Planning Unit Areas for Integrated Rural Development

-An Exercise-

Vivekananda

General Editor
K R V Rao

PLANNING UNIT AREAS FOR INTEGRATED RURAL DEVELOPMENT

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STUDIES IN INTEGRATED RURAL DEVELOPMENT

(*General Editor : V.K.R.V. RAO*)

M. VIVEKANANDA

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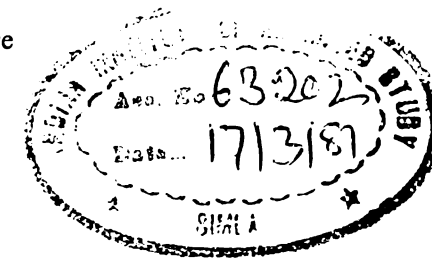

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Foreword

The objectives behind the Tumkur Project, of which this study is a part, have been explained in Appendix II and need not, therefore, be repeated here. What is relevant, however, is to note that one of the objectives behind the Project was to test on the ground the cluster concept for integrated rural development that I had been advocating since my Convocation Address to the Indian Agricultural Research Institute in January 1977. Briefly put, the idea behind the cluster approach is that single villages cannot be made units for integrated rural development, as a majority of Indian villages are of a population size below 1000 each and do not possess either the basic amenities or infrastructural resources or the diversified occupational pattern or the market needed for viable and some measure of autonomous development. At the same time, units of a much larger size such as blocks selected for the community development programme do not make for local participation at the grassroots level nor does it provide an all round development of their constituent villages. What has also become clear from studies of rural development is that the percolation theory does not work only leads to scattered bases of developed areas in the desert of a multitude of poverty stricken and underdeveloped villages. Even the modified growth centre approach suggested by Lalit Sen of a two-tier hierarchy for development of dependent and central villages does not solve the problem. Hence the suggestion for making a cluster of an appropriate number of villages as an integrated unit for development at the grassroots level.

While geographical contiquity is basic for the constitution of a village cluster, it is also necessary to take account of the

factors that do or can inter-link them when constituting the clusters for actual development. Mr Vivekananda's study attempts to understand the prevailing distribution pattern of villages, amenities and services and the contact pattern of villages for marketing and employment with a view to formulate a minimal unit for integrated development without an uneconomic expansion of the existing spatial structure of basic amenities and services. The ten per cent sample villages selected for the Tumkur study have been used for the purpose because of the elaborate data collected for these villages on the basis of the village questionnaire used in the Tumkur Project, and the study traces the linkeages in terms of dependency of the sample villages both with other villages and neighbouring towns. Mr Vivekananda uses the concept of both threshold and hinterland population for analysing the hierarchy of functions and the relationship of dependence. As he points out, however, the data do not permit a consideration of either the spatial preference of the villages or the qualitative aspect of the functions analysed.

The amenities and services analysed by Mr Vivekananda include education, communication, institutions, extension, medical and veterinary services, marketing and employment contacts. He finds that the primary school is the only amenity which is available in 78 per cent (or most) of the sample villages. Then comes in descending order the grocer shop in 44.6 per cent of the villages, middle school, post office and panchayats in 22 per cent, co-operative society in 15.5 per cent, Agriculture input dealer in 12.1 per cent and Fair Price shop in 10 per cent. Villages having in them the rest of the functions are less than 10 per cent. Dependence is mostly upon other villages except for secondary schools, telephone, agricultural input and medical supplies where the dependence is more on towns.

Mr Vivekananda then classifies the functions under three categories, lower, middle and higher on the basis of

threshold populations of less than 750, 750 to 2500 and above 2500 respectively and finds that primary school, middle school, post office, co-operative society and the panchayat, all come under the higher order functions, while the weekly market and medical shop come under higher order functions, and the rest under the middle order functions. The need for a cluster rather than a single village, as a unit for developments gets confirmed by his finding that even the lower order amenities such as middle school, post office, panchayat and co-operative society are all available only in 29 out of the 245 sample villages. Generally speaking, only villages with a population of 2000 or more were found endowed with all the four lower order functions. His findings clearly reveal the existence of inter-dependence in villages even in regard to lower order functions and emphasise the need for the cluster approach in determining the unit area for development. His analysis of hinterland populations shows that using the population method, the hinterland covers 2555 persons per panchayat, and 3975 persons for co-operative society, while the area method gives 3280 persons for panchayat and 5788 per co-operative society. As these are two institutions basic for integrated development, a population size of between 3000 and 5000 seems a viable unit for integrated development.

Marketing, whether for sales or purchases, is another factor which makes for inter-village contacts and also for contact with towns. Vivekanada's analysis for the sample villages data shows that the smaller villages depend upon neighbouring villages of larger size while larger villages depend upon neighbouring or even distant larger villages, while also having contact with their neighbouring small villages. Dependence for both sales and purchases seems to be governed more by neighbourhood and distance than by village size, thereby lending support to the cluster concept and also indicating the need for purposive attempts at integrated development within the clusters which usually contain a large village. Dependence for employment again seems to be

governed largely by neighbourhood rather than village size, distance appearing to be the major factor in determining the quest for employment ; which reinforces the case for decentralisation of non-agricultural economic activity for bringing about integrated area and human resources development.

On the whole the detailed analysis carried out by Mr. Vivekananda lends support to the thesis that the unit area for integrated development has to be a cluster of neighbouring villages rather than one single village irrespective of its size. It also brings out the dichotomy between a hinterland population that can be served with all the amenities and functions needed for rural development and the population size needed for participation and even dispersal of the benefits of development. A compromise solution is, therefore, inevitable. Neither a single village nor a block of 100 villages can be a basic unit for development with dispersal of the benefits of development to the constituent village. Only a cluster of 5 to 7 villages with one large village within the cluster and having a total population of between 3000 and 5000 (depending upon local circumstances of area, resources and skills) can be a basic unit for integrated development. The emphasis in integrated development has to be on participation and even distribution of income and work opportunities ; and to do this, even in a cluster, one will have to avoid concentration of activity and power in any single one of its villages. At the same time, the study also shows cluster of villages by itself would not be viable except for the lower and perhaps middle order of functions and amenities. There will have to be inter-cluster links and links with urban centres. How this can be done and what kind of a cluster-inter-cluster-town-city continuum has to be built up for effecting integrated rural development with economic viability, participating democracy, social justice and mass welfare in the question which needs to be studied and answered in depth.

Mr. Vivekananda's study is a contribution to the understanding of the cluster concept and, taken along with other studies emerging from the Tumkur Project, will hopefully take us nearer to both an understanding and implementation of the concept of integrated rural development on which rests so much of our hope for an economically better and socially happier India.

Institute for Social
and Economic Change,
Bangalore.

V K R V Rao

Preface

This study was completed when I was a member of the Tumkur project which was initiated by the Institute for Social and Economic Change, under the guidance of professor V K R V Rao.

I am grateful to professor V K R V Rao for the opportunity he had given me to be a member of his project team. He gave me the liberty to select the topic of my own interest, consistent with the framework of the project. He was a source of inspiration and guidance to me at various stages of my work in the project.

I am thankful to Dr V M Rao, the Joint Director of the project for the encouragement and guidance I received from him in my work in the project.

My thanks are due to Dr D V Raghava Rao, a colleague of mine in the project for his valuable comments on the preliminary draft.

I thank the investigation staff for the help I received in the tabulation of data.

I thank Sri B M Veerabhadraiah, the Secretary of the project for his hard task of administrative arrangements for making our work smooth. Finally, I thank Sri S Krishna Murthy for his efficient typing.

M V ivekananda

Institute for Social
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Bangalore.

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Above all, people of Tumkur district and its villages whose help and hospitality enabled us to reach the grass-roots.

V K R V RAO
Chairman,
Board of Governors.

Institute for Social
and Economic Change,
Bangalore.

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Introduction

In recent years the concept of Integrated Rural Development has been receiving attention both in literature and development plans Pilot projects for Integrated Rural Development were initiated in the country in the year 1976-77 in twenty districts, one in each State. Further, Integrated Rural Development has become the accepted strategy for rural development for the Five Year-Plan, 1978-83 [1]

India's planned development effort is aimed at improving the social and economic conditions of her vast rural population The introduction of several programmes like SFDA, DPAP, etc., and the shift in the emphasis from one programme to the other particularly from community development programme to Integrated Rural Development indicate the concern of planners with the objective of equity expressed in terms of reduction of unemployment, reduction of income inequality, removal of poverty, improvement in accessability to public goods and services and the reduction of inter-regional imbalances in development. The success of new programmes depends on the identification of the causes for failure of the previous programmes and designing new programmes free from them.

The community development programme which was initiated in the country in 1950's was aimed at all-round development of rural society, which was based on the assumption that with

1. Government of India, Draft Five-Year Plan, 1978-83, Planning Commission, New Delhi, 1978, p. 154.

the initial assistance from the Government, the people would take up development activities of their villages. The programme was designed to initiate micro-level planning at block level and attempted at functional integration by integrated staffing of specialists drawn from different departments of Government for the development administration of the block. However, the programme failed to evoke popular interest and enthusiasm of the villagers. The functional integration at block level also did not yield results as they were concerned with achievement of sectoral targets and lacked perspective of the viable area for development and concerned with numerous revenue villages as units for development.

In the early 1970's, to strengthen the community development programme a search was on by spatial planners to identify potential service centres in the community development blocks to provide amenities and services. The notable spatial planners who have given considerable attention to the study of distribution of functions are,L alit K. Sen,[2] V L S Prakasa Rao,[3] Waheeduddin Khan,[4] and R P Mishra.[5] They adopted growth centre approach of Christaller[6] with suitable

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2. Lalit K Sen, *et. al.*, Planning Rural Growth Centres for Integrated Area Development, Institute of Community Development, Hyderabad, 1971.

3. V L S Prakasa Rao : Development Strategy for an Agricultural Region, Institute of Development Studies, University of Mysore, 1976.

4. Waheeduddin Khan, *et. al.*, Plan for Integrated Rural Development, in Pauri Gharwal, National Institute of Community Development, Hyderabad, 1976.

5. R P Mishra : Growth Poles and Growth Centres in the context of India's Urban and Regional Development Problems in Growth Poles and Growth Centres in Regional Planning, (Ed.) Antoni R. Kuklinski, United Nations Research Institute for Social Development, Geneva, 1972.

6. Christaller, W : The Central Plans in Southern Germany, translated by W. Baskin, New Jersey, 1966. His book first appeared in Germany in 1933.

modifications to identify the hierarchy of settlements within their study region. Lalit K Sen in his study area identified two tier hierarchy in rural settlements, *viz.*, (*a*) dependent villages and (*b*) central villages. He defined dependent villages as those having lowest level of functions and form the lowest level of the hierarchy. They depend for higher level functions on higher-order centres, whereas central villages are large villages with higher order functions and they form second level of the hierarchy. A number of villages around central village depend for higher order functions on central village. The central village concept of Sen is similar to that of lower order service centre concept of Pilot Research ,Project in growth centres[7]. These studies suggested a package of functions to the central village or primary service centre. The functions suggested to the dependent villages are those whose threshold requirements are fulfilled by the population of the dependent villages.

The modified growth centre concept advocators considered central villages as nodal points in regional space. The provision of package of functions to central villages along with the development programmes are expected to activise the nodal points and the nodal points in turn assumed to generate development impulses in their hinterland. Thus the modified growth centre approach of developing central villages for overall development of the region can be classified as a blend of balanced growth[8] and unbalanced growth theories.[9] It is balanced growth in approach as the nodal points considered

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7. Prodipto Roy, *et. al.*, Manual for Block Level Planning, The Macmillan Company of India, Ltd., 1977.

