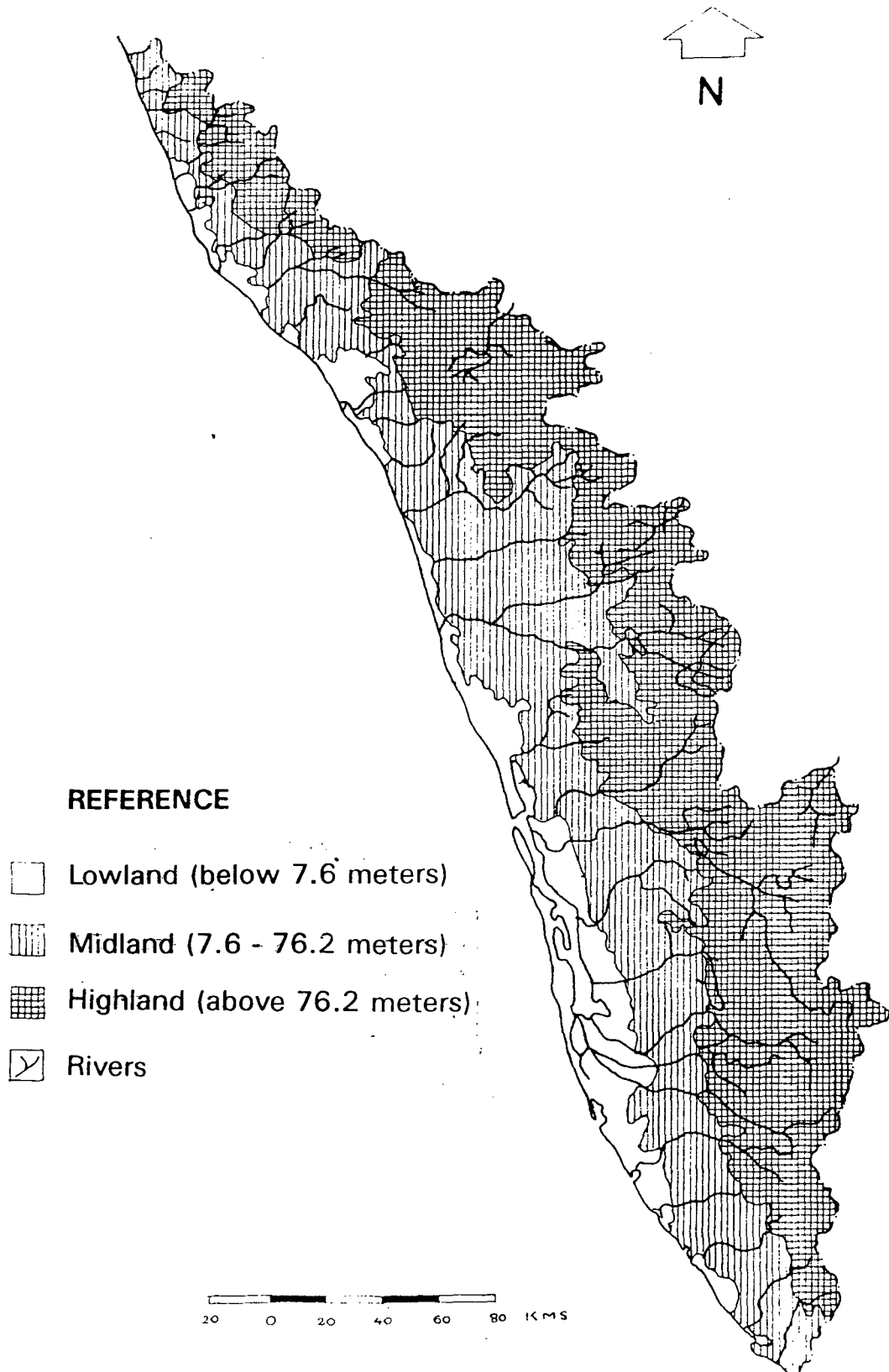
Kerala's settlement pattern is characterised by dispersed, linear and continuous stretch of habitation. It is so continuous that rural-urban differences are very little, and moreover it possess a village system unlike other parts of India. This unique pattern is termed as 'gragara'. The peculiar specificities of the state which have their effects on gragara settlement pattern are many. First of all it has got a uniform resource endowment. Secondly, there exists a direct dependence on natural resource, as they are a cheap productive input for economic activity and also provide conditions for specific agricultural and recreational purposes. Moreover it bears the imprint of a colonial history, in which the patterns of land use established by the colonialists effectively tied natural resources to export production.

1.5.1 History

The urban centres in Kerala developed as administrative, trade and religious centres. The geographical advantages of all town centres along the coast were more or less the same, i.e., facilities in access to trade, access to hinterland, access to population due to similar agro-climatic characteristics of the land etc. External functions like administration and religion thus were as an additional

KERALA

NATURAL DIVISIONS



stimulus for the growth of urban centres historically. The existence of an agrobased manufacturing sector side by side with agriculture helped in developing small inland centres and thus decentralising the urban population.

1.5.2 Physical Characteristics

The state of Kerala has a total area of 38864 sq.km. extending between north latitudes 8° 04' and 12° 44' and east longitudes 74° 54' and 77° 12'. The length of the coastline is 580 km and breadth varies from 11 to 121 kms. The three major natural divisions in which the territory is divided are the high land (above 76 m), the lowland (below 7.6 m), and the midland (7.6 m to 76 m). Kerala has 44 rivers of which 41 are west flowing and 3 are east flowing. The state gets a consistently high average rainfall of 300 cms, with wide variations from the highlands towards the low land. This topography and climate has implications for 'gragara' which covers the lowlands and midlands of Kerala. Of the three natural divisions of the state the low land covers 10 percent of the area and 26 percent of the population. The major crops grown in this region are paddy and coconut. The midland covers 42 percent of the area and 59 percent of the population, the crops include paddy, coconut, rubber, cashew, sugar cane, plantain, spices etc. The highland is devoted to plantation crops and spices and it covers 48 percent of the area but has only 15 percent of population.

1.5.3 Economy

Historically the states economy has been dependent on the exports of agricultural products. This dependence was further aggravated by the arrival of the British, because of their huge investment in plantations. This necessitated a peculiar type of economy in which plantation agriculture and a large labour intensive manufacturing sector existed side by side. This high level of employment in rural manufacturing sector and exports of tropical cash crops helped in the sustenance of the rural economy. Government investment was also such that there is minimal urban bias in planning. The urban-rural differential is low in the social organisation also. Seeing this kind of a settlement pattern, Lipton argued that Kerala is an exceptional case in the Indian subcontinent.⁵⁰

Historically, the share of agriculture in workforce was only 65.7 percent in 1911 compared to 74 percent in India. It remained around 72 percent for India in 1961 and it came down sharply to 55 percent for Kerala. Presently the rural non-agricultural employment is 43.9 percent in the 1991 census.

1.6 Relevance and Statement of the Problem

50 Micheal Lipton (1977), op.cit., p.57.

Economists have considered 'endowment' as an important factor in wealth formation. Various authors⁵¹ have underlined the role of regional supply of natural resources in achieving regional development. The resource base of a region is the complex of resources and their regenerative support systems that are critically important for regional welfare.⁵² It has become increasingly evident that regions with energy resources and agriculture exhibit strong growth in income levels as opposed to regions developed on external energy sources. So the management and use of regional resource base depends on many factors as far as there exists multiple uses for them.

The trends in the level of urbanisation in Kerala since independence showed a secular pattern till 1981. The results of the 1991 census showed a phenomenal increase in the degree of urbanisation. From a meagre 18.78 percent in 1981 it has now increased to 26.44 percent. There is a massive joining up of small and medium towns to form urban agglomerations. At the same time the factors which help in maintaining rural sustainability are neglected. Massive land use changes i.e., from forests to plantations in the high land regions has caused high soil erosion, leaching of organic content of the

51 C.W.Howe (1987) On the Theory of Optimal Regional Development Based on an Exhaustible Resource; 'Growth Change', 18:53-68 and Walker, R. (1987), Regional Development and Renewable Resource Exploitation.

52 Jeroen, C.J.M., V.D.Bergh and P.Niskamp (1994), op.cit.

soil, and above all, accelerated the loss of soil quality, fertility and productivity. The perenniality of the rivers are also affected. Agro- based industries which had given employment to the rural agricultural surplus labour earlier also face problems of non-availability of raw material from the rapidly changing agricultural sector. Thus increasing commercialization of agriculture in the form of plantations (mainly rubber) has accelerated the problem of rural unemployment and food security. Due to all these reasons the carrying capacity of the region has come down.

1.7 Hypothesis

Within the theoretical framework discussed above, and considering the physio-economic and historical specificities of Kerala, the following hypothesis have been put forward in this study.

1. Excessive commercialization of agriculture and deforestation reduces rural sustainability.
2. Increasing urbanisation level reduces rural sustainability.

1.8 Methodology

The growing failure of univariate statistic in capturing the real life of man has opened up discussion in choosing multivariate statistics and various other alternative indicators. Social and environmental indicator are replacing the orthodox development indicators in many of the welfare

measures like quality of life etc. The usage of multivariate analysis in regional analysis enunciated the need for factor analytic models. Hence following from an expanded concept of sustainability an expanded framework of indicators showing sustainability can be taken.

1.8.1 Choice of Indicators

The choice of indicators is a very important part in social science methodology as it will help in reaching an operational definition of any concept in social sciences.

First of all as a stock taking of the regional natural resource base and as a negative indicator of the earlier development path, the extent of forest area has been taken as the ecological indicator for analysing the problem of deforestation in the state. It has got both direct use values (like timber) and indirect use values (effects on water table, micro climate etc.) for the rural economy. Moreover the district-wise forest reserve data were collected from the state forest department and landuse board.

Rubber is the single most important plantation crop which has got a direct influence in the rural economy of the state, particularly since the last 25 years. But it has only intensified the problem of rural unemployment and food security, since it is much less labour intensive and it down sized the importance of other foodcrops. So the growth rate

of area under rubber has been taken as a negative indicator to capture the rural sustainability.

The growing rural population density has severely affected the physical carrying capacity of the area, from the point of view of the biologist. So in order to capture the effect of population on the carrying capacity of land, the rural density of population is also taken as a negative indicator.

The status of the rural industrial sector over the period is studied by taking the percentage of rural male workers to total workers in the rural manufacturing sector. The last three indicators were taken from the state economic survey and census volumes.

1.8.2 Statistical Methodology

In this study an attempt has been made to analyse the status of both ecological and economic sustainability of rural Kerala. In a subsequent step the relation between the emerging pattern of urbanisation and rural sustainability is also studied.

The status of the rural sustainability of Kerala is studied by making a composite score of sustainability using the alternate principal component analysis.⁵³

53 Amitabh Kundu (1980), op.cit.

The principal component analysis enables us to determine a vector known as first principal component or factor, linearly dependent on constituent variables having the maximum sum of squared correlations with the variables.⁵⁴ But it fails to take care of multi-collinearity and it captures minimum variation due to the standardization procedure done during scale transformation. So in order to pass over these two hurdles an alternate principal component analysis is used. In alternate principal component analysis the composite index is constructed such that it maximizes the total of the squared projections of the transformed variables. Scale transformation process of division by mean in alternate principal component analysis, does not disturb the 'dispersion' of the variables since the coefficient of variation of the original series is retained. So this will take care of two of the axioms i.e., a variable having stronger interrelations with the other variable should have a higher weight and secondly a variable having greater disparity in space must have a higher weight. The negative indicators chosen were subtracted from a given constant during the transformation process so that it maintains the standard deviation of the original series.

54 Ibid.

The cause-effect relationship between indicators of sustainability and urbanisation level is found out using simple correlation.

CHAPTER II

'GRAGARA' SETTLEMENT PATTERN

2.1 Introduction

Kerala's spatial formation of a fine mixture of rural and urban areas or 'gragara'¹ is the most unique feature of the state. As a 14th century Arab traveller Ibn Battuta puts it "along this road... no space is uncultivated. Everyone has his own separate garden with his own house in the middle, surrounded by a wooden fence.... It is the same throughout the entire journey of two months."² William Logan (1887) has also mentioned about the densely populated coastal tracts and he even validates the observation of Battuta. Says he, "From end to end of the district, on the low lying lands near the sea there is an unbroken belt of coconut palm orchards, and the description that Shaikh Ibn Battuta gave of the country in the 14th century is equally applicable now."³ Though many

1 Although the term 'gragara' was first used in print by Issac (1986), it was already in usage or parlance of the KSSP (Kerala Shastra Sahitya Parishad, Kerala People's Science Movement). See Rex Casinader (1992).

2 Ibn Battuta, Travels in Asia and Africa, 1325-1354, Translated and selected by H.A.R. Gibb (1929) (1969) New York, Augustus M. Kelley, p.231.

3 William Logan (1887), Malabar, vols. I and II, Madras: Government of Madras. Reprinted 1951. Trivandrum: Chaithram Printers, Reprinted 1981, pp.111-12.

scholars have mentioned about the state's settlement pattern,⁴ the inherent weakness of these descriptions were that the economy of the state has never been looked at, although there are some late exceptions.⁵

When compared with the national scene, the Kerala villages are not clusters of houses and towns are not geographically like isolated islands. Moreover the villages are characterised with a very high rate of non-agricultural occupations and they do not differ much from the towns in the availability of modern amenities. The analysis of similar high density mixed urban patterns were carried by McGee in Java, Indonesia and Taiwan. He termed them 'Desakota', a neologism in 'Bahasa' Indonesia, 'desa' meaning rural and 'kota' urban. He concluded that the emerging pattern of urbanisation in Asia is region based rather than city based as this process is using the insitu rural populations. He also suggested the term 'Extended metropolitan regions' (EMR) for such regions as he locates his 'desakota' within such extended metropolitan regions.