8. (*i*) R. Nurkse : Problems of Capital Formation in Developing Countries, Oxford, 1953.
   (*ii*) W.A. Lewis : The Theory of Economic Growth, Allen & Unwin, London, 1955.

9. Albert O. Hirchman : The Strategy of Economic Development, Yale University Press, New Havera, 1959.

for development are generally many in number and spread over regional space. It's unbalanced growth nature lies in the notion that the development of central place would promote economic activity in the centre and it would spread to its hinterland in a mutually beneficial relationship.

The crucial assumption in growth centre approach is the beneficial spread effects between the central place and its hinterland. Some writers expressed doubts about the beneficial spread effects. Niles M. Hansen[10] is of the view that "Growth Centres may drain their hinterland rather than induce prosperity in them." Prof. V L S Prakasa Rao[11] opines that "Our.....Five-Year Plans could not percolate growth impulses from growth focci or growth regions down to micro level nor radiate outward extensively into the surrounding areas, as a consequence of which, extensive under developed areas coexist with a few isolated islands of development." Dr. V M Rao [12] observation of variations in the characteristic features of villages within a close nighbourhood, raised doubts in him about spill over and percolation theories of development even at micro level. Looking to the past performance of unbalanced growth approach in planned development and the characteristic features of Indian villages, the modified growth centre approach may at best develop some "rural towns" at the expense and further deterioration of conditions in other rural areas. In the absence of beneficial spread effects in rural areas, the strategy for rural development should be balanced development of all rural settlements. The strategy of Integrated Rural

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10. Niles M Hansen (ed.) Growth Centres in Regional Economic Development, The Free Press, New York, 1972, p. viii.

11. V L S Prakasa Rao : *op. cit.*, p. 3.

12. V M Rao : Rural Development and Village : Perspectives for Planning for Development, Institute for Social and Economic Change, Bangalore, 1979.

Development advocated by Dr. V K R V Rao [13] aims at this balanced development of rural settlements which further takes note of the failure of the community development programme mentioned earlier.

It is claimed [14] that the concept of Integrated Rural Development was originally propounded by the World Bank in their study on "The Assault on World Poverty Problems of Rural Development, Education and Health." According to the study, the processes of rural development must integrate rural poor into the social, political and economic life of a country. The definition appears to be more philosophical than pragmatic. Professor V K R V Rao defined the concept as "The optimum utilisation of the natural and human resources of a given rural area for the enrichment of the quality of life of the population. This optimum utilisation should take into account not only production but also distribution, employment, uplift above the poverty line of all below it, and environmental harmony. The programmes and projects used for the purpose should be such as will maximise their mutual additive impact on each other and result in a higher total than the some of its parts. The relevant total has to be measured in terms of both material well being and quality of life for the entire population."[15] Professor Rao's definition of Integrated Rural Development is comprehensive and envisages micro-level planning through mutually compatible programmes and projects for the attainment of the diversified objectives. The unit

13. V K R V Rao : "Integrated Rural Development"—Paper presented to the Third Biennial Conference of Association of Development Research and Training Institutes of Asia and the Pacific at Goa, 1977.

14. Dipl—agr. Rainer Wulf : "On the concept of Integrated Rural Development" in Economics - a biannual collection of recent German contributions to the field of economic science, Vol. 17, Institute for Scientific Co-operation, 1978, pp. 63-80.

15. V K R V Rao : *op. cit.*

area for planning Integrated Rural Development considered by him is not a village but a group of villages or a cluster of villages as the present villages are not viable planning units.

The success of the envisaged strategy for rural development lies in the determination of the appropriate size of the clusters – the primary planning units, and their delineation. The determination of the size of clusters and their delineation naturally depend on factors which bring in viability to the clusters, induce motivation and participation in development programme among its inhabitants and help to gain largest possible self-sufficiency within the clusters. The formulation and planning of clusters should also aim at developing horizontal integration among the constituent villages and vertical integration with larger places and markets outside the cluster.

In the light of the above framework attempts should be made to formulate primary planning units. Simply geographical contiguity, though essential, should not be the only consideration in constituting such units There should exist inter-actions among the constituent villages for formulating the units instead of expecting interactions to develop among them in course of time as development takes place, because the change of the spatial preferences is a slow process in the rural set up. The interactions among the villages take place for different purposes—social, religious, services, marketing, employment, education, etc. Comprehensive knowledge of these movements or contacts among villages is vital for identifying the 'minimal area' for planning. The present availability of amenities and services and their distribution in rural areas and the norms for providing various amenities and services play a vital role in identifying the size of the cluster. The clusters should have within them at least the basic amenities and services which help to stimulate the development process. A beginning was made in the provision of amenities and services to rural areas in a phased programme as a part of development strategy

of First Five Year-Plan and they were extended to many other villages in latter plans. Various amenities and services are being extended to rural areas under revised minimum needs programme with differential norms. [16] So the identification of the size of the minimal area for planning should take into account the already existing amenities and services and the norms for extending them.

An attempt is made in this study to understand the prevailing distribution pattern of amenities and services and the contact pattern of villages on other places for marketing and employment with a view to judge the minimal planning unit without resorting to a large scale expansion of the present basic amenities and services, keeping in view the norms for providing them. Further, in view of the non-feasibility of providing other rural amenities and services to the 'minimal units' at the present level of development, an attempt is made to identify an area for providing some of these at a reasonable distance from the 'minimal units'.

Approach

Studies on regional planning based on modified growth centre approach attempted to identify the hierarchy of places in a region based on the functions of settlements. The implicit assumption in this approach is that the development of the centres by removing functional gaps and initiating developmental activities within them will generate development impulses in their hinterlands. The entire exercise of identifying hierarchy of central places seems to be to suggest some more functions based on the functional gaps. There was no deliberate attempt to identify smaller units below the taluk level for planning purposes. Though village panchayats and group panchayats are functioning, at grass-root level, they are not suitable for planning units as they were formulated on the population criteria alone.

16. Government of India, Draft Five-Year Plan 1978-83, p. 106.

The present study attempts to identify primary planning units at grass-root level for Integrated Rural Development by taking into account the present level of development of amenities and services and the existing contacts for marketing and employment. The starting point for the analysis is the village. The study traces the linkages in terms of dependency of sample villages with other places. The availability aspect of amenities in the sample villages of the district has been studied by Dr. V M Rao, based on data from District Census Hand Book, 1971.[17] This study is in a way an extension of that study which takes into account the dependency of sample villages on other places. In this study the terms functions and amenities and services are used interchangeably. The concepts of threshold and hinterland population are used in the analysis to identify hierarchy of functions. The hinterland population for various functions is estimated under certain assumptions as the study is based on a randomly selected sample and the data pertain to the nearest place of availability of various functions for the sample villages. The spatial distribution of functions is studied through skewness of distance distribution (the distance from sample village to the place where the function is located). In the study the location aspect of functions is considered and not the spatial preference of the villages. However, the spatial preference are reflected in marketing and employment contacts. Further, the study has taken into account only the availability of functions but not their qualitative aspects.

The results of the study are given in four sections– the first deals with amenities and services, the second marketing, the third employment and the fourth strategy.

Nature of Data

The Tumkur Project conducted a survey of Tumkur district in the year 1977 at the village level and household level. The

17. V M Rao : *op. cit.*

'Village Questionnaire' of the Tumkur Project provided data on a wide range of functions in several details for 10 per cent of villages in the Tumkur district - what functions are locally available ; if any function is not locally available, the nearest place of its location, the distance, the type of road connecting it and the mode of travel ; further, the names and distance of the places on which the sample villages depend for sales, purchases and employment are also available. The present study is based on the data thrown up by these questionnaires for sample villages. The 10 per cent of villages randomly selected for the ten taluks in the district (with taluk as the stratum) comes to 245 villages. But as the 'Questionnaire' were collected for 232 sample villages, the present analysis is based on these 232 sample villages.

2

The Study Area

Tumkur district belongs to the group of districts called the 'Maiden' (plains districts and is situated in the east central part of Karnataka State. It is situated between 12° 45′ and 14° 20/ north latitude and between 76° 20′ and 77° 30′ east longitude. It is bounded by Ananthapur district of Andhra Pradesh on the north, Mandya district on the south, Kolar and Bangalore districts on the east and Chitradurga, Hassan and Chickmaglur districts on the west (all these districts belong to Karnataka). One peculiar feature of the district is that one of the taluks, *viz.*, Pavagada is not at all connected with it at any point. The district is a land locked district. It has no natural features like rivers or mountains dividing it from its bounded districts.

The district comprises of ten revenue taluks, *viz.*, Tumkur, Tiptur, Turuvekere, Gubbi, Kunigal, Chikkanayakanahalli, Pavagada, Sira, Madhugiri and Koratagere. These taluks are grouped into three revenue sub-divisions for administrative convenience. There are ten Taluk Development Boards for the ten taluks in the district.

The districts extends over an area of 10,606 sq. kms and has a population of 16,27,721 persons as per 1971 census. There are 12 towns, 2452 inhabited villages and 273 uninhabited villages in the district. The rural population account for 88.3 per cent of the population of the district

which clearly shows the predominant rural character of the district. The towns are small. 6 out of 12 towns have population less than 10,000 and only one town, the district headquartes has a population of about 70 thousand. The small towns are like large villages and lack the urban character.

Tumkur district is a typical rainfed region, representing a region of neither assured rainfall nor a region of very scant rainfall. It comes under the drought-prone area with a normal rainfall of only 688 mm. There are no perennial streams in the district. The soils in the district are generally poor except for the small proportion of area under tank irrigation. The area under forests is only 4.3 per cent. The forests of the district are classified under dry belt zone. The trees in the forest are short in size and they are mostly used for fuel purpose. Though the district possesses a variety of minerals of economic importance, they are not significant in quantity except for limestone and some iron and manganese deposits. On the whole, the district is not rich in natural resources.

The per capita income of the district in 1974-75 at constant prices is Rs. 653 as against Rs. 784 for the State. Major part of the district incomes come from the primary sector *i e.*, agricultural and allied activities. In percentage terms the primary sector accounts for about 80 per cent of district income. Coming to the industrial distribution of workers, about 89 per cent of rural workers are engaged in agriculture and mining activities as per 1971 census

The net irrigated area accounts for only 14 per cent of net sown area. Tank irrigation is the major source of irrigation followed by wells which respectively account for 53.5 per cent and 44 8 per cent of total irrigated area. These sources of irrigation in a drought-prone area can at best serve to irrigate light irrigated crops. Ragi is the main crop of the district which is the staple food of the people. The cropping pattern is oriented towards drought resistant food crops Looking at the size of the land holdings, it is observed that

they are generally small in size. 42 3 per cent of land holdings are less than 1 hectare, 67.7 per cent of the holdings are less than two hectares and 90.8 per cent of the holdings are less than 5 hectares. The farm sector indicates subsistence farming and lacks market orientation.

Coming to industries, there is only one large scale industry and one medium scale industry located in the district. The large scale industry is a cement factory and the medium scale industry is a solvent extraction plant. The techno-economic survey of Tumkur district enumerated 17,333 small and traditional industrial units in the district employing 47,092 persons which gives an employment generation of 2.7 persons per unit on an average. The classification of units and their employment suggest that these units generally consist of self-employed persons engaged in traditional occupations.