4 Clarke (1915), Hesterlow (1932), Menon (1953), Mencher (1966), etc.

5 K.P.Kannan (1988). *'Of Rural Proletarian Struggles': Mobilization and Organization of Rural Workers in S.W. India*, Oxford: Oxford University Press.

2.2 Historical Development

From the observations of early historians and traveller diaries it is quite clear that the state was having a typical garden country/dispersed pattern of settlement all through its history from 14th century. This was mainly due to the region's agro climatic similarities and minimal differentiation in natural resource endowment. The existence of a moderate population base⁶ fully dependent on cultivation also promoted this pattern of settlement. As Clarke⁷ noted "Yet in a sense the whole country is a village, the people of Malabar and south country must have privacy and their 'taravads' give it to them regardless of space".

While looking at the geographical extent of kingdoms of earlier rulers in the late pre-colonial period, the 'multiplicity of principalities'⁸ competing with one another and playing minor but regionally important roles was the major phenomenon. Moreover the presence of a feudal structure in

6 The combined population of Malabar and Thiruvithamcore, the two major kingdoms was 18,34,292 in 1826. See T.C.Verghese (1972).

7 Clarke (1915), In Kerala: A Record of a Tour of South India with Their Highness the Maharajah and Maharani of Gaekwar, June July, p.72.

8 Rex Casinader (1992), Enigma of Kerala Spatial Formations - Gragara as an Invalidation/Recovery of the Desakota Hypothesis, paper presented at the International Congress on Kerala Studies, 27-29 August 1994, AKG Centre for Research and Studies, Trivandrum, p.24.

which the Nair lords themselves were the owners of the land rather than a centralised land ownership, also helped in the formation of a decentralised power structure.⁹

2.2.1 Colonial Impact on State's Settlement Pattern

The arrival of the colonialists dates back to 1498 with the landing of the Portuguese. The real turning point however, occurred with the arrival of the British East India Company. Expansion of commercial agriculture and development of transport facilities in order to expand the exports were the first steps taken by them. The volume of trade increased with increasing investments of the British in plantation agriculture. They started many agroprocessing industries in the late 19th and 20th centuries thus adding to the rural proletariat. Kannan (1988) identifies three levels of organisation¹⁰ of production in the state during the colonial rule. The first category was large scale capitalist production with marginally superior technological foundations, coir weaving of Alleppey, Tile manufacturing of Malabar, cashew processing in Quilon and modern infrastructure. The second was small scale capitalist production without change of technical foundations, toddy tapping, coir processing beedi

9 Panicker (1929) quoted in T.T.Sreekumar, Urban Process in Kerala 1900-1981, Trivandrum, Centre for Development Studies.

10 K.P.Kannan (1988), op.cit.

making all came under this category, and lastly the household/artisanal production consisting of mainly fishermen, carpentry, blacksmiths etc. This formed the base of rural non-agricultural workforce which is a major characteristic of gragara/desakota in the state.

Throughout the twentieth century less than 60 percent of Kerala's working population was engaged in agriculture.¹¹ The employment of persons in manufacturing more than doubled from 466000 to 877000. The bulk of the increase in manufacturing employment came from sugar production, cashewnut processing, cotton textiles, coir and coir products, made up textiles, wood and wooden products and non metallic mineral products. The major exports from Kerala in the 1920s included coffee, coir, lemon grass-oil, coconut oil, rubber, spices, tea and rope.¹²

11 Dharma Kumar (1983) (ed.), *The Cambridge Economic History of India*, Part 2, Cambridge: Cambridge University Press.

12 Ibid.

Table 2.1: Distribution of Male Working Force in the Major Indian States - 1911 and 1951.

Category	Kerala		Madras		Maharashtra		W.Bengal	
	1911	1951	1911	1951	1911	1951	1911	1951
Cultivators	31.5	25.6	51.0	40.9	39.5	39.4	45.8	36.3
Agri.labourers	24.8	25.3	18.1	19.4	25.2	22.1	17.2	17.1
Plants, forestry, fishing, livestock	12.0	6.5	4.2	2.6	5.8	1.9	5.5	3.2
Manufacturing	11.7	15.8	9.4	13.6	10.4	13.8	10.9	14.7
Trade and commerce	8.7	8.4	5.8	7.8	5.4	7.4	5.5	10.3
Transport, storage and communications	2.8	4.2	1.6	2.4	2.3	2.8	3.5	4.7
Other services	11.2	12.0	7.3	11.2	9.9	10.7	9.5	10.9

Source: Cambridge Eco.History of India, Occupational Structure pp.542-43.

The table clearly shows the significance of a high amount of non-agricultural workforce during pre-independence period in the state, compared to other states.

2.3 Present Status of the Gragara

The state occupies the south western coast of India having a coastline of 550 kms. Thus ten of its fourteen districts are coastal districts and they cover the low land and mid land portions of the state. These regions constitute little more than half the total area of the state but contains nearly 85 percent of the population. The gragara regions

occupies the entire low land and mid land areas of the state
(See Map 2).

Table 2.2: Population Density and Non-Agricultural Workforce in the Rural Areas of Coastal Districts in Kerala - 1981 and 1991

Districts	Rural density (1981)	Non-agricultural work force			
		Male		Female	
		1981	1991	1981	1991
Kasargod	460	46.9	46.3	52.5	63.3
Kannoor	408	45.0	50.5	22.2	35.3
Kozhikode	737	54.8	52.2	54.7	60.1
Malappuram	818	43.6	45.4	28.8	38.0
Thrishoor	715	52.3	52.9	43.9	47.8
Ernakulam	709	50.9	50.4	42.8	54.5
Kottayam	700	42.0	43.3	51.8	56.0
Alappuzha	788	52.7	47.0	55.6	57.4
Kollam	433	42.0	40.7	62.6	68.3
Trivandrum	958	38.6	36.5	59.3	57.0
Average/Total	629	46.9	46.5	47.4	53.8

Source: Census of India 1991 Series 1, Final Population Totals, Brief analysis of primary Census abstract and 1981 Census Worker Population Tables.

Table 2.2 clearly shows the high rural density of the coastal districts of the state. All districts have rural densities more than the cutoff level of population density in the definition of an urban unit, i.e., 400 persons per square kilometre. The high percentage of workers in non-agricultural

sector is another indicator of gragara, but increasing participation of women in non-agricultural sector as proposed by McGee is absent in the state.¹³ However the percentage of women, working in non-agricultural sector is more than the male percentage throughout the state. It is mainly because of the high percentage women employers in cashew, coir and beedi industries of the state.

Another important task while establishing the 'gragara' formations in the state is to look over the rural-urban differentials in various indicators. Table-2.3 shows the differentials in indicators of population growth and general health of the people of the state, compared with the nation.

Table 2.3: Rural-Urban Differences in Infant Mortality Rate, Literacy Rate and Sex Ratio.

Country/ State	Infant Mortality Rate				Sex Ratio				Literacy Rate (R-V Differential)	
	1981-83		1990-92		1981		1991		1981	1991
	R	U	R	U	R	U	R	U		
INDIA	116	65	86	52	952	880	939	894	31.25	28.47
KERALA	35	25	17	15	1034	1021	1037	1034	6.60	3.33

Source: Census of India, 1991. Series 1, Final Population Totals Brief Analysis of Primary Census Abstract, and Statistics for Planning, 1993, Kerala.

13 Rex Casinader (1992), op.cit. He partly devotes it to the invisibility of female labour force participation, p.20.

Infant mortality rate, which is suggested as the single most significant¹⁴ indicator of development by the UNICEF, is very low in the state compared to the national figures. Kerala also stands far above the country as a whole in providing education across the rural-urban barriers. Improvement in the status of women is a minor factor in the high rates of sex ratio but the main reason for it is still the male selective out migration.¹⁵ Thus the reasons¹⁶ of outmigration stands common for rural and urban areas of the state.

The small differences between rural and urban areas of the state indicates the availability of collective consumption services, particularly those provided by the state in health care, education, and transport. Otherwise the effective intervention of the state in maintaining a minimal differentiation of rural and urban areas is very much visible in the state.

Another major characteristic is the reduction in the difference between rural and urban Kerala in the consumption

14 Ibid.

15 Amitabh Kundu and Mahesh K.Sahu, "Variation in Sex Ratio - Development Implications", EPW, October 12, 1991, pp.2341-42.

16 Outmigration is a general character of the poorer states. See Kundu (1986), Migration, Urbanisation and Interregional Inequality - the Emerging Socio-Political Challenge, November 15, 1986, EPW, pp.2005-08.

behaviour. The principal reason behind this is the ragrara pattern of settlement. Moreover literacy and an even distribution of income among people as a 'consequence of land reforms and social reforms'¹⁷ can also be added as minor reasons. Comparing with the national scene, the spectacular miscibility between urban and rural Kerala can be seen.

Table 2.4: Rural Urban Differences in Percentage Expenditure on Food to Total Expenditure - Kerala 27th to 43rd Round.

Country/ State	1972-73 27th round		1977-78 32nd round		1983-84 38th round		1987-88 43rd round	
	R	U	R	U	R	U	R	U
India	72.81	64.49	64.3	60.0	65.58	59.12	63.77	55.92
Kerala	70.42	64.85	61.2	61.6	61.67	59.4	59.92	57.08

Source: Sarvekshna Issue nos.7, 20, 27, 38, 49 of January 1979 January 1986, April 1986, January-March 1989 and July-September 1991 respectively.

2.4 Factors Affecting Ragrara in the State

Ragrara in the state may have been aided by ecological, historical and geographical factors. Among them are, mobility of population, historically aided by water ways and later augmented by the colonialists through railways and a fine network of roadways; high rural population density; minimal rural-urban differentiation; and high availability of rural amenities. Decentralisation of agroprocessing industries to

17 K.P.Sunny (1988), "Consumption Behaviour in Kerala - A Study of NSS data 1965-66 to 1983", unpublished M.Phil thesis, JNU, Centre for Development Studies, Trivandrum.

rural areas also must have contributed to gragara formations. The political economy of labour-capital conflict, in which capital's use of space in its strategies to content labour by dispersing their factories to rural locations is also sighted as a reason of 'gragara'.¹⁸

2.4.1 Ecological and Geographical Factors

Ecology plays an important role in the economy of the state as it provides much diversified agro eco systems within the 30-130 km breadth and 580 km length of the state. As the lowland and the adjoining backwaters provides suitable background for paddy cultivation and pisci-culture, the midland and high land is well known for plantations. The western ghats in the east plays a major role by stopping the moisture laden monsoon airmasses and thus paves the way for heavy orographic precipitation in all the districts. Moreover 41 small rivers originating from these ghats, and well replenished by forests, provides a very fine drainage network. These features also supported the development of rural agro based industries. Thus the 'relationship between ecology and social structure has given rise to a dispersed rural habitation pattern in Kerala.'¹⁹

18 Rex Casinader (1994), op.cit, pp.29-30.

19 Joan Mencher (1966), "Kerala and Madras: A Comparative Study of Ecology and Social Structure", *Ethnology*, vol.5, no.2, pp.135-71.

2.4.2 Mobility

During pre-colonial times, mobility was made possible by an extensive system of waterways linked continuously by the backwaters. Later on colonialists developed railways for conducting smooth movement of their army and as an infrastructure for export promotion. Mobility was thus greatly advanced by the development of roads and railways. Today the state has got the maximum average road length per square kilometre, among other Indian states. This enhanced mobility also contributed to minimal differentiations as it ensured the supply of raw materials and collection of finished products for the state's agro processing industries.

Table 2.5: Total and Average Length of Roads - Kerala and India 1971-89.

Country/ State	1971	1981	1989
India	917947 (27.92)*	1491101 (45.35)	1998434 (60.8)
Kerala	74272 (191.11)	104246 (208.23)	212858 (547.7)

*Road length per 1000 sq.km.

Source: Basic Road Statistics of India 1988-89, p.13.

2.4.3 Rural Population Density

Almost all districts of the state except Idukki and Wayanad which are located in the highland have got high rural population density.²⁰ This is higher than minimum cutoff

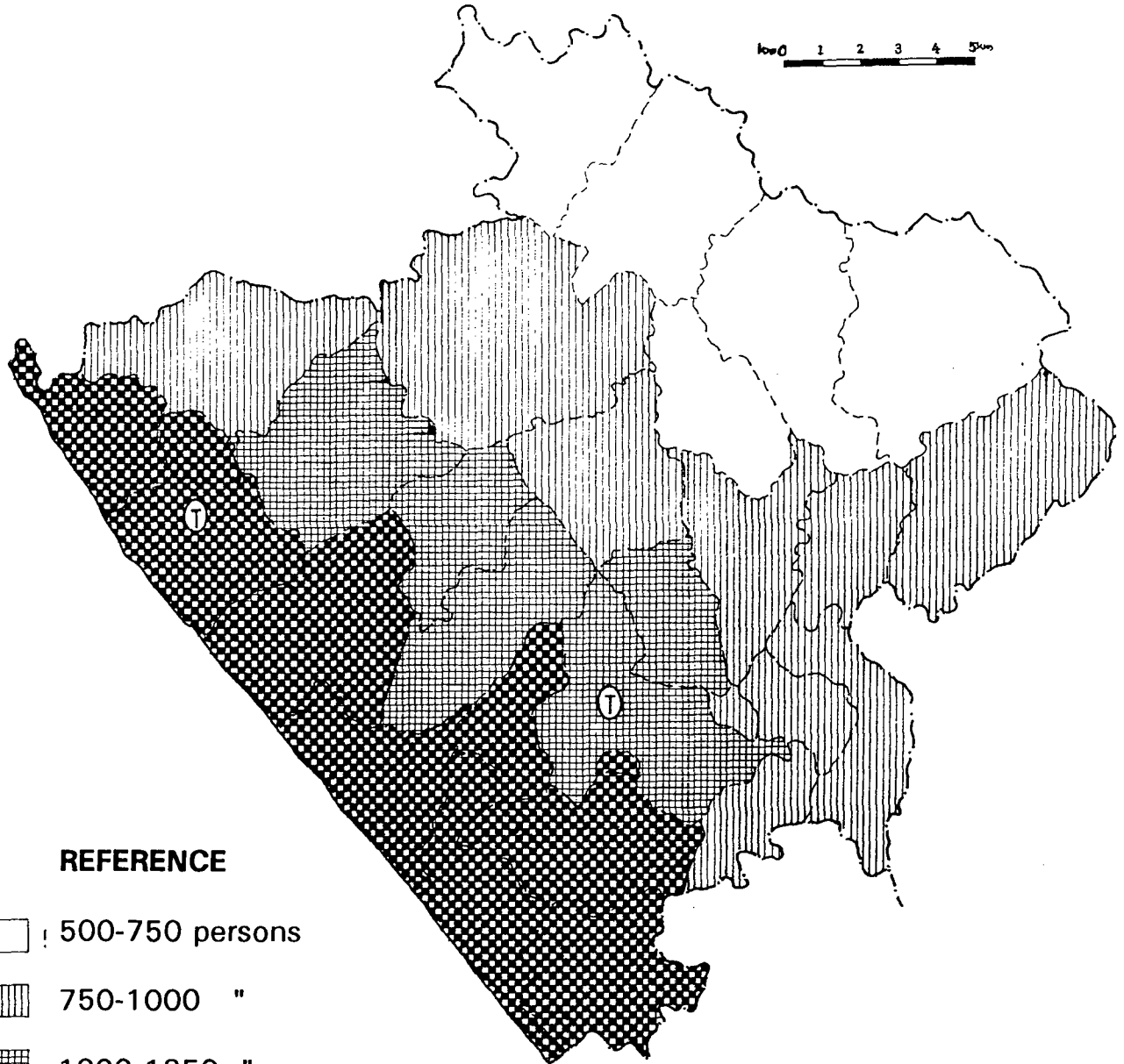
20 Census of India, Final Population Totals, 1991.

KERALA

CHIRAYINKIL TALUK POPULATION DENSITY

TRIVANDRUM DISTRICT

1981



REFERENCE

□ 500-750 persons

▨ 750-1000 "

▩ 1000-1250 "

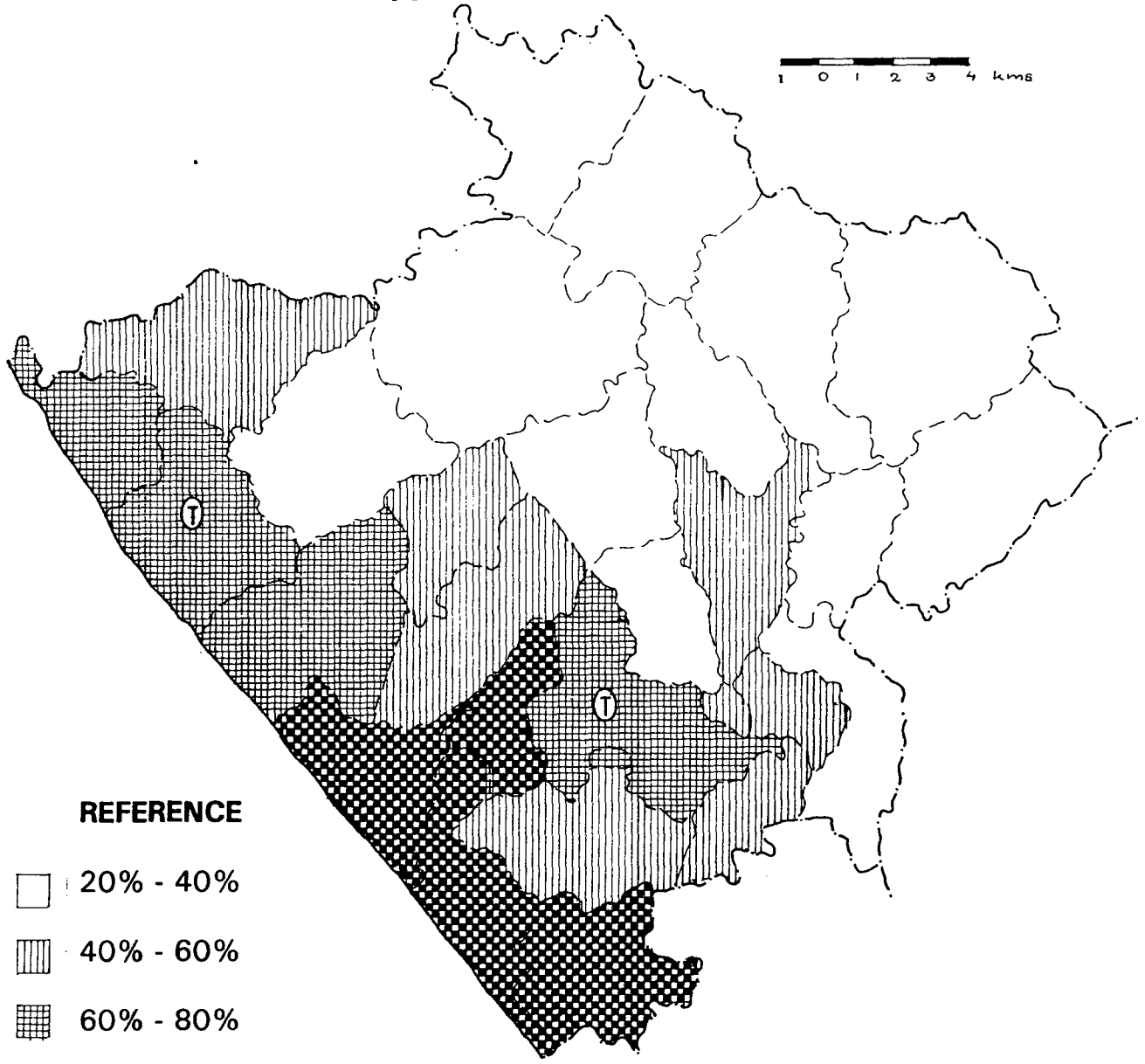
▣ 1250+ "

Ⓣ TOWN








CHIRAYINKIL TALUK NON-AGRICULTURAL WORK FORCE TRIVANDRUM DISTRICT

1981



REFERENCE

-  20% - 40%
-  40% - 60%
-  60% - 80%
-  80% +
-  TOWN



urban population density of 400 persons per square kilometre. These high population densities provided economies scale for transport system and for collective consumption²¹ which is otherwise limited only to the cities only.

2.4.4 Minimal Differentiation

The differentiation tendency²² of the urban centres in the state is very low and this actually helped in the minimal differentiation of rural and urban areas of the state. The reason for this is that urban location is not a necessary pre-condition for many of the agroprocessing industries of the state like coir, cashew, tile and cotton weaving. Some of these even maintained a rural location because of the availability of the raw material, and cheap labour. Very little fixed capital in plant and machinery were required by these factories. Another reason was the minimal geographical differentiation, as none of the regions of the state has got any natural superiority over the other region. The minimal demographic differentials also minimized differentiation between rural and urban areas.

21 Castells, *Theory and Ideology in Urban Sociology*, in C.Pickvance (ed.), *Urban Sociology: Critical Essays*, London, Tavistock.

22 Rex Casinader (1994), op.cit.

2.4.5 Availability of Rural Amenities

The village areas of the state cannot be compared or it is beyond comparison while considering an average Indian village. The villages of the state assumes first place in almost all major amenities located within a specified distance. The following table clearly shows the importance of the villages of the state in maintaining the gragara pattern.

Table 2.6: Ranking of Major States According to Productivity of Land and Percentage of Villages Having a Particular Amenity Located within a Specified Distance

State	% of non-agri.work force to total	Railway Metalled station road		Primary school	Dispen-sary	Bank	Electri city	Drink-ing water within village
		<5 km	<2km	<2km	<2km	<5km		
Kerala	1	8	1	1	1	1	3	5
Assam	2	2	13	8	9	15	17	16
Haryana	3	5	3	3	5	2	1	2
W.Bengal	4	4	8	4	2	4	16	14
Tamilnadu	5	9	4	6	12	9	4	7
Punjab	6	1	2	2	3	3	2	1
Gujarat	12	3	9	5	7	5	10	10
Mahara-shtra	14	13	11	9	15	13	6	4
UP	15	6	10	11	11	6	11	9
Bihar	16*	7	12	10	10	12	15	11

*Total of 17 states, all of them are not included.

Source: Kannan (1988), op.cit., p.18.

2.5 Conclusion

The following conclusions have emerged from the discussion of gragara in this chapter.

1. Colonial penetration of the state resulted in the establishment of a rural non-agricultural sector in the 19th century. This developed the rural areas in terms of infrastructure facilities specifically transport and resulted in a gragara settlement pattern, i.e., minimal differentiation between rural and urban areas.
2. The gragara settlement pattern has been maintained over the decades due to the high rural population density, availability of rural amenities and other eco-geographical factors like the availability of a much diversified agro eco systems with a good rainfall distribution and drainage network.

CHAPTER III
RURAL SUSTAINABILITY

3.1 **Introduction**

The notion of rural sustainability implies the existence of an aggregate economic-ecological system, which on a historical time scale succeeds to sustain both its natural and human environment. As both these natural communities are highly dynamic systems these two share a sequence of growth, decline as well as a replacement of system components. In ecological succession, one particular species may colonize an area and may become extinct after sometime. As far as the histories of human economies are concerned the increasing demands placed on the environment resulted for the down fall of many of the civilizations which dominated for decades or centuries. The self inflicted downfall of Sumer, Indus and Mayan societies, are examples of such civilizations.

The experience of many of the developing countries in recent times, does provide some cause for concern, whether it be the destruction of rainforests in Brazil, or biased energy flows in tropical Africa. The after- effect of all this is the maintenance of poverty and inequality in many of the Afro-Asian countries.

3.2 Eco-systems and Sustainability

An eco-system according to Odum (1969)¹ is "any unit that includes all of the organisms in a given area interacting with the physical environment so that a flow of energy leads to... exchange of materials between living and non-living parts of the system." Every eco-system has got its own serene way of maintaining its energy input and outputs. Its 'vulnerability to human induced perturbation' or 'stability' varies widely.

Ecosystems can recover from any stage provided their natural habitat remains untouched. It can recover through the natural processes of cutting and burning but not destruction of species. Watt² has proposed that stability at any Herbivore/Carnivore trophic level,³ increases with the number of competitor species at that level, decreases with the number of competitor species that feed upon it, and decreases with the proportion of environment containing useful food. The most important feature of an ecosystem is its 'evolutionary adjustment',⁴ so that it takes time to adapt with a new crop

1 E.P. Odum (1969), "The Strategy of Eco-system Development", *Science*, 164, pp.262-70.

2 K.E.F.Watt (1968), *Ecology and Resource Management*, New York: Mcgraw Hill, chapter 3, pp.39-50.

3 Feeding levels, which represents stages in the transfer of energy within a biological system.

4 Defined by H.E.Odum (1971), *Environment, Power and Society*, New York, John Wiley quoted in Andrew Goudie (continued...)

combination, particularly in agro-ecosystems. Mature or climax ecosystems like tropical forests achieve stability through energy flows away from production and towards the maintenance of the system itself.⁵ But in young systems the rate of gross production of biomass and organic matter tends to exceed the rate of community respiration i.e., the maintenance costs of the ecosystem. The interest of human beings lies in maintaining always a higher biomass output. So production maximization in agriculture leads to the removal of mature ecosystems, as it is against nature's own way of self protection/ adaptation.

The maintenance of a highly productive young agro-eco system, costs enormous artificial energy subsidies in the name of fertilizers, genetic selection, pest control etc., hence it proves non-sustainable in the long run. Thus sustainability in the primary sense is endangered by unwise agricultural practises against mature nature- intended ecosystems.

4(...continued)

(ed) (1985), *The Encyclopedic Dictionary of Physical Geography*, Oxford, Basil Black Well.

5 P.Bartelmus (1986), *Environment and Development*, London: Allen and Unwin, quoted in Redclift, Micheal (1987): *Sustainable Development - Exploring the Contradictions*, New York: Routledge.

While studying the "effects of agricultural development on the capacity of the ecosystem",⁶ G.Conway (1984) referred to four properties of agro-ecosystems as productivity, stability, sustainability and equitability.⁷ He established that modern high technology production systems can improve the productivity of a system but only by giving away all the other three properties mentioned above. At the same time traditional agricultural systems, although they are generally low in productivity and stability have got a high equitability and sustainability. But the case of many of the developing countries is that they are forced to increase their agricultural productivity to feed their growing populations.

Studies⁸ conducted on the sustainability of the various agricultural systems practised all over the world, indicated that energy efficiency⁹ of those systems which are practised in the developing countries is much more than the systems practised in the developed countries. The most successful are

6 G. Conway (1985a), "Agro Ecosystem Analysis", *Agricultural Administration*, 20, 31-55 quoted in *ibid*.

7 Expresses the distributive aspects of agro eco systems... the more equitable the system the more evenly are the agricultural products shared among the members (after Conway, G. 1985a).

8 Mainly by N.Gligo (1985), UNEP/ECLA.

9 Used as a proxy indicator, for measuring sustainability of various agro-ecosystems. It is calculated by dividing the total energy produced with total energy input.

those systems which combine crop rotation and fallow with low energy input, such as the peasant-maize production-system dominant in most part of rural Mexico. This system gives an energy efficiency factor which is fifty times that of irrigated spinach cultivation in the United States. The same study reveals that energy efficiency of the estate crop production in India is also very low.

Although tropical forest eco systems cover only about 7 percent of earth's land area, they harbour more than half the species of world's biota. These are the most fragile of all habitats and often conversion of it into other uses some times results in wet deserts, as was the case of Cherrapunji.¹⁰ The importance of these ecosystems lies in its ability to recharge ground water, keeping the perenniality of the river courses, maintenance of a steady soil quality, and its role in the distribution of the rainfall of a region. With deforestation or the opening up of the canopy, the increase in instant surface run-off will leach away the topsoil and that will again reduce the infiltration. Thus by maintaining its due role in the hydrological and nutrient cycles, the tropical forest eco system helps in the sustenance of the rural economy.