Comparing the district with other districts of the State, the district can be classified as one of the backward districts of the State. The Planning unit of Karnataka Government has constructed a composite index of development to identify districts according to the levels of development. According to these composite indices of development prepared for the year 1976-77, the district scores a rank of 13 out of the 19 districts in the State. Looking to the indices computed for broad sectoral categories, the district can also be classified as backward in infra-structure, industry and utilisation of land. It is interesting to observe the highly developed district, namely, Bangalore which scored 1st rank in the relative ranking of composite indices happened to be the neighbouring district of Tumkur. The district is well connected with Bangalore—the State capital and the industrial city, by rail and road. The proximity of the city is draining away the skilled and semi-skilled man power of the district. In all, the district has become the shadow region of a big industrial city.

In the context of backwardness of the district in terms of urbanisation, natural resources, industrialisation, per capita

income, infra-structure, irrigation, land utilisation and communication, the rural district needs an alround development to come out of the trap of backwardness at least to the levels of neighbouring districts (excluding Bangalore district) in the first instance. The district is posing a challenging task to the planners. If the concept of Integrated Rural Development as conceived by Dr. V K R V Rao becomes the strategy for development of the district, the district can hope to come out of the trap of backwardness without sacrificing the distributive justice. The Tumkur Project already plunged to translate the concept into workable propositions in a cluster of villages in the district as an experimental measure. It is hoped the experience of this exercise and its success can eventually give us the needed techniques to combat the problems of rural development.

3

Amenities and Services

Under planned economic development infra-structure in terms of roads, power, markets and educational, health and a number of other development institutions is being provided to rural areas to stimulate the development process and make rural life more comfortable. nn the process of rural development some amenities which were hitherto of urban character like high schools, dispensaries, etc., are being extended to villages. Here a distinction should be made between an urban amenity and a rural amenity. The urban amenities are developed mainly by the effective demand for them whereas in villages they are developed as a part of developmental effort with a view to stimulate demand for them.

The present rural settlement pattern does not, however, permit the provision of all amenities to every village. About 50 per cent of villages in Tumkur district have less than 500 population and the same trend prevails at the State and National levels. In view of the financial constraint and the cost involved in extending the amenities to the numerous small villages, efforts have been made to provide amenities only in some villages on the basis of some criterion, with the intention that other villages will also be served by these villages. The obvious result is a particular amenity becomes local to some villages, neighbourhood to other villages, and distant to some other villages.

The functions that are considered in this study can be broadly classified under six heads, *viz.*, (*a*) Educational, (*b*) Communications, (*c*) Institutions. (*d*) Extension Agent, (*e*) Medical and Veterinary and (*f*) Marketing. The main heads and amenities and services considered under each head are furnished in Table 3.1.

TABLE 3.1

Amenities and Services

Major head	*Amenities and services*
1. Education	Primary School
	Middle School
	Secondary school
2. Communications	Post office
	Telephones
3. Institutions	Co-operative Society
	Panchayat
4. Extension Agent	Agricultural Assistant
5. Medical and Veterinary	Government Dispensary
	Private dispensary
	Auxiliary Nurse mid-wife
	Veterinary dispensary.
6. Marketing	Fair Price shop
	Grocer shop
	Weekly market
	Cloth shop
	Agricultural input dealer
	Agricultural input dealer (cooperative)
	Medical shop

The present study examines some major functions that are locally available within the sample villages of the district. The functions examined are also of the nature for which villages depend on other places if they are locally absent.

Power and roads are not considered here as they are not of the nature mentioned above. Drinking water is also not considered as it is available in most of the villages[1]. As Primary Health Centres are few in number, they are dropped from the present analysis in preference for a lower order function, *viz.*, Government dispensary.

Availability of amhnities and services

Before presenting the data on availability aspect of amenities and services, it is worth to recall the picture of the district in terms of towns and villages. Tumkur is a predominantly rural district with about 88 per cent of its population living in villages which is the highest in the State. There are 10 taluks and 12 towns in the district including the district and taluk headquarters and one notified area (in addition, some sample villages reported three other towns of the neighbouring districts as nearest place of location for some functions). Looking to the villages having population of 2000 and above which are supposed to stimulate spontaneous growth of amenities and also serve the nearby villages are only 3 per cent of villages in the district ; and villages with 1000-2000 population account for 11 per cent of villages. However, the large villages with 1000 and more population are evenly distributed in terms of distance from towns as is evident from Table 3.2. The proportion of large villages to total number of villages in each distance class does not vary very much. Mapping of these villages shows that they are evenly distributed over space except in some parts of Gubbi, Koratagere and Sira taluks. The district picture which thus emerges is that there are only a few large villages, distributed evenly over space and taluk headquarters are the only towns with the exception of Pavagada taluk where there is one another town.

1. The main source of drinking water is wells and during scarcity season people resort to irrigation wells.

TABLE 3.2

Distribution of villages by distances from towns

Distance classes (in kms.)	*Villages with less than 1000 population*	*Villages with 1000 and above population*	*Total No. of villages*
3—5	209	49	258
6—15	813	133	946
16—25	743	113	856
Above 25	322	70	392
Total	2067	365	2452

In this situation it is of interest to study the availability of various functions within the village and the dependency of village on other villages and towns for the functions which are not locally available. The number of villages having various functions within the village, villages depending on other villages and towns nearest to them for various functions and the average distance between dependent villages and the nearest place of location of function are presented in Table 3.3.

Primary school is the only amenity which is available in most of the sample villages (78 per cent).[2] Next in order is the grocer shop, which is available in 44.6 per cent of villages. About 22 per cent of villages have Middle School, Post office and Panchayat. The other functions that follow in descending order of availability are Co-operative Society, Agricultural input dealer (Co-operative) and Fair Price shop—15.5, 12.1 and 10 per cent of villages have these functions respectively. Villages having the rest of the functions within the village works out, in percentage terms, to a single digit figure. The villages which do not have the functions locally depend mainly

2. The quality of primary education and the facilities available in the primary schools are being studied by Dr. R. Govinda, a member of the Tumkur project.

TABLE 3.3

Availability of amenities and services

(No. of sample villages - 232)

Function	*Within the village*	*In other villages*	*In towns*	*Average distance to the place of function in (kms.)*	
				Village	*Town*
Primary School	180	52	—	1.34	—
Middle School	53	172	6	2.65	2.75
Secondary School	15	169	48	4.44	7.73
Post Office	51	178	3	2.63	3.83
Telephone	7	131	94	6.99	10.90
Panchayat	56	176	—	2.76	—
Co-operative society	36	187	9	3.71	5.83
Govt. Dispensary	7	169	56	5.13	8.04
Private dispensary	6	144	73	6.10	11.13
Auxiliary Nurse Midwife	21	192	19	4.00	4.74
Veterinary dispensary	8	171	53	5.38	7.50
Agricultural Assistant	18	204	10	4.48	5.55
Grocer shop	103	114	14	3.27	7.11
Fair Price shop	23	168	38	4.31	6.55
Weekly market	3	160	69	4.80	9.25
Cloth shop	16	155	58	4.68	7.62
Agricultural input dealer	4	90	137	6.07	12.87
Agricultural input dealer (co-operative)	28	185	18	3.73	7.03
Medical shop	2	66	163	7.30	14.20

on other villages for most of the functions. Sample villages have not reported any dependency on towns for primary education, while a few villages reported dependency for Middle school, Post office, Co-operative Society, Auxiliary Nurse-Midwife, Agricultural Assistant, Grocer shop and Agricultural

input dealer (Co-operative). For other functions like Secondary school, telephone, etc., a significant number of sample villages depend on towns, although other villages are also catering to many of the sample villages. The main dependency on towns seems to be for Agricultural input dealer and medical shop. It is of interest to observe that the public or public supported amenities like Medical dispensary, Agricultural input dealer have penetrated further into rural areas compared to their counterparts in private enterprises. The average distance from sample villages to the place of functions reveal the fact that functions in urban areas serve a bigger area compared to those located in villages. Instead of average distance, the distribution of villages by distance to the place of functions may give a better insight into the dependency pattern for amenities.

Urban dependency

The distribution of villages dependent on towns in terms of distance ranges and skewness[3] of the distribution is shown in Table 3.4.

A few villages showing dependency on towns for the functions stated earlier (Middle school, Post office, etc.) are mostly the villages near the towns. For other functions except telephone, private dispensary, agricultural input dealer and medical shop, the area of operation is fading away after 10 kms distance from the town.

Skewness for the distance distribution is computed for the functions for which there is marked dependency on towns. The more skewed distance distributions for Secondary school, Government dispensary, Veterinary dispensary and weekly market suggest that some distant villages are dependent on towns for their functions. In the case of agricultural input

3. See appendix I

dealer the pattern is symmetric and it is less skewed in the case of telephone and medical shop ; with their respective average distance of 12.9, 10.9 and 14.2 kms they command wider area in all directions from the town.

TABLE 3.4

Urban dependency for amenities and services

Functions	*No. of dependent villages*	*Distance distribution for villages depending on towns (in kms)*			*Skewness of the distance distribution*
		Upto 5	*5 to 10*	*Above 10*	
Middle school	6	5	1	—	NC
Secondary school	48	18	22	8	3.65
Post office	3	2	1	—	NC
Telephone	94	26	29	39	0.47
Co-operative society	9	4	5	—	NC
Govt. Dispensary	56	23	23	10	3.69
Private dispensary	73	22	24	27	1.07
Auxiliary Nurse-Midwife	19	13	6	—	NC
Veterinary dispensary	53	22	22	9	3.99
Agricultural Assistant	10	7	2	1	NC
Grocer shop	14	5	6	3	NC
Fair Price shop	38	17	18	3	0.91
Weekly market	69	23	28	18	2.35
Cloth shop	58	20	27	11	0.70
Agricultural input dealer	137	23	37	77	0.20
-do- (Co-operative)	18	8	7	3	NC
Medical shop	163	24	40	99	0.51

Note : NC : Not computed.

Dependency on other villages

The distribution of dependent villages on other villages in terms of distance ranges and the skewness of distance distribution is shown in Table 3.5.

TABLE 3.5

Dependency on their villages for amenities and services

Functions	*No. of dependent villages*	*Distance distribution from villages to the place of amenity and services (Kms)*				*Skewness of distance distribution*
		Upto 2	*2-5*	*5-10*	*Above 10*	
Primary school	52	47	5	—	—	NC
Middle school	172	91	68	12	1	3.55
Secondary school	169	41	79	43	6	1.08
Post office	178	95	73	10	—	1.89
Telephone	131	14	44	50	23	1.21
Panchayat	176	92	72	12	—	1.72
Co-operative society	187	61	90	35	1	0.76
Govt. dispensary	169	29	74	59	7	0.64
Private dispensary	144	21	53	53	17	1.11
Auxiliary Nurse-Midwife	192	57	94	36	5	1.60
Veterinary dispensary	171	26	73	65	7	0.97
Agricultural Asstt.	204	50	96	50	8	1.30
Grocer shop	114	47	49	18	—	0.67
Fair price shop	168	51	72	38	7	2.33
Weekly market	160	29	76	50	5	0.77
Cloth shop	155	31	70	48	6	0.84
Agricultural input dealer	90	11	32	41	6	0.87
-do- (Co-operative)	185	58	94	32	1	0.89
Medical shop	66	10	18	27	11	0.45

Note : NC : Not computed.

The dependency of sample villages for most of the functions is on other villages (exceptions being agricultural input dealer and medical shop). In most of the cases, primary school is available within the village or within 2 kms. from the sample village. Except for telephone, private dispensary, agricultural input dealer and medical shop, the area of influence of other rural amenities is mostly upto 5 kms. as most of the dependent villages fall within this distance range, beyond which the influence gradually fades away indicating the zone of another place of rural amenity. In the case of amenities like telephone, private dispensary, agricultural input dealer and medical shop the area of influence is mostly upto 10 kms.