10 P.S.Ramakrishnan (1992), "Shifting Agriculture and Sustainable Development", *Man and Biosphere Series* (New Jersey), vol.10.

3.3 Factors Affecting the Rural Sustainability of Kerala

The concept of rural sustainability is closely linked with many factors. The important ones which are linked with the state and dealt in detail below are the role of forest lands, changes in landuse, variations in carrying capacity and labour force shifts especially in the rural manufacturing sector.

3.3.1 Role of Forest Lands

The concept of biological conservation is closely linked with sustainable development. There again, two contrasting views emerge. In the North, the evolving 'environmental managerialism'¹¹ lacks any ideological underpinnings, as it is at the behest of relatively affluent urban groups. On the other hand the environmental problems of the developing countries evolving from non-conservation strategies are directly linked with their growing populations. In reality it is the outcome of under development and poverty. This implies that ecological integrity is to be maintained not only to meet human needs but also to achieve equity with social justice and provision for maintenance of cultural diversity. Here arises the need for an agro ecosystem concept which will provide a

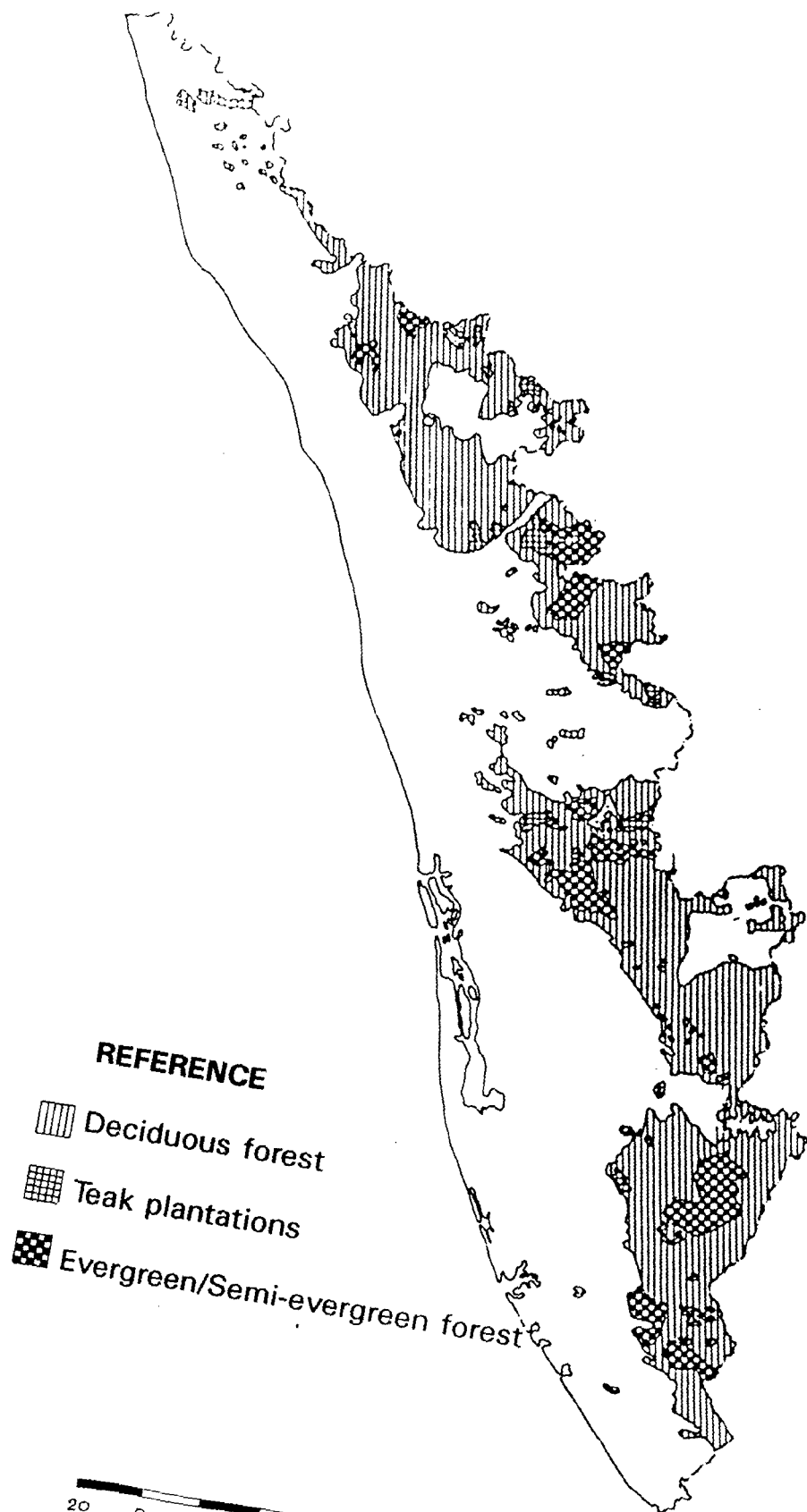
11 The 'environment' under environmental managerialism lacks ideological resonance and it is tamed and conquered and made to yield economic revenues and livelihoods. See for details David Goodman and Micheal Redclift (1991), *Refashioning Nature - Food, Ecology and Culture*, London: Routledge.

system which is not only productive but which is not lacking in equity, stability and sustainability. Many of the traditional agro eco system concepts, which were existing in India were well harmonised with its ecological components. The number of species cultivated by the jhum farmer on north eastern India in a crop mixture ranged from 4 or 5 to over 35.¹² The stability and sustainability that this traditional agro eco systems can provide needs no mentioning as many of those crop mixtures were even soil friendly.




The status of eco friendly agriculture is on a diminishing note in Kerala, as for the past 90 years, the removal of the mature tropical monsoon forests for plantations has resulted in absence of coevolution, leaching of the organic content of the soil and lastly dwindling water tables. This can be attributed partially to the all out support given by earlier princely rulers and by the post independence state governments for cultivating cash crops for getting sufficient foreign exchange. The other notable developments¹³ since independence were, the encroachment of forest areas by a rural rich class majority, clear felling in the name of development activities and a lot of illegal felling.

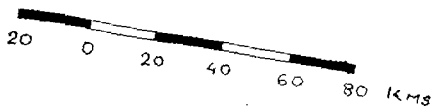
12 P.S.Ramakrishnan (1992), op.cit., chapter 10.

13 K.P.Kannan and K.Pushpangadan (1988), "Agricultural Stagnation in Kerala - An Exploratory Analysis", *Economic and Political Weekly*, 24 September 1988.

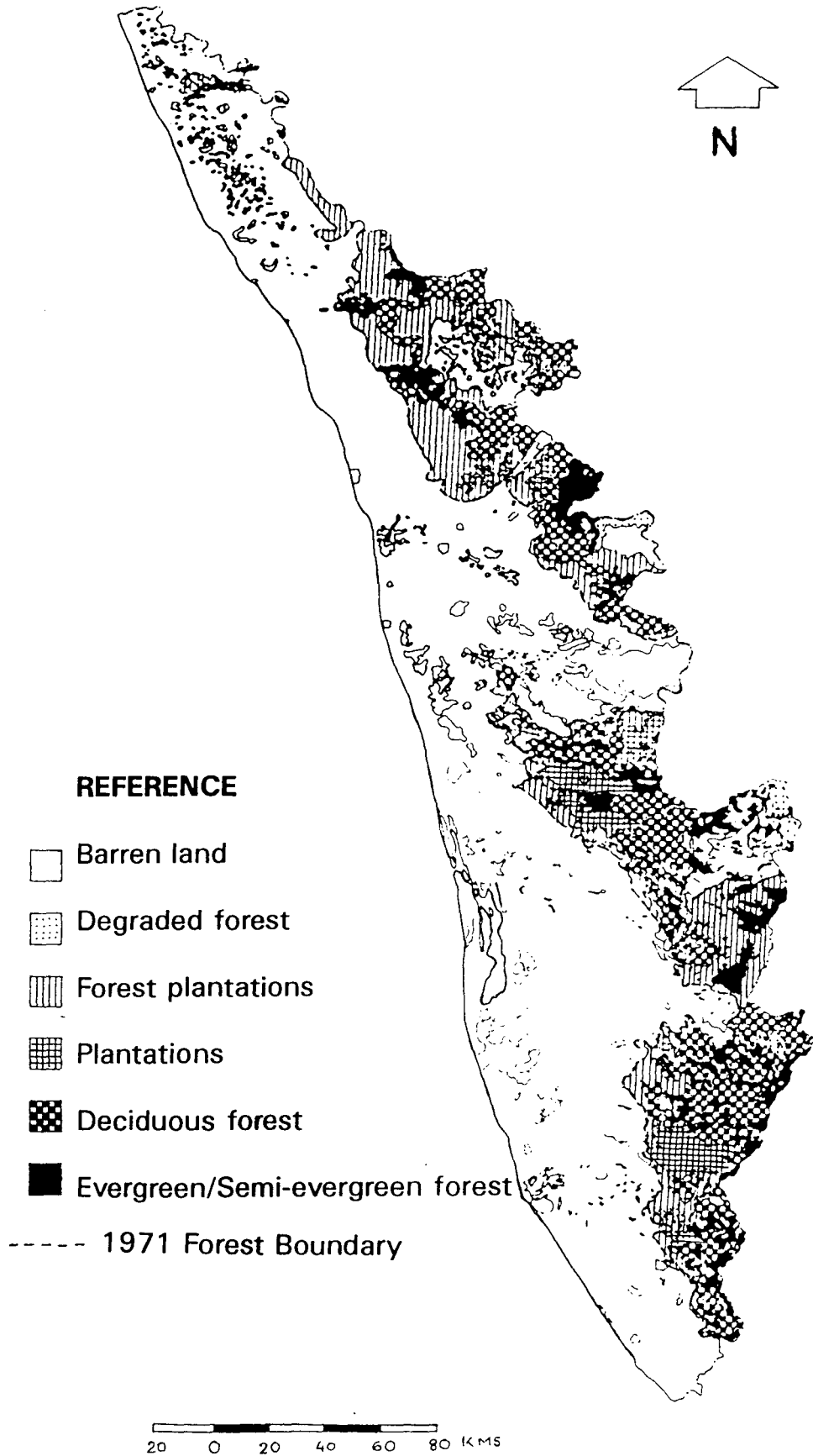


REFERENCE

-  Deciduous forest
-  Teak plantations
-  Evergreen/Semi-evergreen forest



LAND USE CHANGES 1971-1991



All of this has resulted in alarming rates of deforestation,¹⁴ declining rainfall, and high rates of soil erosion and land slides.¹⁵

The data showing agro climatic characteristics of 18 taluks which were showing the lowest yield in the state for paddy from 1975-76 to 1985-86 is given in Table 3.1

The relationship emerging between agro-climatic conditions and cropping pattern is very clear from the table. Poor quality of soil, and meagre area under forests are the visible conditions which leads to a low yield despite moderate distribution of rainfall. Poor quality of the soil indicates the absence of the forest induced nutrient cycle in these taluks. Fourteen taluks out of these eighteen have population density much higher than the state average thus adding to low land productivity.

14 Area under forests estimated 44 percent of the total geographical area in 1905, it declined to 27 percent in 1965 and to 17 percent in 1973 and between 7 and 10 percent in 1983. For details see Srikumar Chattopadhyay (1985), "Deforestation in Parts of Western Ghats Region - Kerala", *Journal of Environmental Management*, 20, pp.219-30.

15 From land use surveys conducted by the Kerala State Landuse Board (1983).

Table 3.1: Agro-Climatic Characteristics of Taluks with Low Land Productivity in Paddy Cultivation

Name of the Taluk	Yield (per hectare)	Agro climatic zone	Soil	Altitudinal type	Rainfall	Topography	Forest cover (% area)
Mukundapuram	2012	IV	Laterite	S.L. to 500 m	2 monsoons moderately distributed	Less valley and more hills and slope	23
Ernad	1996}	VI	"	"	Monsoon less moderately distributed. S-W monsoon concentrated in 3-4 months period	Less valleys slopes are more steep but hills with table top	15
Tirur	1820}						
Hosedurg	2084}						
Kozhikode	1614}						
Thaliparamba	1942	V	"	"	Monsoon less moderately distributed. S-W monsoon concentrated in 3-4 months period	Less valleys, steep slopes, hills with moderate gradients	7
Thalassery	1757						
Kannoor	1872						
Qilandy	1408						
Wadakara	1372						
Chowghat	1695	II	Sandy	"	2 monsoons moderately distributed	Extensive valleys with levels but raised garden lands	Nega-tive
Kodungalloor	1135						
Cochin	2061						
Shertallai	1067						
Ambalapuzha	1949						
Karunagappally	1944	I	Alluvial	"	2 monsoons moderately distributed	"	"
Quilon	2013						
Kanayannoor	1875						

Source: Government of Kerala (1974) Report on the Committee on Agroclimatic Zones and Cropping Patterns, Department of Agriculture, Trivandrum.

Table-3.2: Mean and Variability of Rainfall
in Kerala (1960-1985)

Various statistic	1960-69	1970-79	1980-85
Mean	2973.8	2641.8	2454.1
Standard deviation	498.2	465.7	494.2
Coefficient of Variation	16.8	17.6	20.0

Source: Compiled from Statistics for Planning, Bureau of Economics and Statistics (1971 and 1988).