A contrast can be observed in their area of influence between urban amenities and rural amenities for Secondary school, Government dispensary, Veterinary dispensary, Fair price shop, Weekly market, Cloth shop. The area of influence for the above rural based amenities is mostly upto 5 kms. as against 10 kms. for the same amenities in urban area. Amenities like telephone, private dispensary, agricultural input dealer, medical shop in rural areas have influence mainly upto 10 kms. whereas for the urban based amenities, it goes beyond 10 kms.

The skewnesss of distance distribution for rural based amenities clearly show that they are unevenly distributed over space (exception being medical shop). It is of interest to note that Middle School, Panchayat, Post Office and Private Dispensary are more unevenly distributed over space than Secondary School, Co-operative society, Telephone and Government Dispensary, respectively.

So far, the analysis was in terms of distance to the place of amenity. The relationship between village size and availability of amenities is discussed under threshold population.

Threshold Population

Threshold population is the minimum population required for a settlement for providing a function efficiently. Each

TABLE 3.6

Distribution of Functions by Population size

Functions	*Below 250*	*250 to 499*	*500 to 999*	*1000 to 1999*	*2000 and above*	*Threshold Population*
Primary School	20	55	69	28	8	166
Middle School	—	3	22	21	7	577
Secondary School	—	—	2	6	7	1682
Post Office	1	3	17	24	6	599
Telephone	1	—	—	2	4	1753
Panchayat	—	2	22	25	7	644
Co-operative Society	1	1	10	17	7	704
Agricultural Asstt.	—	—	2	10	6	1459
Govt. Dispensary	—	—	—	3	4	1682
Private Dispensary	—	—	—	2	4	2129
Auxiliary Nurse-Midwife	—	—	6	9	6	973
Veterinary dispensary	—	—	1	2	5	2327
Grocer Shop	8	17	45	25	8	260
Fair Price Shop	1	—	5	11	6	1016
Weekly Market	—	—	—	1	2	4127
Cloth Shop	—	—	2	9	5	1397
Agricultural Input Dealer	—	—	—	1	3	2129
Agricultural Input Dealer (Co-operative)	—	—	4	16	7	1155
Medical Shop	—	—	—	—	2	4127
No. of sample villages :	63	62	71	28	8	

amenity has its own threshold population. It does not mean that all villages with that population will have the amenity ; it only indicates that the function tends to occur at that population of the settlements. The median of taluk threshold populations for each function is taken as the threshold population for the respective function for the district. The distri-

bution of functions in the villages, by population size classes and their threshold population are presented in Table 3.6. For the present analysis, the functions are classified into three broad categories, *viz.*, lower order, middle order and higher order based on threshold population. The functions having a threshold population of less than 750 are classified as lower order functions ; with 750 to 2500 population as middle order functions and above 2500 population as higher order functions. As per this classification, Table 3.6 indicates Primary School, Middle School, Post Office, Co-operative society, Panchayat and Grocer shop become lower order functions, Weekly market and Medical shop become higher order functions and the rest come under middle order functions.

From Table 3.6, it can be observed that some functions are not available in certain villages whose population is more than the threshold requirement. Though threshold population indicates the minimum population required for the function to develop at a settlement at the present level of development, it is worthwhile to consider it along with the areas of coverage of a function as every function has its area of coverage beyond the village in which it is located. Therefore, while giving policy suggestions for opening of new functions at a settlement it is desirable to consider both the threshold and hinterland population to have the desired economy.

Though the lower order amenities – Middle School, Post Office, Panchayat and Co-operative society are available in 53, 51, 56 and 36 villages respectively, all the four functions together are available only in 29 villages. The distribution of the four functions by taluks and population size is presented in Table 3.7. This Table shows that generally villages with 2000 and more population are endowed with all the four lower order functions. Out of the 8 sample villages which have population of 2000 and above, 6 villages have all the four amenities. Of the remaining two villages which do not have all the four amenities, one is very near to Tumkur town and the other

is inhabited mostly by students of a large educational institution (Siddaganga Mutt). About 10 per cent of sample villages with 500 to 1000 population have all the four amenities. Even the villages having 1000 to 1999 population have these amenities in 57 per cent of villages. This picture clearly suggests that there is inter dependency in villages even for the lower order functions, even where the villages size is much bigger than the threshold population requirement for these amenities. So the consideration of area of influence of each amenity is a pre-requisite for any policy suggestions.

TABLE 3.7

Distribution of villages having all the four functions —Middle School, Post Office, Panchayat and Co-operative Society – by population size :

Taluks	*Less than 500*	*500 to 999*	*1000 to 1999*	*2000 and above*	*Total*
Chikkanayakanahalli	—	1	3	—	4
Gubbi	—	—	—	—	—
Koratagers	—	1	—	1	2
Kunigal	—	1	3	1	5
Madhugiri	—	1	2	2	5
Pavagada	—	—	1	1	2
Sira	—	1	2	1	4
Tiptur	—	—	2	—	2
Tumkur	—	1	1	—	2
Turuvekere	—	1	2	—	3
District	—	7	16	6	26
No. of sample villages	125	71	28	8	232

Hinterland Population

Hinterland population for a function is the population that is served by that function. It is already mentioned that the hinterland population of a function cuts across the

boundaries of revenue villages. The lower order functions serve small population and small area whereas higher order functions serve large population and large area. Hinterland population is a better indicator for introducing functions in places where the existing function is serving larger areas. The hinterland population for rural based functions are estimated here in two alternative ways. Firstly, the population of sample villages which are availing a rural amenity is computed and it is divided by the number of sample villages having the amenity. Secondly, using the average distance for a rural amenity as radius, the area is obtained assuming that the hinterland would be in the form of a circle around the place of amenity. With the help of the rural density for the district, hinterland population for the area is arrived. These two exercises are repeated for all the functions. These estimates are presented in Table 3.8.

The estimates obtained by the second method are likely to be over estimates if the distance distribution is skewed (to the right). Table 3.5 shows that the distance distribution to all functions except for medical shop is skewed. In the case of medical shop, it is close to the symmetric distribution. The estimates arrived from the second method are used only to check the estimates of the first method. Table 3.8 shows that the hinterland population for many functions computed by the second method is higher than the estimates arrives at by the first method. This is in conformity with the skewed distributions for the distances. However, the wide difference in the two estimates for weekly market found in Table 3.8 can be explained from the inadequate representation of weekly markets by the sample villages. Although there are about 60 weekly markets in rural Tumkur, the 10 per cent sample represented only three weekly markets. This so because a simple random sample may not always adequately represent all characteristics, specially those which are rare in nature, however big the sample size may be.

It can be observed from Table 3.8 that the lower order functions have small hinterland population compared to the other order functions. The institutions that serve small

TABLE 3.8

Hinterland Population

Functions	*Population method*	*Area method*
Primary school	791	679
Middle school	2567	2979
Secondary school	7336	8388
Post office	2720	3644
Telephone	11702	21064
Panchayat	2550	3280
Co-operative society	3975	5788
Government dispensary	16109	11871
Private dispensary	16245	14379
Auxiliary Nurse-Midwife	6814	7115
Veterinary dispensary	13468	12510
Agricultural Assistant	7950	8540
Grocer shop	1326	4487
Fair Price shop	5108	7793
Weekly market	31546	9766
Cloth shop	6843	10263
Agricultural input dealer	14140	11117
-do- (Co-operative)	4650	5694
Medical shop	24612	25606

Note : In the population method, the population of sample villages availing a rural function is considered along with the number of sample villages having the function and the former is divided by the latter. In the area method, the hinterland area for a function is computed and by using population density, the hinterland population for the function is arrived.

hinterland population (less than 4000 population) are Primary school, Middle school, Panchayat, Post office and Co-operative society. Primary school is omitted from the present analysis as the villages which have Middle school, have also either primary section or another primary school in the village. Though these are the primary institutions at village level, they have different hinterland population.

Panchayats are formed by grouping certain villages on population basis. Co-operative societies whose function is mainly agricultural credit are also formed by grouping certain villages mainly on the basis of cultivated area. The recent reorganisation of Co-operative societies which aimed at making them viable units, reduced their number to half of the original number. The number of villages under the jurisdiction of a Post office is fixed in such a way that the Post Office would become self-supporting. It appears that population of settlement seems to be the norm for middle schools. The difference in the hinterland population of these institutions arise as they are organised by different departments based on different criteria. No attempt was made so far to organise these institutions in a defined area whose hinterlands are co-extensive with each other. It is well known that Panchayats and Co-operatives are the primary institutions which require local participation and organisation. The same area of operation of these institutions could facilitate local leaders and administrators to identify the requirements of the area and fix priorities for the general development and also to organise the schemes intended for the vulnerable sections of the community in a comprehensive way.

4

Marketing

In the previous section the availability of market facilities such as grocer shop, fair price shop, weekly market, cloth shop and agricultural input dealer were discussed. Significance of the knowledge of the pattern market contacts of villages in area planning needs no special mention. An attempt is, therefore, made to analyse the marketing behaviour of villagers in terms of their dependency on other places. Marketing refers to the sale of produce, purchase of agricultural inputs and the daily needs of villagers.

The analysis of this section is based on data from the village questionnaire on market contacts for sales and purchases. They are general questions without going into the types and quantities of commodities marketed at different places. The spatial preferences of social and economic groups are not reflected here. The information obtained in the village questionnaire is the usual places the villagers go for sales and purchases. The data base of the present analysis serves the limited purpose of understanding the contact patterns of villages with other places for marketing.

The marketing requirements of villagers are partly met by their own village if the village has a grocer shop or a weekly market. The threshold population for these establishments is furnished in the previous section. Out of 232 sample villages

for which we received completed questionnaire, about 83 per cent of villages reported dependency on other places (other villages and towns) for sales and about 94 per cent of villages reported dependency for purchases (Table 4.1).

TABLE 4.1

Dependency for Marketing

Nature of dependency	*No. of sample villages reporting depend-ency*	*No. of sample villages reporting dependency on*			
		One place	*Two places*	*Three places*	*Total No. of places*
Sales	195	84	55	56	391
Purchases	219	77	62	80	494

The low dependency for sales compared to purchases may be due to the practice of traders visiting different villages for purchasing the produce on the spot. It should also be noted that the marketing requirements of a village may not be completely met by a single outside place. On an average, a sample village reported contact with 2 other places for sales and 2-3 places for purchases. Many of the sample villages which reported contact with a place for sales also reported purchases in that place, but it is not *vice-versa*. It is due to choice of place for reasonable return for the produce and sales are effected in limited number of operation, generally immediately after the harvest season ; on the other hand, purchases are spread over time and they comprise of various items. So, it is natural to expect contacts with more places for purchases rather than for sales. The distance of these places from sample villages and their status in terms of town and village is presented in Table 4.2.

About 45 per cent of places reported by sample villages for sales are more than 5 km distance from sample villages. The corresponding percentage for purchases is 40. This shows the

TABLE 4.2

Places of marketing—distance and status

Nature of dependency	*No. of sample villages*	*Upto 5 km distance*			*Above 5 km distance*		
		No. of places reported	*Towns*	*Villages with more than 1000 population*	*No. of places reported*	*Towns*	*Villages with more than 1000 population*
Sales	195	214	22	106	177	120	43
Purchases	219	299	22	141	199	120	54

tendency of people to travel more distances for sales as against purchases. This Table also shows that 5.6 per cent and 30.7 per cent of the places reported for sales are towns located at a distance range of 5 kms and above 5 kms respectively. 27.1 and 11 per cent of the places reported for sales are villages with more than 1000 population located at the distance ranges of 5 kms and above 5 kms respectively. From these percentages, it can be observed that the proportion of places reported above 5 kms for sales are seldom small villages with less than 1000 population. A similar pattern is observed for the places reported for purchases. These suggest the hierarchy of dependency for marketing where sample villages depend on large villages in the nearby and on towns and large villages at a distance.