The effect of deforestation on micro climate is also important. There has been a decrease in the rainfall in Kerala in the last 30 years. The total average rainfall of the state is becoming less every decade as the normal rainfall¹⁶ is 2961 mm. One of the important conclusion¹⁷ from a study conducted in the state was that deforestation as such does not seem to reduce the total annual precipitation but it reduces the number of rainy days. The conversion of forest areas into agricultural lands can lower water tables and reduce dry season river flow.¹⁸ Perenniality assumes much significance since most of the rivers in the state follow a

16 Statistics for Planning (1993), Bureau of Economics and Statistics.

17 V.M. Meher-Homji (1980), "The Link Between Rainfall and Forest Clearance", Case Studies from Western Ghats, Trans. Inst. Indian Geographers, 2, 59-95.

18 Hamilton, L. and King, P. (1983), *Tropical Forested Water Sheds: Hydrologic and Soils Response to Major Uses/Conversions*, Boulder: Westview Press quoted in David Pearce (1991) *Economic Policy Towards the Environment*, Oxford: Blackwell Publishers.

rapid course. It even results in flash floods, as cutting of forests results in increase of water supply during rainy seasons.¹⁹ All this has added to the non-sustainability of the rural agro-ecosystem.

3.3.2 Landuse Changes

In 1905, the percentage of natural vegetation to total geographical area in Kerala was 44 percent. It came down to nearly less than 10 percent in 1983²⁰ (See Map 5 and 6). Much of this decrease was accounted by the growth of plantations, the reasons of which can be devoted to the increasing pressure on land inflicted by the high population growth. This has resulted in the formation of young agro-ecosystems in place of mature tropical forests. This spree for higher biomass output, resulted in low energy efficiency of these systems (energy efficiency of Indian estate ecosystems is only 0.90 as quoted earlier).

Land use assumes great significance in agro eco system planning concept, because even slight changes in land use can seriously alter the energy budget of the whole system and sometimes it can even destroy it. The experience of Attappadi, a region in Palakkad district, once an evergreen forest, now transformed to a desert is a living evidence of

19 Ibid.

20 Srikumar Chattopadhyaya (1985), op.cit.

the indiscriminate landuse changes. So utmost care should be taken while resorting to new changes in land use, moreover these are physical parameters in which multiple uses can prevail and that adds to the greater responsibility of selecting the most energy efficient system. Many researchers have mooted the necessity of mixed landuse pattern to ensure self sufficiency in food crops and cash crop economy organised on a co-operative basis.²¹ The problem with the early colonizers and later of an affluent rural class was that they never bothered about keeping a vibrant eco system and it lead to an effective tying up of natural resources and export production.

Table 3.3: Growth Rate in Area, Production and Yield of the Major Crops - Kerala 1975-76 to 1990-91.

Crops	Growth Rate in		
	Area	Production	Yield
Coconut	0.25	0.23	-0.02
Paddy	-0.36	-0.20	0.25
Rubber	0.99	1.38	0.19

Source: Compiled from Statistics for Planning, Bureau of Economic and Statistics, Kerala (1993).

While looking at the major crops which constituted the landuse of the state for a period of 16 years from 1975, the

21 P.S.Ramakrishnan (1984), "Let the Tribals Decide What they Want"!, *Science Age*, 2, pp.8-11.

area and production of both coconut and rubber shows positive change. It shows a negative change for paddy, but the growth rate differential between area and production and positive growth for yield shows that only the marginal lands which had been put for paddy cultivation before, have been reclaimed by the other perennial crops. As the farmers were exposed to increased risk in earnings, economic rationality²² dictated the allocation of land use more than environmental and need considerations of the state. The filling up of the water laden paddy fields with mountain laterite, in order to make it cultivable for perennial crops like rubber and coconut is another serious environmental problem which needs attention.

The decrease in yield of coconut has been due to one important externality - the root-wilt disease²³ although the extent of a stagnation is moderately perceptible throughout the state.

The case of Rubber is a completely opposite picture as it has shown consistently positive growth in area, production and yield. Rubber is a monocrop unlike other perennial crops like coconut, pepper and arecanut and the one which has got the maximum institutional support. The attractive private returns

22 K.P.Kannan and K.Pushpangadan (1990), "Dissecting Agricultural Stagnation: An Analysis Across Crops, Seasons and Regions", *Economic and Political Weekly*, September 1-8.

23 Survey of Indian Agriculture (1988), *The Hindu*.

has not brought any attractive social returns, as labour absorption is low compared to seasonal crops, and hardly any income generating type of output processing has happened inside the state.²⁴

The extensive land use changes in the state, which has been induced by an economic rationality based on profit maximization which has resulted in disastrous perturbations in the agro-ecosystem should be analysed from another view point also, i.e., the availability of food in the state. Table 3.4 shows an upward trend in the import of food grains, so this landuse shift cannot be justified while looking at the problem of food security. Moreover the first important commodity imported in 50 towns out of a total of 85 towns is either a cereal or a pulse.

24 Tharian George and Toms Joseph (1992), "Rubber Based Industrialization in Kerala - An Assessment of Missed Linkages", *Economic and Political Weekly*, September 15, 1992.

Table 3.4: Availability of Food in the State

Particulars of availability	1961	1971	1981	1986
	(in lakh tonnes)			
1. Production of rice in the State	10.67	12.98	12.72	11.73
2. Available rice for consumption (within production)	9.6	11.68	11.45	10.56
3. Import of rice on state account	2.40	7.47	15.75	16.50
4. Import of wheat on state account	-	0.55	0.48	4.20
5. Private imports	7.26	NA	NA	NA
6. Total imports	9.66	8.02	16.23	20.7
7. Total availability (2+6)	19.26	19.7	27.68	31.26
8. Total imports as a percentage of availability	50.16	40.71	58.63	66.22

Source: B.A.Prakash (1989), "Unemployment in Kerala: An Analysis of Economic Causes", Working Paper No.231, Centre for Development Studies, Trivandrum.

Table-3.5: First Important Commodity Imported by Size Class of Towns - 1981

Commodity	Size Class of Towns						
	All	I	II	III	IV	V	VI
Rice	43	2	5	27	8	1	-
Wheat	4	1	-	2	1	-	-
Pulses	1	-	-	-	1	-	-
Other food grains	2	1	1	-	-	-	-
Total pulses and food grains	50	4	6	29	10	1	-

Source: Government of India, Census 1981, Town directory.

3.3.3 Labour Force Shifts in Rural Areas

Historically, a sizeable amount of the rural labour force in the state was engaged in the manufacturing sector, which was closely linked with agro processing. This happened mainly due to a favourable export market and a fine network of water ways. Hence it was a 'process of commercialization'²⁵ which was the main reason for the high level of rural non-agricultural employment rather than industrialisation or urbanisation. An earlier study²⁶ using economic concepts like 'location quotient' has already shown that Kerala has a lopsided industrial structure with its base consisting of a set of resource base industries like food processing, wood and wood processing, paper and paper products and rubber and rubber products. But the latest trends shows a decreasing percentage of workers in the rural manufacturing sector, even with a large consumer demand for non-food articles.

25 Mridul Eapen (1994), "Rural Non-agricultural Employment in Kerala - Some Emerging Tendencies", *Economic and Political Weekly*, May 21.

26 K.K.Subrahmaniam (1990), "Development Paradigm in Kerala: Analysis of Industrial Stagnation", *Economic and Political Weekly*, September 15.

Table-3.6: The Percentage Distribution of Persons Working in Manufacturing Sector - (Rural) Kerala (1971-88)

Category	1971		1977-78		1983		1987-88	
	M	F	M	F	M	F	M	F
Agriculture	61.1	64.6	56.7	54.8	55.7	56.5	52.4	53.9
Non-agri-culture	38.9	35.4	43.3	45.2	44.3	43.5	47.6	46.1
Manufacturing	12.8	20.1	14.4	25.8	12.5	23.8	10.7	23.5

Source: Compiled from Census (1971) and NSS Rounds.

3.3.4 Carrying Capacity Variations

The relationship between population, resources, environment and development is very complex. These are acting differently in different societies. The size of the population, its rate of growth and the pattern of its distribution influence the state of the environment as they condition the pace and composition of development. This is not a version from the natural limits arguments of social constructionists but it is the first step in transforming the prevailing pattern of nature-society interaction. The ultimate aim being the withering away of inequalities in consumption and life styles as there lies the root cause of all social problems including environmental degradation.

Population growth, it was argued necessitates the growth in agriculture specially food grains productivity in order to attain self sufficiency. But more than food security,

'environmental security'²⁷ is even more pressing now as that is the only hope for future food security. So considering the sustainability and equitability of an agro eco system it also needs more attention.

The state has had a high density of population from the earlier times and this has resulted in large scale rural migration to the forest regions of the western ghats in the 1960s and at the beginning of 1970s. Although it has helped some rural families in economic advancement, the resulting environmental effects are still felt, as eco-regulatory practices were minimum at that time. These environment related yield problems were maximum in high density areas as it is clearly visible from the earlier analysis of agro climatic regions.

3.4 Trends in Rural Sustainability

The trend in four major indicators of rural sustainability in Kerala is given in the following table. The district level data is for a period of 20 years i.e., from 1971 to 1991.

27 Norman Myers (1985), Population, Environment and Conflict, paper for UNFPA Conference on Population Development and Peace, London, 15-17 May, quoted in Micheal Redclift (1987), op.cit.

Table 3.7: Trends in Rural Sustainability - Kerala
(1971-91)

Districts	% area of Rubber to gross cropped area		Rural population density		% of forest area to total geographical area		% of male workers in rural manufacturing	
	1971	1991	1971	1991	1971	1991	1971	1991
Trivandrum	3.12	10.94	799	1007	22.4	18.4	11.7	7.5
Quilon	8.71	13.48	485	827	34.6	28.6	10.92	10.37
Kottayam	19.36	44.6	298	741	4.5	2.4	8.4	9.08
Ernakulam	8.8	24.6	565	774	12.9	8.66	16.7	13.7
Thrishoor	3.6	3.2	641	739	33.4	29.31	18.1	15.9
Palakkad	2.2	7.09	343	471	35.78	26.57	13.48	12.1
Malappuram	6.5	7.4	486	833	21.4	21.32	9.8	8.5
Kozhikode	5.7	7.4	438	806	12.55	6.28	9.4	8.6
Kannoor	5.4	15.8	369	477	7.7	5.5	16.6	6.4

Source: Compiled from Economic Survey 1981, 1991, 1993, State Planning Board; and Statistics for Planning 1981, 1988, 1993, Bureau of Economics and Statistics; and Forest Data (1991) from Kerala State Landuse Board.

The four indicators, the trend of which are shown above are showing the non-sustainability of the rural areas of the state. Only marginal differences are there against the general trend in two districts for one indicator each. Thus this clearly shows that rural sustainability has been declining in Kerala over the last 20 years.

Kottayam, Ernakulam, Trivandrum and Kannoor districts showed large expansions of area under rubber and Trivandrum,

Quilon and Malappuram has had high rates of growth in rural population densities during 1971-91. All districts showed decrease in forest area and Palakkad district accounted for the worst destruction. The percentage of male workers in rural manufacturing sector also declined in all districts with Kannoor showing nearly 10 percent reduction.

3.5 Levels of Rural Sustainability in Kerala (1971 and 1991)

Evaluation of the ground reality or experience, signifies the most important part of geographical research, as it is basically a spatial science. But linking theory with ground reality is always a hard task. As Harvey puts it "The path between the historical and geographical grounding of experience and the rigors of theory construction is hard to negotiate. I conceive of it as mediated by processes of reflection and speculation. By speculation I mean the interrogation of the conceptual apparatus through which experience is mediated, the adjustment of conceptual filters and juggling of perspectives so as to create fresh windows and dimensions to our interpretation of experience." This kind of a theory building is hardly ventured here, or it is impossible, as it is difficult to adjust with the conceptual filters of prominent social theorists, in order to interpret the spatial spread of settlements in Kerala without losing the

essence of both. Nevertheless an attempt has been made to study rural sustainability in a conceptual framework here.

Table 3.8: Composite Indices²⁸ of Rural Non-Sustainability - Kerala 1971 & 1991

Districts	1971	1991
Trivandrum	1.973	2.014
Quilon	2.034	1.923
Kottayam	2.876	3.201
Ernakulam	2.219	2.406
Thrishoor	1.756	1.444
Palakkad	1.375	1.455
Malappuram	1.952	1.748
Kozhikode	1.902	1.816
Kannur	1.890	1.939

The factor scores of rural nonsustainability, shows that Kottayam and Ernakulam are the most rural non-sustainable districts during both time periods. It was followed by Quilon, Trivandrum, Malappuram, in 1971 and Trivandrum, Kannur and Quilon in 1991. Palakkad and Trishoor are the most sustainable districts in both periods. Malappuram which is considered to be the most backward district of Kerala as far as the socio-economic indicators are concerned, is the third most sustainable district in 1991 in terms of its rural areas.