Looking to the distance to the nearest market place reported by the sample villages given in Table 4.3, about 10 per cent of sample villages depend on distant places (more than 10 kms) for sales and only 5 per cent of villages depend on distant places for purchases. About 38 per cent of villages depend on the nearby places (upto 2 km distance) for sales and 46 per cent for purchases. This strengthens the earlier observation that villagers travel lesser distance for

TABLE 4.3

Distance distribution to the nearst place reported by sample villages for sales and purchases

Size class of villages	*Sales*					*Purchases*				
	No. of sample villages reporting contact with other places	*Upto 2 KM*	*2 to 5 KM*	*5 to 10 KM*	*Above 10 KM*	*No. of sample villages reporting contact with other places*	*Upto 2 KM*	*2 to 5 KM*	*5 to 10 KM*	*Above 10 KM*
Below 250	56	29	19	5	3	61	35	19	6	1
250-499	51	19	22	8	2	57	28	21	7	1
500-999	60	18	28	6	8	67	23	29	11	4
1000 and above	28	8	8	5	7	34	14	9	6	5
All villages	195	74	77	24	20	219	100	78	30	11

purchases and go to distant places for sales. Looking to the size classification of villages and their dependency on other places by distance, it reveals that people in smaller villages travel to less distant places than in big villages. 52 per cent of villages with less than 250 population, 37 per cent of villages with population 250-499, 30 per cent of villages with 500-999 population and 29 per cent of villages with 1000 and more population depend on places with less than 2 kms distance for sales. An ascending order of dependence can also be observed on the distant places from lower size class of villages to higher size class or villages. Only 5 per cent of villages with less than 500 population depend on distant places (more than 10 kms) for sales, whereas 25 per cent of villages with 1000 and more population depend on distant places (more than 10 kms) for sales. The same kind of pattern can also be observed for purchases. The size of villages and their dependency on other villages by distance suggest that the small villages depend on the nearby large villages and the large villages depend on other distant large villages or the towns.

Market contacts with towns

Towns are the centres of administration and non-agricultural activity But the growth of towns and their economic activity generally depends on the agricultural productivity of rural areas and the entreprenеurship of rural people as capital generated in rural areas flows into the urban centres. The weak urban centres reflect the backwardness of rural areas. Tumkur district is the least urbanised district in the State. There are 12 towns in the district serving 2452 inhabited villages. On an average each town serves about 200 inhabited villages. Only 6 towns have population of more than 10,000 in 1971. In this weak urban set up it is of interest to observe the contact pattern of villages with the towns for marketing. The dependency pattern of sample villages on towns for marketing is presented in Table 4.4. The villages which depend on towns but not on any other village for sales or

TABLE 4.4

The dependency of sample villages on towns for marketing

Size class of villages	*Sales*					*Purchases*				
	No. of sample villages reporting outside dependency	*On towns*			*Average distance to towns for complete dependent villages (in kms)*	*No. of sample villages reporting outside dependency*	*On towns*			*Average distance to towns for complete dependent villages (in kms.)*
		Complete	*Partial*	*Total*			*Complete*	*Partial*	*Total*	
Below 250	56	3	25	28	7.7	61	1	27	28	5.0
250-499	51	5	20	25	8.3	57	4	21	25	6.5
500-999	60	13	16	29	9.3	67	10	19	29	8.6
1000 and above	28	11	10	21	10.0	34	11	10	21	10.0
All villages	195	32	71	103	9.2	219	26	77	103	8.7

purchases are termed for this analysis as complete dependent villages on towns and villages which depend on towns as well as other villages are termed as partial dependent villages. About 53 per cent of villages have reported dependency on towns for sales. For purchases, about 47 per cent of villages reporting dependency on towns. However, the sample villages reported dependency on towns have reported dependency for both sales and purchases.

Looking at the size classes of villages, 75 per cent of villages with 1000 and more than population depend on towns for sales. About 49 per cent of villages in the size classes less than 1000 population depend on towns for sales. The same pattern of dependency of villages can be observed for purchases also. Though about 53 per cent and 47 per cent of villages reported dependency on towns for sales and purchases respectively, only about 16 per cent and 12 per cent of villages reported complete dependency on towns for sales and purchases respectively. A positive association is observed between village size and complete dependency on towns for marketing. The percentage of villages completely dependent on towns for sales varied from 5.4 per cent to 39.3 per cent from the size class of villages below 250 to 1000 and more. The complete dependency on towns for purchases by villages varied from 1.6 per cent to 32.5 per cent from the lowest size class to the highest size class of villages. Comparing the percentage of villages completely dependent on towns for sales and purchases in different size classes of villages, reveals that all the villages completely dependent on towns for sales are not completely dependent on towns for purchases. In other words some villages which completely depend on towns for sales reported only partial dependency on towns for purchases, which imply that they also depend on other villages for purchases. The average distance from the complete dependent villages to the towns are also presented in Table 4.4. From the average distance, it is apparent that large villages which depend on towns for marketing are relatively distant villages compared

to small villages. The lower average distance for purchases compared to sales indicate that some distant villages completely depend on towns only for sales. The analysis so far presented brings out the hierarchy of dependency for marketing by the villages in terms of higher percentage of large and distant villages depend on towns compared to small villages in the Tumkur district. These finding thus go against the belief of learned experts that villages (without reference to size) depend on towns for marketing.[1]

Weekly Markets

Weekly markets are traditional markets where sales are made both by traders and farmers. Farmers sell their products and purchase consumer items. There are 64 rural weekly markets in the district in addition to the 10 weekly markets in all the taluk headquarters of the district. The number of weekly markets are taken as reported by the Tumkur district Census handbook, 1971 and is updated as per the village questionnaire information on weekly markets. The existence of weekly markets along with regular markets in the towns and in some villages show the compatibility of weekly markets with regular markets in the district. It clearly indicates that development of regular markets have not eliminated traditional weekly markets, because these markets have their own consumers who have not changed their traditional pattern of purchases at week intervals and the agricultural produce is relatively priced lower in these markets than the regular markets as farmers are directly involved in the sales.

Only two rural weekly markets are located on the two National highways passing through the district Most of the rural weekly markets are found on the district roads. Observing

1. Draft Report on the Development of Tumkur district by the participants of the sub-regional Workshop on population Planning and Area Development for South Asia, pp. 274-275.

the weekdays of the market, seven market cycles[2] have been observed in the district ; out of these 5 market cycles operate independently. The number of rural weekly markets, the area and the population covered by each market is presented talukwise in Table 4.5. In the district on an average each rural weekly market serves an area of 165 sq. kms. and a population of 22,455. Comparing with the district average, Koratagere, Madhugiri, Tiptur and Turuvekere taluks are better served with the rural weekly markets. In Gubbi and Sira taluks, the population served by a market is less than the district average but the area is higher than the district average. This is due to the low density of population in these taluk compared to the other taluks. The taluks of Chicknayakana halli, Kunigal and Pavagada are not adequately served with rural weekly markets.

TABLE 4.5

Rural Weekly Markets

Taluks	*No. of rural weekly markets*	*Area covered by each market (in sq. kms.)*	*Population covered by each market*
C.N. Halli	4	276.88	32,834
Gubbi	7	173.63	22,240
Koratagere	6	107.97	16,469
Kunigal	5	191.60	33,347
Madhugiri	8	139.41	21,003
Pavagada	1	1346.6	1,29,492
Sira	9	171.39	17,459
Tiptur	7	111.10	17,074
Tumkur	6	168.68	32,154
Turuvekere	11	70.33	10,678
District :	64	164.76	22,455

2. Market cycle can be identified from different market dates wherein traders can move from one market to the other during the week.

In the absence of information on the dependency of sample villages on weekly markets, the villages which reported market contacts with villages where weekly markets are held are considered dependent on rural weekly market. Weekly markets are found in towns also and market contacts with towns were reported by villages. But it is less probable to assume that these contacts are with weekly markets of towns and hence towns are kept out of this analysis.

52 per cent of villages on which sample villages depend for sales have weekly markets and 41.2 per cent villages on which sample villages depend for purchases have weekly markets. Table 4.6 further shows that a high proportion of the distant villages with which sample villages have market contacts have weekly markets compared to the nearby villages reported for marketing by sample villages.

TABLE 4.6

Dependency on villages for marketing

Nature of dependency	*Upto 5 Km*		*Avove 5 Km*		*Total*	
	No. of villages reported by sample villages	*No. of weekly markets within them*	*No. of villages reported by sample villages*	*No. of weekly markets within them*	*No. of villages reported by sample villages*	*No. of weekly markets within them*
Sales	192	81	57	38	229	119
Purchases	277	99	75	46	352	145
Sales and Purchases	169	77	35	30	204	107

Further the proportion of weekly marketvillages to the number of villages reporting market contact by sample villages is more for sales compared to purchases. indicating more dependency on rural weekly markets for sales rather than purchases. Looking to the sales and purchase pattern, it is

apparent that villages that depend on the nearby weekly markets for sales also use them for purchases. But such a close association of purchases with sales is not found for the distant weekly markets.

The sample villages by size classification and their contact with rural weekly markets is presented in Table 4.7. The total number of weekly markets reported by sample villages as given in Table 4.6 and the number of sample villages reporting contact with rural weekly markets as presented in Table 4.7 reveal that the dependency of sample village on rural weekly markets if exists is mostly on a single market. About 56 per cent and 60 per cent of sample villages reported contact with rural weekly markets for sales and purchases respectively. But 70 per cent of the rural weekly markets are in 5 KM distance range from the sample villages. Across size classes of sample villages higher dependency on rural weekly markets has been observed for small villages compared to large villages. The percentage of villages dependent on rural weekly markets for sales has decreased from 69.6 for villages with less than 250 population to 39.2 for villages with 1000 and above population. For purchases, the corresponding percentage has decreased from 75.4 to 44.1 for the respective classes of villages.

Another dimension of the enquiry is to examine the extent to which the sample villages that depend on weekly markets also depend on towns. 40.4 per cent of sample villages which reported contact with rural weekly markets for sales also reported contact with towns for sales and a similar percentage for purchases is 36.2.

33.3 per cent and 37.9 per cent of sample villages reported dependency for sales and purchases respectively only on rural weekly markets and other villages—there is no dependency for these villages on towns. These percentages and the percentage of villages completely dependent on towns (Table 4.4) suggest that the marketing dependency of villages is more on rural weekly markets than towns.

TABLE 4.7

Dependency of sample villages on rural weekly makets

Size class of villages.	*Sales*					*Purchases*				
	No. of sample villages reporting outside dependency	*On rural weekly markets*				*No. of sample villages reporting outside dependency*	*On rural weekly market*			
		Upto 5 KM	*Above 5 KM*	*Total*	*Rural weekly markets and towns*		*Upto 5 KM*	*Above 5 KM*	*Total*	*Rural weekly markets and towns*
Below 250	56	30	9	39	17	61	36	10	46	15
250-499	51	19	9	28	11	57	24	11	35	16
500-999	60	21	10	31	9	67	24	10	34	10
1000 and above	28	6	5	11	7	34	9	6	15	6
Total :	195	76	33	109	44	219	93	37	130	47

Neighbouring villages

Neighbouring villages are the villages which have common boundaries with the sample villages. The contacts with the neighbouring villages are particularly important for micro level planning. The following Table 4.8 gives the contact pattern of sample villages with their neighbouring village for marketing. About 47 per cent of sample villages reported contact with neighbouring villages for sales and about 55 per cent for purchases. It can also be observed that many small villages compared to the villages in the higher classes have contact with the neighbouring villages. And the tendency of sample villages depend on more than one neighbouring village is inversely related to the size of the sample villages. Comparing sample villages which reported contacts with neighbouring villages for sales and purchases, it is observed that these villages on an average reported 1.2 neighbouring villages for sales and 1.3 for purchases. This shows that the dependency on the neighbourhood is more for purchases than for sales.