28 Details of the analysis is given in Appendix I.

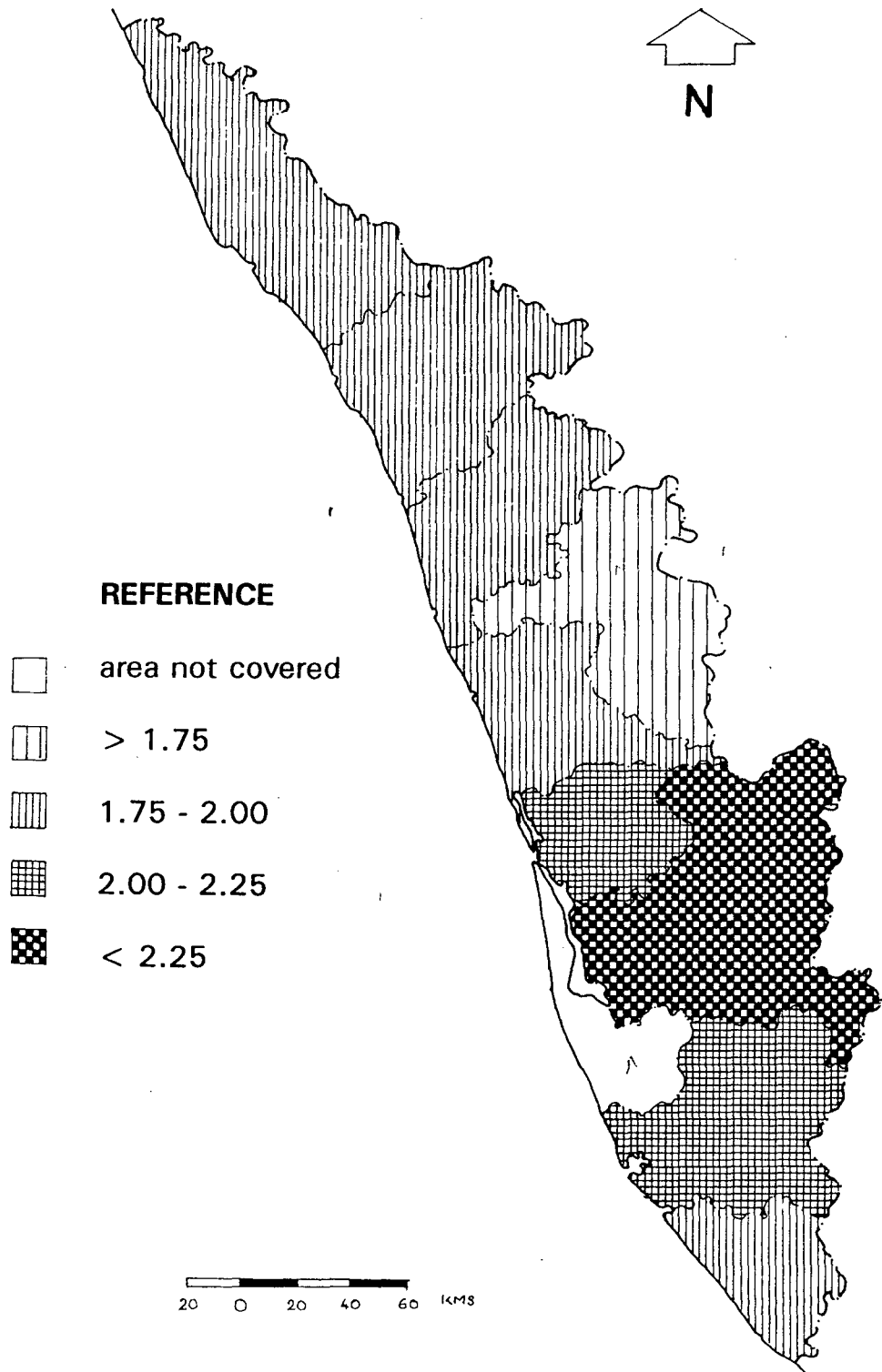
3.6 Conclusions

The following two conclusions have emerged from the analysis in this chapter. They are,

1. The analysis of the factors affecting rural sustainability of the state, make it clear that rural sustainability has declined during the period 1971-91.
2. There is enough evidence to validate the hypothesis that excessive commercialization of agriculture and deforestation reduces rural sustainability.

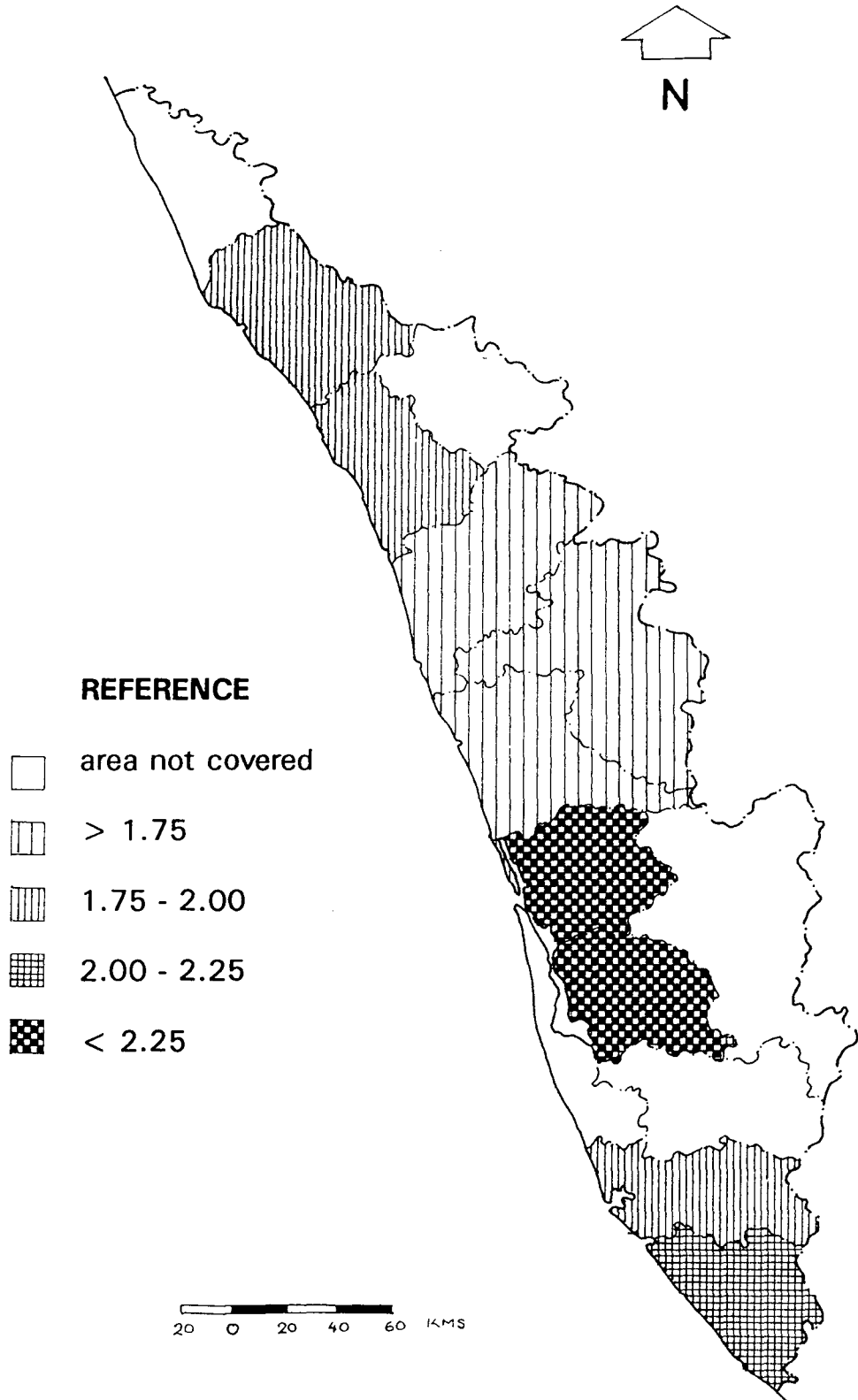
KERALA

RURAL NON-SUSTAINABILITY - 1971



KERALA

RURAL NON-SUSTAINABILITY - 1991



CHAPTER IV

URBANISATION AND RURAL-URBAN LINKAGES

4.1 Introduction

Urbanisation is a natural consequence of the economic development of a country. As a region/country develops certain activities require a concentration of people. Activities that can substitute land with capital are the ones which concentrate in this way. The high elasticities of substitution between land and non-land inputs leads to urban concentrations. On the other hand, the concentration of people involved in agriculture is very much dependent upon the capability of the land. So land can become a deciding factor in creating rural concentrations as well. As the urban concentrations are not restricted by the carrying capacity of land such concentrations can develop enormously. The existence of scale economies in non-agricultural occupations also contributes to this concentration.¹ The combined effect of scale economies, transportation costs and relatively high substitution effects between land and non-land inputs in non-agricultural pursuits produces urban concentrations.

1 Rakesh Mohan, "Urbanisation in India's Future", *Population and Development Review*, vol.11, no.4, December 1985, pp.619-45.

As the per capita income of a region rises, the demand for non-food goods increases² and that in its turn causes more diversification of the non-agricultural sector.

4.2 The Settlement Structure in Kerala

While coming down to the pattern of 'gragara' settlements in Kerala many scholars have pointed out the definitional problems.³ It therefore becomes important to study the origin and sustenance of this unique spatial formation.

Since 'urban' is one of the several spatial scales on which production of space and of political consciousness might be examined,⁴ this chapter tries to look into Kerala's urbanisation and rural-urban linkages. Firstly, the history, trends and present state of urbanisation within a comparative framework of India is attempted, secondly, the rural-urban linkages are analysed.

4.3 History, Trends and Present Status of Urbanisation in Kerala

4.3.1 Historical Background

Most of the urban centres in the state were historically nourished and developed in three ways, firstly as the seats of

2 Engel's law. The Indian experience shows demand increase in all deciles except the lower two. See *ibid.*

3 R.Mohan and C.Panth, "Morphology of Urbanisation in India: Some Results from 1981 Census", in *Economic and Political Weekly*, vol.17, nos.38 and 39, 1982.

4 David Harvey (1985). *Consciousness and the Urban Experience*, Oxford: Basil Blackwell.

power/administration; secondly, as trade centres; and, lastly as religious centres. Besides these three reasons, the geographical factors also played a crucial role in the development of these centres.

Kerala's trade relations with other countries date back to the eighth century B.C. when there was a flourishing trade with Egypt, Rome and Persian Gulf countries.⁵ Commodities like ivory, pepper, rosewood, coconut, ginger and spices were exported via the Kodungalloor port, 30 kilometres north of Cochin. In the early part of the first century the spice trade especially pepper increased steadily and Kodungalloor served as the trade capital of Kerala till 1018 A.D. From 800 A.D. onwards Kollam also became an important commercial centre.

The landing of the Portuguese in 1498 and the Dutch in 1604 resulted in the development of Cochin and Calicut as the new trading centres. Cochin could become a navigable port only after 1341 A.D. when a massive flood removed the land barriers around it.⁶ Around the same time and due to the same reasons the Kodungalloor port gradually silted up losing all its geographical advantages. The role of 'Zamorins' in

5 K.V.K.Ayyar (1966), *A Short History of Kerala*, Ernakulam: Pai and Co.

6 K.P.P.Menon (1924). *History of Kerala*, Vol.I, T.K.K.Menon (ed), Ernakulam: Cochin Government Press.

developing Calicut as an urban centre also needs to be mentioned here. Trivandrum the present capital was earlier developed as the capital of the then King of Travancore and also as a religious centre.

Before independence the Malabar region was under Madras presidency (British rule) and the other two regions cochin and Tranvancore remained as princely states. After the reorganisation of the state in 1956. 3 urban centres Calicut, Cochin and Trivandrum stood out as the main centres.

4.3.2 Census History of Urban Centres

The first census of 1872 identified 7 towns in the state, they were Cannanore, Tellicherry, Badagara, Calicut, Ponnani, Palghat and Fort Cochin. Although there existed differences in the definition of an urban area more and more urban centres were added in the subsequent census periods. In 1901, 21 urban centres emerged, of these 10 were on the coast. From 1911 to 1941 20 new urban centres were added. In the census years of 1951 and 1961. 15 new urban centres were added. Moreover the definition adopted from 1961 onwards was somewhat strict and uniform throughout India. In 1961 as many as 92 towns were recognized and among that 89 were located in coastal and midland areas.

4.3.3 Growth and Level of Urbanisation Since 1901

The increase in the level of urbanisation in Kerala from 1901 has been slow but consistent till 1981. During all these years it was well below the national average. But according to the 1991 census the state has achieved a higher level of urbanisation than the national average as well as the maximum urban growth rate among states. The percentage share of the states urban population in the national sphere has come down.

Table 4.1: Level of Urbanisation and Growth Rate of Urban Population - Kerala and India (1901-1991)

Year	Degree of urbanisation		Annual exponential growth rate	
	India	Kerala	India	Kerala
1901	10.8	7.11	-	-
1911	10.3	7.34	0.03	1.54
1921	11.2	8.73	0.79	2.98
1931	12.0	9.64	1.75	3.46
1941	13.9	10.84	2.77	3.05
1951	17.3	13.48	3.47	3.27
1961	18.0	15.11	2.34	3.99
1971	19.9	16.24	3.21	3.05
1981	23.3	18.74	3.83	3.19
1991	25.7	26.44	3.09	4.76

Source: Census of India, 1981 and 1991.

The annual exponential growth rate shows a higher than national level for the state from 1901 onwards. It came down only during 1951, 1971 and 1981. In 1991 it went up to 4.76.