It is worthwhile to examine the association of the size of sample village with the size of neighbouring villages with which the former reported contact to see whether there exists any hierarchy in the dependency pattern. To avoid repetition, contacts through purchases alone are given in Table 4.9 as the villages have more contacts with the neighbouring villages for purchases than for sales. Table 4.9 shows that sample villages resported contact generally with neighbouring villages which are bigger to them. 94.1, 85.5 and 51.2 per cent of neighbouring contact villages are bigger than the sample villages in the repective sample village classes of below 250, 250-499, 500-999. In the sample village size class of 1000+population, 52.9 per cent of neighbouring contact villages belong to the same size class. This is the highest size class considered for the size classification. Sample villages with less than 500 population have not reported contact with the neighbouring villages smaller to the former. But the sample villages with 500-999

TABLE 4.8

Dependency of sample villages on neighbouring villages

Size class of sample villages	*Sales*			*Purchases*		
	No. of sample villages reporting outside dependency	*No. of s cmple villages reporting contact with neighbouring villages*	*No. of neighbouring villages reported contact by sample villages*	*No. of villages reporting outside dependency*	*No. of sample villages reporting contact with neghbouring villages*	*No. of neighbouring villages reported contact by sample villages*
Below 250	56	31	40	61	37	51
250-499	51	30	35	57	39	48
500-999	60	22	24	67	31	41
1000+	28	9	9	34	14	17
Total	195	92	108	219	121	157

and 1000 and above population have reported contact with the neighbouring villages which are in the population range of 250-499 and 500-999 respectively. The percentage of neighbouring villages in these classes are respectively. 14.6 and 47.1. This shows that higher size class villages have contacts with the villages in the next lower order. On the whole, an hierarchy of dependency is observed in the neighbourhood.

TABLE 4.9

Dependency for purchases on neighbouring villages and their size distribution

Size classes of villages	*No. of sample villages reporting contact with neighbouring villages*	*No. of neighbouring villages reported contact by sample villages*	*Size distribution of the neighbouring villages*			
			Below 250	*250-499*	*500 999*	*1000+*
Below 250	37	51	3	13	11	24
250-499	39	48	—	7	13	28
500-999	31	41	—	6	14	21
1000+	14	17	—	—	8	9

Having seen that the sample villages depend on villages bigger to them in the neighbourhood, it could be of interest to trace the existence of institutions, like Panchayats, and Co-operatives in the neighbourhood which are serving the sample villages. It is also of interest to observe the existence of weekly markets in these neighbouring villages. These particulars are furnished in Table 4.10. In addition to these, the sample villages dependent on their Panchayat headquarters villages is also given in the Table.

From the Table, it can be seen that 19.1 per cent and 40.2 per cent of sample villages depending on neighbouring villages

TABLE 4.10

Neighbouring villages and their status in terms of location of Panchayat, Co-operative society and Weekly markets

Nature of dependency	*No. of sample villages reporting dependency on neighbouring villages*	*Neighbouring villages having—*				*No. of sample villages reporting dependency on their Panchayat village (excluding sample villages)*
		Panchayats covering the sample villages	*Co-op. society covering the sample villages*	*Weekly markets*	*Any one of these institutions of two or three*	
Sales	92	36	37	33	61	47
Purchases	121	50	53	45	89	61

for sales have their Panchayat and Co-operative society headquarters in the neighbourhood respectively. If we take dependency for purchases, these percentages are slightly higher. Similarly, 35.9 per cent and 37.2 per cent of sample villages dependent on neighbouring villages for sales and purchases respectively have weekly markets in the neighbourhood. All these percentages are not addtive as Panchayats, Co-operative societies and weekly markets may co-exist in the same neighbouring villages. Looking with this perspective, 66.3 per cent and 73.6 per cent of sample villages depending on the neighbourhood for sales and purchases respectively have the headquarters of their panchayat or Co-operative society or weekly market or a combination of any two or three of them in the nighbourhood. This does not, however, mean that Panchayat headquarters and Co-operative societies are not at all existing in the nighbouring villages for the remaining sample villages. They may be well there serving villages other than sample villages.

Panchayats are the local governing bodies at the village level formed generally for a group of villages. The headquarters is generally located at the biggest village in the group of villages. The question to be answered is whether the choice of the administrative centre is based on the contacts of its constituent villages with the centre or the administrative centre has developed as market centre for its constituent villages in course of time. The issue is examined with reference to sample villages and their market contacts with their Panchayat headquarter villages. Out of the 195 sample villages reporting outside dependency for sales, 44 have Panchayat headquarters within them. Similarly the 219 sample villages reporting outside dependency for purchases have 51 Panchayat headquarters within them. In other words, 151 villages reported dependency for sales and 168 villages reported dependency for purchases are the constituent villages of various Panchayats (excluding the Panchayat headquarter village). Only 47 out of 151 villages

and 61 out of 168 villages reported their Panchayat headquarter villages for sales and purchases respectively which account for 31.1 per cent and 36.3 per cent for sales and purchases repectively. Thus the existing Panchayat headquarter villages have not developed into market centres for their constituent villages leaving alone their formation on the basis of contacts. To sum up, the various places reported by sample villages for marketing can be classified as given below :

TABLE 4.11

Classification of Market Places

(per cent)

Nature of dependency	*Neighbouring village*		*Other villages*		
	With weekly market	*Without weekly market*	*With weekly market*	*Without weekly market*	*Towns*
Sales	8.44	19.18	22.00	14.01	36.32
Purchases	9.11	22.67	20.24	19.23	28.75

The above Table clearly brings out that much of the market dependency of sample villages is an rural areas. Weekly markets and neighbouring villages are significantly catering to the market needs of the sample villages. Looking back to Table 4.2, 77.1 per cent villages for sales, and 78.7 per cent of villages reported by sample villages for purchases are in the distance range of 5 km from the sample villages. Thus much of the marketing activity in the villages of the district is restricted to village within short distances.

5

Employment

The fast growth of some villages and the decline of some other villages in terms of population in the district during 1961-71 (may be the case for earlier decinnial periods also) indicates internal migration of population between villages, in addition to towns. Data from village questionnairs show that employment is the main reason for this out-migration. To retain the population in the villages, employment planning is as vital as planning amentities and services. It has been recognised that the drive against rural poverty shall aim at providing adequate employment opportunities. The programme like 'food for work' are geared in this direction. This programmes will be effective if they are taken up to meet the needs of the local conditions to reduce the tempo of out-migration for employment. This requires the knowledge of employment potential of villages and their manpower ; the outside dependency for employment ; the critical distances travelled for employment which does not warrant the change of the place. All these require an approach for planning at micro level.

As stated earlier, an attempt is made here to study the contact pattern of villages on other places for employment, based on the village questionnaires' data on sample villages. The contacts referred here are mostly related to agricultural labourers as the rural district is predominantly agriculture

based with 84.7 per cent of workers depending on agriculture. These contacts with the outside places are only indicative and do not give the details of the extent of dependency in terms of number of persons and man hours spent on work.

About 80 per cent of sample villages reported outside dependency for employment. Looking to the outside dependency for employment across size classes of sample villages as given in Table 5.1 it appears that village size has no relevance for outside dependency. The dependent sample villages on an average reported 2.2 places for employment. The size distribution of places reported by sample villages is also given in the Table. About 6 per cent of place names have been traced in the census hand book. Out of the places reported by sample villages, only 9 per cent are towns. From the size classification of sample villages and the size distribution of the reported places it has been observed that no hierarchy exists in employment dependency in contrast to the market dependency. In other words a large village depends on a small village and a small village depends on a large village for employment. Out of the places reported by large sample villages, 9.1 per cent and 15.9 per cent are respectively villages having less than 250 population and 250-499 population. The sample villages with less than 250 population reported dependency on all size classes of villages.

The distance of these places from sample villages is given in Table 5.2. 53.3 per cent of these places are in the distance range of 2 km from sample villages. Only 11 per cent of places are above 5 km distance from sample villages. The distance travel patterns have no association with the size of the sample villages. About 72 per cent of dependent sample villages reported dependency on neighbouring villages and these sample villages reported dependency on an average on 1.5 neighbouring villages. Thus the dependency for employment is mostly on the nearby villages and the neighbourhood dependency is significant.

TABLE 5.1

Outside dependency for employment

Size class	*No. of sample villages*	*No. of sample villages reported dependency*	*No. of places reported by villages*	*Size distribution of places reported by sample villages*						
				Uninhabited	*Below 250*	*250-499*	*500-999*	*1000+*	*N.T.**	*Towns*
Below 250	63	50	103	—	9	19	24	36	9	6
250-499	62	47	113	3	10	17	28	37	5	13
500-999	71	65	145	1	12	30	48	37	9	8
1000+	36	23	44	—	4	7	10	10	3	10
Total	232	185	405	4	35	73	110	120	26	37

*N.T : Not traceable.

TABLE 5.2

Number of places reported for employment and their d istance from sample villages

Size class of sample villages	*No. of places reported by sample villages*	*Distance distribution of places*			*Neighbouring villages*	
		Upto 2 km.	*2 to 5 km.*	*Above 5 km.*	*No. of sample villages reported*	*No. of places reported*
Below 250	103	66	28	9	45	62
250-499	113	51	46	16	30	51
500-999	145	79	52	14	48	75
1000+	44	20	18	6	10	14
Total	405	216	144	45	133	202

6

The Strategy

In the light of the distribution pattern of amenities and services and the contact patterns for marketing and employment discussed in the earlier sections, an attempt is made in this section to identify the minimal size of a cluster for the implementation of the programmes of Integrated Rural Development.

It is observed in the previous sections that much of the marketing activity of villages is restricted to rural areas within shorter distances and the dependency for employment is mostly on the nearby villages and the neighbourhood dependency is significant. This restricted contact pattern and the envisaged horizontal integration within the constituent villages of the clusters indicate the need to have small size clusters.

The number of functions a cluster can support is directly related to its size. This can be observed from the hinterland population of rural functions presented in Table 3.8. So the minimal size of a cluster should be decided in such a way that it can atleast accommodate the basic functions without resorting to a large scale expansion of these functions.

An exercise was done in the project with the help of census date of examine how the cluster of villages look like in terms of their characteristic features.[1] The clusters were

1. V M Rao ; *op cit.*

drawn by fixing the sample village and tracing the villages which have common boundary with the sample village. The cluster will have a village at the centre surrounded by other villages. The average size of a cluster consists of six villages with about 4000 population. The present development of rural functions in the district as observed from the hinterland population of functions suggest that a cluster size of 4000 population can have middle school (all the villages with middle schools have primary schools), Panchayat, Post office and cooperative society with certain amount of rationalisation of these functions as they are unevenly distributed over space., Thus a cluster size of 4000 population satisfies the requirement of having the basic functions *viz.*, Middle school, Panchayat Post office and Co-operative society However, there is a need to make the ranges of these functions coextensive overi ng all the villages of the cluster.

But these clusters exhibited intra-cluster variations in characteristics within its constituent villages. This shows that they are at different levels of development in matters like literacy, occupational structure etc., and raises doubts about spil over and percolation theories of development. When the basic objective of rural development is to bring about homogeneous development of villages, it is advisable to select a smaller size (or area) than the cluster size of 4000 population. The smaller area at the same time, should be capable of providing the basic functions under the existing distribution pattern without resorting to a large scale provision of them. It is plausible to do this exercise as the hinterland population for these functions are on the lower side than 4000. The estimates of hinterland population for Middle school, Post office, Panchayat and Co-operative society are 2567, 2720, 2555 and 3975 respctievely. The population norms for providing these functions are also in favour of smaller area. The first All-India Education Survey envisaged a middle school for a group of villages having 1500 population. The Karnataka Village Panchayats and Local Boards Act, 1959 envisaged a Panchayat

for a village or group of villages having population ranging between 1500 to 10,000. The provision of Post offices is linked to the Panchayats. The Fifth Plan envisages to cover all the Gram Panchayats with Post offices during the plan period. Coming to Co-operative societies, the Third Five-Year Plan draft accepted organisation of co-operatives on the basis of village community as the primary unit and laid down maximum limit of population for a society as 3000.

Looking to the hinterland population for the basic functions and the norms for providing them, it appears that a unit area consisting of 2000 population is attempted, it can provide basic functions if few additions are made to the existing functions. Accordingly, an exercise is made here with population norm of 2000 for a unit area.

In an earlier section it is stated that villages with 2000 and more population already have these functions. These villages can serve as independent units by themselves. The villages with less than 2000 population account for 2377 villages in the district which have to be organised as unit areas with 2000 population each. To cover the above 2377 villages under this net, the number of units that have to be formed, the number of villages that form a unit and the ayerage distance between the neighbouring villages (two adjoining villages) are presented taluk wise in Table 6.1.

This Table shows that on an average about 4 villages form a unit area and most of the taluks conform to this norm. Koratagere and Pavagada taluks, however, show some divergence because Koratagere taluk has more small villages and Pavagada taluk has many large villages. The average distance between neighbouring villages is about 2 km. except of Pavagada and Sira taluks, for, villages in these taluks are big in terms of area.

Keeping in view the main objective of providing all the four basic functions to each unit area, the study estimates the requirement of additional number of institutions for these

TABLE 6.1

Number of unit areas to be formed

Taluks	*No. of units*	*No. of villages in a unit*	*Average distance between neighbouring villages* two consecutive villages (Kms)*
Chicknaikanhalli	52	4.0	2.5
Gubbi	68	4.3	2.1
Koratagere	46	4.8	1.8
Kunigal	75	3.8	2.0
Madhugiri	66	4.0	2.1
Pavagada	52	2.4	3.5
Sira	61	3.5	2.8
Tiptur	53	4.1	2.1
Tumkur	84	4.1	1.8
Turuvekere	54	4 0	2.0
District :	611	3.9	2.2

*The average distance between neighbouring villages is derived from the average diameter of a village which is (2.2 km) obtained from the total area of villages. The village of the district seem to be of nucleated type where cluster of shouses are at the centre and fields lying around. For this type of villages the average distance between the inhabitant localities of neighbouring villages is the same as the average diameter of villages under the assumption that the villages are of circular form.

basic functions by adopting three independent approaches, *viz.* (*a*) to bring down the existing hinterland population of these, functions to 2000 population, additional requirement is calculated keeping in view the population, inhabited in villages with less than 2000 population in the district, (*b*) by calculating the difference between the estimated number of unit areas and the present availability of these functions in the villages of the district with less than 2000 population which is estimated from

the sample villages data, and (*c*) estimating the additional requirement on the basis of non-availability of these functions in the unit areas conceived in this study. The purpose of estimating the additional requirement by different independent approaches is to obtain estimates by various possible alternatives and examine the relative merits of these estimates.

Assuming that four amenities are widely dispersed in a cluster, cluster being defined as a group of villages having common revenue boundary with sample village, and that a sample village does not have any one of these four amenities, one needs to look to a maximum of 5 villages (including the sample village) in a cluster to trade all the four amenities. But the present location pattern of these amenities presented in Table 6.2 suggest co-existence of amenities at a place though they differ in their combination.

TABLE 6.2

Location pattern of basic amenities

Amenities	*Co-op. society*	*Post office*	*Middle school*	*Panchayat*
Co-op. society	100	89	83	89
Post office	63	100	80	82
Middle school	57	77	100	75
Panchayat	57	75	71	100

The first row of the above Table indicates that 100 villages having co-operative societies also have within them 89 Post offices, 83 Middle schools and 89 Panchayats. Likewise, the other rows also reveal the association of a function with the other three functions in the present locational pattern of these functions in the villages of the district. Considering the association pattern of these functions, it may not be necessary to consider all the five villages (the upper bound for dispersal of the four functions in a cluster) including the sample village from a cluster to trace all the four functions. It should, how-

ever, be noted that there are several clusters which lack any one or more of these functions. In this study, in the exercise of tracing the four functions, they were traced in a maximum of four villages (including sample villages) in the clusters having all the four functions.

The unit area conceived in this study shall have on an average 2000 population and consists of four villages. So, in the exercise of finding the gaps in the availability of the basic functions in the unit area, the norm of four villages (including sample village) is considered for the present analysis. The cluster is a basic structure from which the four villages including the sample village are selected to form a unit area. The unit area, thus considered in this study consists of sample village and other three villages of a cluster. The primary criteria for choosing the other three villages is the availability of basic functions in them. However, in the selection of other three villages, the villages with 2000 and more population are not considered as they themselves form separate units. From the unit area so formed, the gaps in the basic functions are arrived at to estimate the additional number of institutions required for the four basic functions for organising unit areas in the whole district.

The availability of the basic amenities in the unit areas are presented in Table 6.3. According to this Table, about 34 per cent of the unit areas have all the four amenities within its constituent units ; 25 per cent have 3 amenities, 16.5 per cent have two amenities, whereas only 9.8 per cent of unit areas do not have even a single basic amenity (Primary institution). Looking at the inter-taluk distribution pattern of these amenities, taluks like Chiknayakanahalli, Pavagada and Turuvekere are in favourable position compared to other taluks.

The estimate arrived from the three different methods for the additional number of institutions required for providing basic amenities in all the unit areas of the district are presented in Table 6.4.

TABLE 6.3

Availability of basic amenities in unit areas

Taluks	*All the four amenities*	*Three amenities*	*Two amenities*	*One amenity*	*No amenity*
Chicknayakanahalli	10	5	—	2	2
Gubbi	4	9	5	7	5
Koratagere	4	7	3	5	2
Kunigal	12	3	5	4	3
Machugiri	8	6	3	2	6
Pavagada	4	6	1	1	1
Sira	6	1	5	3	—
Tiptur	8	4	6	—	4
Tumkur	11	8	7	7	—
Turuvekere	10	7	2	—	—
District :	77	56	37	31	23

Note : Sample villages with 2000 and more population are not considered.

TABLE 6.4

Additional requirement of basic amenities

Functions	*Hinterland population approach*	*Difference between estimated No. of unit areas and the available No. of amenities*	*Gaps in the availability of amenities in the unit areas*
Co-operative society	303	311	318
Post office	162	161	185
Middle school	135	151	188
Panchayat	133	131	166

Looking to the estimates arrived by the three different approaches given in the Table, it can be observed that the difference between estimates arrived by the first two approaches are less compared to the estimates arrived at by the third approach. The estimate based on second approach stand in between the estimates for the first and the third approaches (with the exception of estimates for Panchayats). The first approach based on hinterland population does not take into account the present spatial distribution of basic function. In the second approach the spatial distribution of these functions is partially represented as the present available number of institutions for the basic functions are estimated for the district from sample villages data whereas the third approach based on the functional gaps in the unit areas considers roughly about one-third of the rural area of the district and well represent the present spatial distribution of basic functions. From these estimates it can be said that the first approach gives the minimal estimates and the third approach gives the maximal estimates.

If villages are organised into such unit areas, each unit area will have about 3 primary schools. Most of the primary schools now existing in villages are single teacher schools. Unit area approach provides an opportunity to amalgamate some of the nearest single teacher schools into a multi-teacher school to create better school atmosphere and improve standards by reducing the work load of teachers. The availability of Middle school in every unit area facilitate higher enrolment of children in the age group of 10 to 14 years.

Apart from the formation of a primary co-operative society within a unit area, there is need to widen its functions like supply of controlled commodities, agricultural inputs, provisions, cloth and basic medicines to reach certain degree of self-sufficiency within the unit area.

The extension Agent, designated as Agricultural Assistant, who is the king pin of the vital extension service and supposed

to function at the grass-root level, is now found in the middle order functions as per threshold and hinterland populations. On the average each agricultural assistant is serving about 16 villages in the district. He is the friend, philosopher and guide to the villagers. He carries the new agricultural technology to all villages and convinces the villagers about its high yields through personal contact and demonstration plots. He acts as the co-ordinator between the villagers and taluk level development administration ; in addition he records and supplies basic statistics vital for development planning to the planners and administrators. Much of his time is lost in collecting these statistics. These multifarious activities of the Extension Agent, particularly in a wide area make him ineffective and suggests the need for reviewing his area of operation.

The unit area that is visualised here is not simply for providing basic amenities, but also to treat it as the basic unit for formulating integrated development plans and their implementation. Looking from this angle, the need for an Extension Agent for a unit area is vital. The study, therefore, suggests that the jurisdiction of an Extension Agent should be confined to a unit area. He can also be entrusted with the work of Panchayat which is being attended to by revenue officials. Following this suggestion, the existing staff of agricultural assistants need to be increased by four-fold.

Coming to health, the unit area needs some kind of basic medical aid. As it may not be feasible to extend a dispensary to the unit area, at least a para medical official, *viz.*, Auxiliary Nurse Mid-wife (ANM) shall serve a unit area. The additional requirement of these officials following the suggested pattern, comes to two and half times of the present strength.

It should also be noted that, besides providing the functions mentioned above in such a unit, the constituent villages in a unit area should be well connected with roads to accelerate interactions among them and usher in integrated rural development.

Middle Order Functions

Like the unit area at the primary level discussed earlier, there is a need for a 'secondary unit area' serving a group of primary units for the middle order functions. The public or public supported functions at the middle order are secondary school, telephone, agricultural assistant, Government dispensary, Auxiliary Nurse Mid-wife, Veterinary dispensary, Fair price shop and Agricultural input dealer (Co-operative). It is already suggested that agricultural assistant and Auxiliary nurse mid-wife should be brought down to the primary unit level and the functions of the Co-operative society at the primary unit level need to be widened to cover distribution of controlled commodities and sale of agricultural inputs. From the above list of functions, the functions that continue at middle order are secondary school, telephone, Government dispensary and Veterinary dispensary. As these functions are also of essential nature, they should be available within walking distance.

The fast communication media, *viz.*, telephone is now available to villages at an average distance of 8.6 km. It seems there is no planned programme of extension of telephone to rural areas. Though telephone is considered for the present analysis at the secondary unit level, it is worth pointing out that there should be a phased programme of extension of telephone to every Post office in rural areas. It involves only initial cost for extending new lines. It will be of interest to work out the economics of rural public call office in terms of social cost and social return.