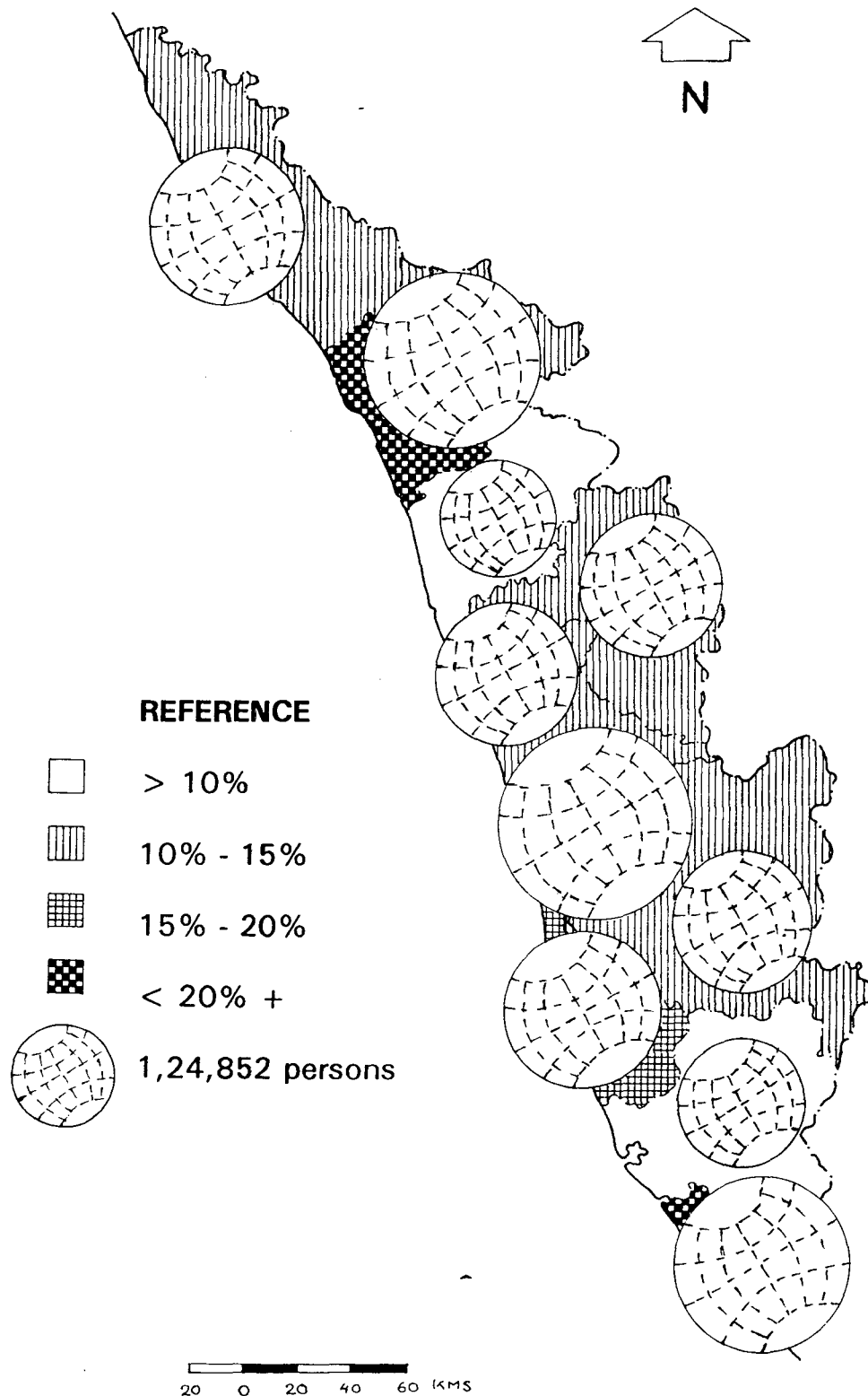
Table 4.2: Urbanisation Level and Urban Growth Rate in Kerala (Districtwise)

State/ districts	Level of Urbanisation			Urban Growth Rate		
	1971	1981	1991	1971	1981	1991
Kerala	16.23	18.74	26.40	35.72	37.64	60.89
Kannoor	13.74	23.39	50.87	8.26	101.84	86.94
Kozhikode	26.66	27.18	38.34	47.97	8.67	64.54
Malappuram	6.73	7.40	9.12	64.35	42.39	58.87
Palakkad	12.70	10.11	15.70	43.80	-3.46	81.07
Thrishoor	11.74	21.10	26.31	34.58	106.04	39.83
Ernakulam	27.56	39.56	48.74	66.17	57.68	36.81
Kottayam	10.22	9.37	17.55	28.81	-23.79	101.4
Alleppey	16.92	15.89	30.46	15.87	3.84	77.04
Kollam	7.87	13.15	18.53	31.66	14.90	32.24
Trivandrum	26.0	25.26	33.87	27.42	14.73	52.13

Source: Based on Census of India 1991, 1981 and 1971.

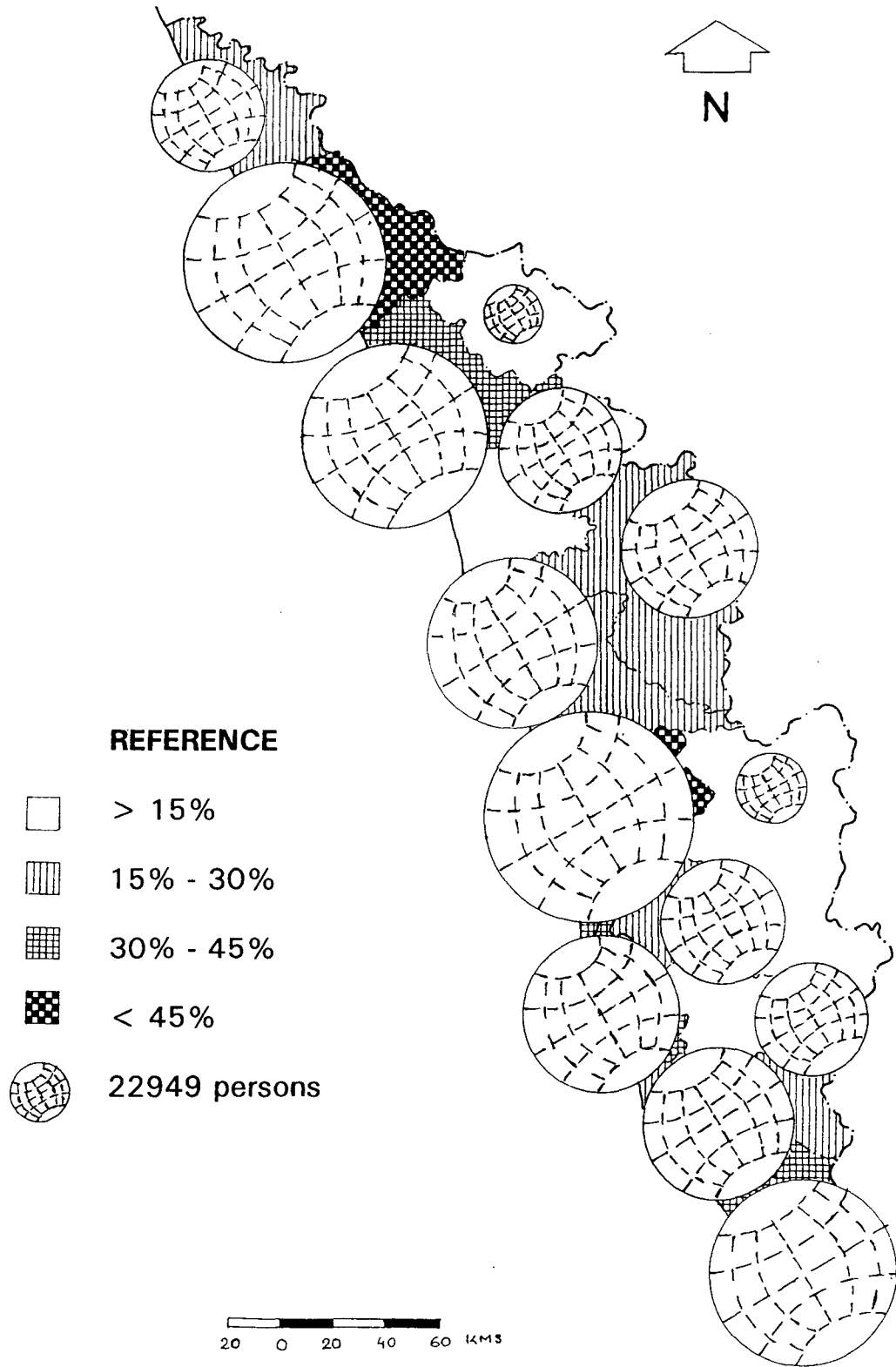
The districtwise break up of the level of urbanisation reveals that a major proportion of the urban population is concentrated in the coastal districts of Kannoor, Kozhikode, Ernakulam, Alleppey and Trivandrum, Kannoor stands out to be the most urbanised district of Kerala followed by Ernakulam, Kozhikode and Thiruvanthapuram. The least urbanised districts of Wynad and Idukki are located in the high land region of the state. The last decade helped to record the most spectacular

LEVEL OF URBANISATION AND URBAN POPULATION - 1971



KERALA

LEVEL OF URBANISATION AND URBAN POPULATION - 1991



growth rate in the level of urbanisation for the five above mentioned districts.

Table 4.3: Urban Population 1901-91 (Percentage)

districts	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991
zarkode	-	-	-	-	-	-	-	-	-	2.30
nnoor	11.80	12.67	9.19	8.05	6.90	6.82	10.75	9.37	13.74	15.00
zhikode	18.62	18.07	13.53	12.06	13.65	12.50	14.36	16.20	12.79	13.1
nad	-	-	-	-	-	-	-	-	-	0.92
lappuram	4.82	4.77	3.16	2.78	3.53	3.49	2.97	3.60	3.73	3.6
lakkad	12.64	12.70	10.04	8.02	8.32	8.12	8.33	6.18	4.33	4.7
trishoor	6.87	7.74	7.59	8.65	10.01	8.30	7.27	7.21	10.79	9.4
ernakulam	15.82	16.65	14.17	15.43	15.88	14.45	15.28	18.35	21.02	17.6
quilon	-	-	-	0.38	0.35	0.58	-	0.73	0.94	0.66
kottayam	6.6	3.27	8.35	8.54	7.88	8.50	6.18	6.02	3.33	4.2
trivandrum	6.65	7.52	12.92	13.17	11.90	12.46	12.15	10.38	7.83	7.7
malappuram	-	-	-	-	-	-	-	-	-	2.02
palakkad	3.45	3.89	6.07	6.32	6.67	7.86	5.55	5.48	7.76	5.8
trivandrum	12.73	12.62	14.98	14.6	14.89	16.92	17.16	16.48	13.74	13.0

Source: Based on Census of India, 1981 and 1991.

When we consider the urban growth rates in a disaggregated level, they were consistently good for Malappuram Thrishoor, Ernakulam, Quilon and Trivandrum, during all three census years. Two of the districts viz. Palakkad and Kottayam showed negative growth rates in 1981. The reason

for this is the high percentage of declassification and reduction in geographical area because of division for Palakkad and Kottayam respectively. The census decade 1981-1991 was the period of high urban growth rates for all districts.

The percentage distribution of urban population clearly reveals that the share of coastal districts has increased over time. Another interesting finding is that the three districts which were having the main three urban centres viz. Cochin, Calicut and Trivandrum from 1901 onwards have not improved their share in total urban population. They in fact declined by a few percentage points. This clearly shows the effect of the decentralised urbanisation of Kerala, which is not promoting any kind of regional primacy. Ernakulam district has got the maximum share of population (17.8 percent) and Wynad has got the minimum (0.298 percent) in 1991 census.

4.3.4 Growth of Towns by Size Class

The share of the urban population by size class during the census year 1971-91 shows that the class I towns have got the maximum share of the urban population both at the national and state level. But this is mainly due to the increasing concentration in the class I towns, as no other class is above it, so there is a piling up of towns, once they have acquired 1 lakh population. The share of class III towns is consistently sizeable in the state, and is not the case at the

national level. This enormous share of class III towns can be linked up with the development of the social infrastructure of the state. The social agglomerative economies⁷ will be maximum within this population limit (20000-49999). Moreover the state accounts for the maximum spending on social overhead. But these economies show sharply diminishing returns except for some vertically integrated services like water supply, electricity and sewage in higher urban concentrations. But agglomeration economies in every other front viz., manufacturing, transport will persist with city growth.

Table 4.4: Percentage Share of Urban Population by Size Class Kerala and India (1971-91)

Size Classes	Kerala			India		
	1971	1981	1991	1971	1981	1991
I-VI	100	100	100	100	100	100
I	49.7	53.1	66.34	57.24	60.42	65.2
II	11.52	9.51	7.22	10.9	11.6	10.9
III	27.57	31.87	19.08	16.01	14.33	13.19
IV	9.14	4.78	6.78	10.94	9.55	7.78
V	1.94	0.74	0.58	4.45	3.58	2.60
VI	0.13	-	-	0.46	0.52	0.29

Source: Census of India, 1991.

7 Samuel, H. Preston, 'Urban Growth in Developing Countries', *A Demographic Reappraisal: Population and Development Review*, vol.5, no.2, June 1979.

4.3.5 Size Classes and Urban Growth

Table 4.5: Size Classes and Urban Growth of Kerala and India (1971-91)

Size class	Urban growth			
	Kerala		India	
	1971-81	1981-91	1971-81	1981-91
I-VI	37.64	60.89	46.23	36.09
I	47.18	100.85	94.35	46.87
II	13.64	22.12	55.73	28.14
III	59.07	-3.68	30.85	25.30
IV	-28.07	128.39	27.54	10.72
V	-50.13	32.83	17.82	-1.27
VI	-	-	65.73	-21.70

Source: Census of India, 1991.

The predominant relation between city size and city growth in developing countries is negative. By analysing the 1971-81 decadal census growth there is no clear cut picture. But for 1981-91 the country's picture is very clear as there is a positive association between city size and growth. While considering the Kerala case in 1981-91, the curve is just 'U' shaped, as the growth of population in class III towns is negative. The high growth rate of the class IV towns is due to the adding up of 17 new towns in 1991 census. Thus the diffusion of the urbanization process came down by one class in the 1991 census.

4.3.6 Present Urban System in Kerala

The absence of a primate city is a fundamental feature of the state's urban structure. Compared to other Indian states, the concentration of population, and urban activity ratios in the biggest city is the lowest in Kerala. The reason of this may partially be the limited access to the hinterland due to the Western ghats. Another reason is the historical pattern of development of the main urban centres in the state, as they have developed as the capitals of three leading princely states almost simultaneously.

Table-4.6: Population and Urban Activity Ratios in the Prime City 1971

Concentration ratio	Madras	Bombay	Calcutta	Cochin
Population	25.43	38.00	64.11	12.67
Manufacturing (other than household)	29.33	58.20	79.32	14.52
Trade and Commerce	24.97	49.95	72.52	13.83
Transport, storage and communication	41.32	49.49	29.51	21.12
Other services	27.93	40.37	68.41	15.31

Source: Sankaranarayanan, 1977.