Government of India envisaged a medical sub-centre (dispensary) for a population of 10,000 under minimum needs programme.[1] The Education Commission 1964-66 recommended a secondary school serving a radius of five to seven

1 However, the norm achievable by 1988 for a sub-centre under revised minimum programme is 5000 population.

miles with a total population coverage of 10,000 to 15,000. Consideration of 10,000 population norm for the secondary unit area is consistent with the All-India norm for Government dispensary and a secondary school. From the district picture, a radius of 5 km provide a population of about 10,000. So, a secondary unit area with 10,000 population serves 5 primary units in the district and the maximum distance from the central unit to any part in secondary unit may not exceed 5 kms.

The unit area which has more functions out of the four functions considered above (secondary school, telephone, Government dispensary and Veterinary dispensary) could be taken as the 'Central Unit' in the secondary unit area and the neighbouring primary unit areas having common boundary and having linkages with the 'central unit' are to be considered to form the secondary unit. The primary unit areas within 5 kms distance from the town, however, may continue to depend on towns for the above functions. The secondary units that are to be formed with the above criteria would be about 124 for the whole district.

The additional requirement of the functions, *viz.*, secondary school, telephone, Government dispensary and Veterinary dispensary for the district is estimated by considering hinterland population of these functions at 10,000 from the existing levels. The additional requirement works out to be 20, 63, 62 and 51 respectively for the above functions. These estimates are the minimal estimates. So, the actual additional requirement may be some what higher than the estimates worked here.

In addition to providing Government dispensary and Veterinary dispensary at the central unit of the secondary unit area, these dispensaries are to be provided with full-time doctors and a mobile unit and the mobile unit shall visit all the primary unit areas periodically.

It should, however, he noted that the estimates so far attempted are only indicative, the actual additional requirements depend upon the delineation of these unit areas. The estimates, though of indicative type, serve the purpose of showing that with some additional number of amenities, the amenities can be organised into a two tier system in the district with basic amenities at the primary unit level with 2000 population and the middle order amenities at the secondary unit level with 10,000 population.

7

Conclusion

A case for considering a cluster of villages as a unit for planning Integrated Rural Development is convincingly stressed by Professor V K R V Rao in his recent lectures and papers. He called a unit as 'unit area' for development planning. The present study is an exercise in identifying such a unit area (minimal planning unit) in the district of Tumkur by considering the present availability pattern of rural amenities and services.

The number of functions a unit area can support is positively related to the population of the area. The availability of the number of functions diminishes with the consideration of less number of villages for the unit area. So the size of the minimal area depends on the judgment of functions required for the area.

By looking at the hinterland population of various functions in the study area and the general norms laid down for the functions, it is felt that a unit area of 2000 population, inhabiting four villages can hope to have a Panchayat, a Co-operative society, a Middle school and a Post Office. These four functions are considered basic functions to be made available for a unit area in the district. Taking 2000 population as the norm for a unit area, additional requirement of these basic functions is calculated for the district. The

study recommends widening the functions of primary co-operative societies to include supply of controlled commodities, agricultural inputs, provisions, cloth and basic medicines so that a certain degree of self-sufficiency comes to the unit area.

In addition to the four basic functions, the study suggests provision of certain other functions in a unit area to make it more self-reliant and to usher in integrated development of the unit area. It is proposed to reduce the existing jurisdiction of Extension Agent, para-medical, *viz.*, Auxiliary Nurse Mid-wife, so as to confine their activities to a unit area. Like the unit area at the primary level, the study recommends the formation of a 'secondary unit area' for 10,000 population serving a group of five primary units each, to cater middle order functions like Secondary school, Government dispensary, Veterinary dispensary and Telephone.

Much of the market dependency of villages is on rural markets located in short distances. The development of primary and secondary unit areas respectively satisfies the purchases and sales requirements of the villagers. The present travel patterns of villagers for employment suggest that the employment programmes can be organised at the primary unit level.

The present exercise of identifying the minimal size of 2000 population for the unit area, however, takes into account only amenities and services and contact pattern of villages. The other factors such as administrative convenience and viability aspect of institutions may favour a bigger unit. There is a controversy between the Gandhians and Planners from the days of planning regarding the area of operation of a Panchayat. The former wanted a smaller unit and the latter favoured bigger unit for administrative convenience. A study of the project on Panchayats[1] also suggests that larger

1. D V Raghava Rao : Panchayats and Rural Development.

Panchayats having a population of 4000 would be economically viable to implement rural development programmes. Considering these aspects and allowing an additional margin of one thousand population for the outer limit to suit variations in local conditions it can be argued that 2000 population is the minimal limit and 5000 population is the maximal limit for formulating the clusters to implement the programmes of Integrated Rural Development.

Coming to the location aspect of the functions within the cluster, it is necessary to consider it with the objectives of cluster approach along with the traditional approach of centrality. The location pattern of functions within the cluster has to be consistent and in tune with the objective of developing horizontal integration within the clusters. The decentralisation of functions with the clusters would help to promote contacts among the constituent villages. On the other hand, provision of functions at a central place within clusters would minimise the distance of travel for the inhabitants and the functions may be utilised more effectively by the inhabitents. These are two divergent objectives and to strive a balance between them, the functions which serve the children and the sick might be located at the central place and the rest of the functions might be decentralised within the cluster.

Actual delineation of unit areas is beyond the scope of the present study as it is based on sample villages selected at random. This requires a further study based on the inventory of all villages. In the light of it, it is proposed to take up one taluk in the district for the study of delineation of unit areas.

Before closing, it is worth mentioning the limitations of spatial approach in extending functions based on threshold and hinterland population. This approach assumes that the present thresholds for various functions are the optimal levels at the present level of development. The present

thresholds for various rural functions are the outcome of Government policy in extending these functions and do not reflect effective demand for them. The preferences of the people for various alternative functions are not fully reflected in the present thresholds. If the economics of various functions is analysed by using social cost benefit analysis, the functions that appear to be higher order functions as per the present threshold population may effectively turn out to be a lower order functions. So integration of spatial approach with the economic analysis of various functions may give better results, reflecting the preferences of the people.

Appendix I

In this study of amenities an attempt is made to visualise the spatial distribution of functions through average distances and skewness of distance distributions without resorting to mapping. Symmetric distribution of distance for an amenity indicates positive relationship between the distance and the number of dependent villages upto the average distance and the later decline in the number of dependent villages suggest the area of influence of another location of amenity. It seems the skewness for the distance distribution needs different interpretations for urban amenity and for rural amenity as the neighbourhood amenity for an urban amenity is a rural amenity, whereas for rural amenity it is mostly another rural amenity.

The symmetric distribution for urban amenity may be interpreted as the area of influence of the amenity is even in all directions from the town, whereas for rural amenity it may be interpreted that the location of amenities are evenly distributed over space. The skewed distance distribution (skewed to the right) for urban amenity suggests that many nearby villages depend on towns and the influence of the amenity fades away with the distance indicating some distant villages are dependent on towns, whereas for rural amenity it may be interpreted that the amenities are not located evenly over space.

The measure of relative skewness is calculated from the third moment for the ungrouped distance data.

Though the measure of skewness is not a complete substitute for mapping, it gives a fair idea about the distribution of amenities over space.

Appendix II

TUMKUR PROJECT : OBJECTIVES AND WORK

Tumkur Project, a study on rural development located in the Tumkur district of Karnataka, was initiated in November 1976, under the guidance of Professor V K R V Rao who is the Honorary Director of the Project. The project has three main objectives. First, the project brought together a group of researchers drawn from the different faculties of the Institute for Social and Economic change with the intention of building up an inter-disciplinary team of researchers working in close co-operation with each other and looking at the problems of rural development from a common perspective delineated by the Hon. Director in collaboration with the team. Second, the issues relating to human resources and role of rural communities, social groups and institutions in rural development were to form the principal theme underlying and motivating the studies undertaken in the Project ; the larger and long-term objective was to try to accumulate a body of knowledge on the theme which could both help policy makers in field, and also, contribute fresh and relevant insights on the theme to social sciences concerned with rural development. Consistent with this objective, the third objective of the project was to prepare a data base capable of supporting a wide range of studies besides those undertaken within and during the duration of the Project.

The field work of the Project was conducted in April-June 1977. It covered 245 villages in Tumkur, a 10 per cent sample of inhabited villages in the district. The data were collected with the help of about 250 village-level and block-level officers

and an equal number of school teachers who worked under the guidance and supervision of the members of the project team. Two schedules were used for the field-work - (*i*) a comprehensive village questionnaire covering agriculture and land-use, other economic activities, rural amenities and services and village level institutions—Panchayat, Co-operative Society, School and Voluntary organisations ; and (*ii*) a eight-page household schedule—canvassed with each resident household in the sample village and covering a total of over 30,000 house-holds—focussed on the socio-economic status and life style as reflected in caste, occupation, ownership of land, housing, membership and access to institutions, contacts outside village and indicators of health and education. The principal data base of the project consists of village and household data for sample villages and village-wise population census (from 1941 to 1971) and agricultural census (1970) data for all villages in the district. Arrangements are being made to put these data on computer tapes to ensure their ready availabilty for future research.

During the period August 1977 to October 1978, the Project team prepared a set of preliminary papers based on secondary and village-questionnaire data. The set consists of ten taluk profiles—one for each taluk in the district—and a paper each on demographic change and villages in Tumkur. The findings and insights of these papers have been brought together in a synoptic theme paper prepared by the Honorary Director entitled, "Issues and Problems of Development of Tumkur." These papers were presented to and formed the principal source material for the four-week workshop on Population Planning and Area Development organised by the United Nations Asian and Pacific Development Institute, Bangkok in collaboration with the Institute for Social and Economic Change and held in November-December 1978 at the Institute campus in Bangalore. The workshop was attended by twenty participants drawn from eight countries of South Asian region and the members of the project team were among

the faculty and resource persons of the workshop. The key output of the workshop was a medium-term development plan for Tumkur prepared by the participants with the help of the workshop personnel.

Concurrently with the preliminary papers, work was also initiated on a number of theme-oriented studies, some completed and others in progress. They form the substantive output of the project and they are being brought out in a series— Studies in Integrated Rural Development—under the general editorship of Professor V K R V Rao. The time schedule to which the team is working is to complete these studies before the termination of the project in November 1980. The tentative titles listed below would give a broad idea about the focus and content of these studies.

1. Rural Development and Village :Perspectives for Planning for Development. (completed)
2. Panchayats and Rural Development. (completed)
3. Planning Unit Area for Integrated Rural Development—An Exercise. (completed)
4. School Education in Rural Areas—A Case Study of Tumkur District. (completed)
5. Dimensions of Backwardness in Pavagada Taluk. (completed)
6. Spatial Analysis of Transport network for Inter-village interactions. (in progress)
7. Human Factors in Rural Development. (planned)
8. Micro-Level Planning for Rural Development—An Application of Cluster approach. (planned)

These studies are visualised as the beginning of a research programme on rural development consisting of different but converging lines of investigation. The lines of investigation are expected to be pursued further—and fresh lines added—by

the different units in the Institute for Social and Economic Change beyond the period of the project. A beginning has already been made in this direction by the Social Service Management, Rural Economics and Education Units which are in the process of proposing studies based wholly or in part on Tumkur Project data. There is some ground to hope that this larger research programme will provide opportunities and incentives to different social science disciplines in the Institute to come closer together and pool their insights on the analytical and policy aspects of rural development. Such pooling of insights, in its turn, could initiate a trend towards interdisciplinary research growing out of shared and interacting perspectives of individual social science disciplines and, in the process, acquiring a holistic perspective richer and more perspective than its components. This is looking much too ahead but it is precisely the lure of this distant goal which pursuaded the Institute for Social and Economic Change to make a beginning with the Tumkur Project.

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