Table 4.7: Components of Urbanisation 1971-91
(in percentage)

State/ Districts	Incremental component			Extensional component		
	1971	1981	1991	1971	1981	1991
Kerala	70.1	43.8	32.6	29.9	56.2	67.4
Kannoor	65.6	10.8	22.8	34.4	89.2	77.2
Koshikode	67.0	74.9	20.2	33.0	25.1	79.8
Malappuram	35.7	100.0	62.7	64.3	0.00	37.3
Palakkad	69.9	100.0	28.6	30.1	0.00	71.4
Thrishoor	34.8	6.4	38.9	65.2	93.6	61.1
Ernakulam	78.3	59.6	9.3	21.7	40.4	90.7
Kottayam	71.3	100.0	16.3	28.7	0.00	83.7
Alappuzha	100.0	74.8	55.4	0.00	25.2	44.6
Kollam	70.3	41.1	73.9	29.7	58.9	26.1
Trivandrum	80.9	86.9	64.4	19.1	13.1	35.6

Source: Based on Census of India 1981 and 1991.

The two important components of urbanisation,⁸ the incremental and extensional components constitutes the total urban growth. Incremental component means the net addition to the population of already existing towns which continue to be towns either due to immigration or due to natural increase in population. Extensional component is the increase in that

8 K.Nagaraj (1985), Towns in Tamilnadu, Karnataka and Andhra Pradesh: A Study of Population and Spatial Configurations 1961-81, Working Paper No.54, MIDS, Madras.

population which happens due to the emergence of new towns. Considering the whole of the state, it is quite evident that incremental component is becoming less important, although there are large fluctuations in the districts. This happens because of the minimum natural increase as both population growth and immigration are becoming less. This indeed is a different path, and very peculiar to Kerala, as both the national experience and the Western experience were different. Natural increase still constitutes the major share in the urban growth occurring elsewhere in the country and rural to urban migration constituted the major share of urban growth in the western world.

The district wise pattern of the two major components reveals some interesting results. High rates of rural-urban migration and high population growth should have induced a high incremental component in 1971 and 1981. This conclusion is particularly true for the districts of Palakkad, Malappuram and Kozhikode. By 1991 extensional component overtook in all districts due to addition of 105 new towns. Malappuram district which recorded the highest population growth during 1981-91 recorded a high incremental component. The high rates of extensional component pushed up the level of urbanisation but after the system has attained stability these high rates are likely to come down.

4.4 Rural-Urban Linkages

The question of rural-urban linkages has received attention in recent urban literature in the West as well as in the developing countries. In developing countries still the majority lives in the country side, and the question of rural-urban linkages is very much central to their planning process. The allocation and access to resources are still decided in some countries under the rural-urban framework.

Rural and urban units are no more considered as separate spatial units or as different manifestations of the division of labour, but as having linkages with each other involving resource transfers. By looking into the net resource transfer, the degree of exploitation/ benefits can be analysed. Secondly there is acceptance that rural and urban cannot be considered as two different areas having linkages and class difference accordingly, but having both rich and poor classes.

Many scholars have classified the urban-rural linkages in spatial development. Rondinelli⁹ (1985) classifies the linkages via population movement, as a separate category from physical and social interaction linkages.

9 D.A.Rondinelli (1985), *Applied Methods in Regional Analysis: The Spatial Dimensions of Development Policy*, Westview, Boulder.

O'Connor¹⁰ has suggested that in Africa the most important urban-rural linkage involve movements of people, the transmission of ideas, flows of goods and transfers of cash while Gould¹¹ has suggested that urban-rural interaction is the two way flow of people, goods, money, technology, information and ideas. A broad overview of the rural-urban relations establishes the economic, social, political and ideological linkages, between them. These find their physical expression in flows which are measurable (eg., people, money, budgetary allocation). These flows are associated with interactions between people, places and objects. Thus labour flows are necessary for an interaction between labour and capital. A table representing a broad overview of rural-urban relations in which linkages, flows and interactions are seen as separate but closely linked concepts is given below.

10 A.O'Connor (1983), *The African City*, London: Hutchinson.

11 W.T.S.Gould (1985), *Rural-Urban Interaction in Third World, Building from R.U.I.N.*, Department of Geography, University of Liverpool, mimeo.

Table 4.8: An Overview of Rural-Urban Relations

Linkages	Flows	Interactions
Economic	<ul style="list-style-type: none"> - Labour - money - food - Vehicles - Commodities - Energy - Credit - Raw materials 	<ul style="list-style-type: none"> - Labour/capital - Marketing - Shopping - Transport
Social	<ul style="list-style-type: none"> - People - Correspondence - Telephone calls - Medicines 	<ul style="list-style-type: none"> - Social groups - Family - Friends - Class
Political	<ul style="list-style-type: none"> - Power - Authority - Budgetary allocation - Law 	<ul style="list-style-type: none"> - Political action - Lobbying - Justice provision - Allegiance payments
Ideological	<ul style="list-style-type: none"> - Ideas - Books - Radio - Television 	<ul style="list-style-type: none"> - Religious activity - Education - Advertising

Source: Tim Unwin (1989), op.cit., p.27.

4.4.2 History of Rural-Urban Relations in the State

The genesis of early urban settlements in the state itself was due to trade relations established with the foreigners. These trade relations are basically rooted in the rural agricultural products of the state. Later on, during the pre and post independence phases also, the role of rural exports constituted the chunk of exports from the state's

urban centres. So the obvious conclusion from this is that the status of the rural agriculture and moreover the rural economy at earlier times was very strong, as they even formed the economic base of the towns. The urban centres in the state especially Kodungalloor till 1341 A.D. and Cochin, Calicut, Quilon, Tellicherry and Kannoor were later developed as ports to export plantation products like pepper, tea, coffee, ginger, coconut, coir, timber and other wood products. There were 30 medium and minor ports besides this to handle the trade all along the coast. Some of them like Ponnani, Chavakkad, Purakkad, Vizhinjam were later identified as urban centres.

4.4.3 Rural-Urban Relations 1971-91

In 1971, out of the total of 88 towns, 57 manufactured, one or more commodities related to plantation based products, coir and coir products and cashew nut. The exports from these urban centres also consisted of plantation based products. Pepper was the major commodity followed by coir yarn and goods and rubber. Besides plantation products, fish and fish products also constituted a major part of exports mainly from coastal urban centres.

The listing of the first important commodity exported from towns in 1981 shows that out of 105 towns, 67 of them export plantation products. Pepper constitutes the first

principal item of exports in 14 towns of which two are class I towns. Cashew, fish and coir products also form the principal export commodity of some class I towns. The importance of plantation products is quite clear from the table given below, and its influence is uniform in almost all classes.

Table 4.9 : First Important Commodity
Exported by Size Class of Towns - 1981

Minor Groups	All Classes	Class					
		I	II	III	IV	V	VI
Pepper	14	2	-	8	2	2	-
Coconut	11	-	1	7	2	1	-
Coir and Coir Products	10	1	-	9	-	-	-
Copra	7						
Rubber	5	-	-	5	-	-	-
Cashew	5	1	-	1	2	1	-
Coconut Oil	3	-	1	1	1	-	-
Hill Products	3	-	2	1	-	-	-
Others	9	-	1	5	2	1	-
Total	67	4	6	42	10	5	-

Source : Town directory 1981 census, Kerala.

While looking at the first important commodity manufactured in all urban centres of Kerala, paddy, coconut,

coir products, copra, coconut oil, cashew, pepper and rubber constitutes the major portion. The first important commodity is an agricultural product in 5 out of 6 class I towns. This is a clear indication of the rural-urban relations existing in Kerala as both urban manufacturing and exports depends on rural agricultural products.

Table 4.10 : First Important Commodity
Manufactured by Size Class of Towns 1981

Minor Groups	All Classes	Class					
		I	II	III	IV	V	VI
Paddy	21	1	2	15	2	1	-
Coconut	16	-	1	9	6	-	-
Coir and Coir Products	8	2	-	5	-	1	-
Copra	5	-	-	4	1	-	-
Coconut Oil	4	1	1	2	-	-	-
Pepper	3	-	-	2	-	1	-
Cashew	3	1	-	1	1	-	-
Rubber	3	-	1	2	-	-	-
Others	4	-	1	1	2	-	-
Total	67	5	6	41	12	3	-

Source : Town directory 1981 Census, Kerala.

4.4.4 An Empirical Enquiry into the Relationship Between Rural Sustainability and Levels of Urbanisation (1971-91)

An attempt is made here to enquire into the relationship between rural sustainability and levels of urbanisation. This is very significant since the states rural sustainability shows a declining trend (dealt in detail in chapter 3). The correlation between two indicators of rural non-sustainability and urbanisation showed a mild insignificant negative correlation coefficient in 1971 (-.0122) and again a mild insignificant but positive coefficient in 1991 (+0.09). So it is very clearly found that there is no relation between these two entities.

Table 4.11: Rural Non-Sustainability and Level of Urbanisation - Kerala (1971 and 1991)

Districts	Level of Urbanisation		Rural Non-Sustainability	
	1971	1991	1971	1991
Trivandrum	26.00	33.87	1.973	2.014
Kollam	7.87	18.53	2.034	1.923
Kottayam	10.22	17.55	2.876	3.201
Ernakulam	27.56	48.74	2.219	2.406
Trishoor	11.74	26.31	1.756	1.444
Palakkad	12.70	15.70	1.375	1.455
Malappuram	6.73	9.12	1.952	1.748
Kozhikode	26.66	38.34	1.902	1.816
Kannoor	13.74	50.87	1.890	1.939

4.5 Conclusion

The conclusions emerging from this chapter can be stated as follows :

1. The early impetus to urbanisation in the state was due to trade and administrative functions performed by the towns.
2. The level of urbanisation and rate of urban growth in the state showed a gradual and steady increase till 1981 but remained below the national average.
3. There was a sudden spurt in urbanisation in 1991. This was due to the emergence of many new towns. This can be called the extensional component of the urbanisation process.
4. Rural-urban linkages in Kerala are very strong. This is evident from the fact that rural products constitute the major portion of the urban trade.
5. There is no relationship between increasing urbanisation and rural sustainability. The hypothesis that an increase in the levels of urbanisation reduces rural sustainability is not validated.

CHAPTER V

CONCLUDING REMARKS

The principal aim of this study was to enquire into the rural sustainability and rural-urban linkages prevailing in Kerala state situated in the south western corner of India. These enquiries are significant since Kerala achieved the highest urban growth rate amongst the Indian states during the 1991 census estimates. The impact of this high growth on the historically harmonious rural-urban settlement pattern of the state constituted the theme of this study.

The settlement pattern of the state received the attention of scholars as early as 14th century A.D. It has always been a peculiar pattern of a fine mixture of rural and urban areas. At the beginning of the 19th century, due to the colonial influence, manufacturing activities have also been added to the rural landscape. Since then the majority of the districts, particularly the districts located in the lowland and upland of the state have a high percentage of rural non-agricultural workforce. This formation of mixed rural-urban settlement pattern and mixed agricultural and non-agricultural activities has been termed as 'gragara' by Issac (1986), combining 'gra' from gramom (rural in Malayalam language) and 'gara' from nagara. At about the same time McGee while examining the high density mixed rural patterns in Java and

Indonesia termed them 'desakota', a neologism in Bahasa Indonesia.

✓ The rural-urban linkages in the state have been strong as majority of urban centres depend upon rural products for exports and manufacturing. Here arises the paradox that while attaining a high growth in level of urbanisation during recent decades, the factors affecting rural sustainability were neglected. The population growth and economic expansion involved a major change in landuse, resulting in the near disappearance of natural forests. This has accelerated the loss of soil quality, fertility and productivity. Increasing commercialization of agriculture has accelerated the problem of rural unemployment and food security. Thus this study looked into the rural sustainability by dividing it into four component parts (i) Growth of commercial agriculture; (ii) the physical carrying capacity of the land; (iii) the process of deforestation; and, (iv) the status of rural manufacturing sector. In a subsequent step its relationship with state's urbanisation has also been looked into.

The conclusions drawn from the analysis in this thesis are as follows.

1. Colonial penetration of the state resulted in the establishment of a rural non-agricultural sector in the 19th century. This developed the rural areas in terms of infrastructure facilities specifically transport and resulted

in a gragara settlement pattern i.e., minimal differentiation between rural and urban areas.

2. The gragara settlement pattern has been maintained over the decades due to the high rural population density, availability of rural amenities and other eco-geographical factors like the availability of a much diversified agro eco-system with a good rainfall distribution and drainage network.

3. The analysis of the factors affecting rural sustainability of the state make it clear that rural sustainability has declined during the period 1971-91.

4. There is enough evidence to validate the hypothesis that excessive commercialization of agriculture and deforestation reduces rural sustainability.

5. The early impetus to urbanisation in the state was due to the trade and administrative functions performed by the towns. The level of urbanisation and rate of urban growth in the state showed a gradual and steady increase till 1981 and the spurt in urbanisation in 1991 was due to the emergence of many new towns.

6. Rural-urban linkages in Kerala are very strong. This is evident from the fact that rural products constitute the major portion of the urban trade.

7. There is no relationship between increasing urbanisation and rural sustainability. The hypothesis that an increase in the levels of urbanisation reduce rural sustainability is not validated.

Appendix I

Weightages Assigned to the Indicators of
Non-Sustainability by First Principal Factor

	1971	1991
Percentage area of rubber to gross cropped area	.543	.565
Rural population density	.478	.476
Percentage of non-forest area to total geographical area	.492	.481
Percentage of male workers in all categories other than manufacturing	.485	.472
===== Explained variation	90.234	89.848

Composite Indices of Non-Sustainability - Kerala

Name of the district	1971	1991
Trivandrum	1.973	2.014
Quilon	2.034	1.923
Kottayam	2.876	3.201
Ernakulam	2.219	2.406
Trichur	1.756	1.444
Palghat	1.375	1.455
Malappuram	1.952	1.748
Kozhikode	1.902	1.816
Kannoor	1.890	1.939

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