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**INTEGRATED
AREA
DEVELOPMENT
PROJECT**

**FOR
THE TRIBAL AREAS OF
VISAKHAPATNAM DISTRICT**

VOLUME - 1

TRIBAL CULTURAL RESEARCH AND TRAINING INSTITUTE

TRIBAL WELFARE DEPARTMENT

GOVERNMENT OF ANDHRA PRADESH

HYDERABAD

1974

Self-5

INTEGRATED AREA DEVELOPMENT PROJECT
FOR
TRIBAL AREAS OF VISAKHAPATNAM DISTRICT

VOLUME I

TRIBAL CULTURAL RESEARCH AND TRAINING INSTITUTE
TRIBAL WELFARE DEPARTMENT
GOVERNMENT OF ANDHRA PRADESH
H Y D E R A B A D
1974

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Research Institute
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P R E F A C E

For tribal development, as part of National Policy, sectoral plans with schematic budgets has been adopted as the instrumentality of planned development upto the end of III Five Year Plan. Though this policy resulted in tonning up of tribal economy and improving of social services to an extent, it is found that certain regions and groups in tribal areas remained backward, while others recorded some progress. This imbalance in regional and group development has been mainly due to lack of uniform distribution of social services and economic facilities besides difference in distribution of natural resources and group receptivity to development programmes. Realising the consequent dangers of this lopsided development National Planning Commission envisaged district

level planning as a corrective measure in its Approach Paper to IV Five Year Plan. However even this district level planning could not take concrete shape during the IV Five Year Plan as actual planning was not done at grass root level. By the end of IV Five Year Plan the short comings of sectoral planning with schematic budgets have brought into focuss not only the glaring backwardness of tribal areas in comparison to other areas but also the differences in the levels of development of one tribal region and the other. Realisation of these imbalances in development within tribal areas and in comparison with outside areas necessitated the evolving of a new strategy in the V Plan called "Integrated Area Development Plan" which is expected to accelerate the development of tribal areas in general so that they can also catch up with other areas while removing imbalances within tribal regions and groups.

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In the approach document for the development of tribal areas in the Fifth Five Year Plan, preparation of Integrated Area Development Plan was enunciated. In accordance with the policy outlined in the Approach paper for the tribal development in the Fifth Five Year Plan, the Government of India desired the State Governments to prepare Integrated Area Development Plans for tribal areas of the respective States. The Government of Andhra Pradesh have entrusted the Tribal Cultural Research and Training Institute, Hyderabad with the task of preparation of Integrated Area Development Plans.

In their letters, Government of India have outlined the nature of exercise to be undertaken in the process of plan formulation and implementation in each State. Broadly the exercise is to be done in two stages - clear enunciation of the present level of development of tribal areas as compared to the general level of development in

the State and on this basis the first order estimates of broad targets in each sector of development have to be made. The second stage of the exercise involves demarcation of Project Areas and preparation of Integrated Area Development Plan at field level. For the purpose of preparing plans, areas are to be carved out with existing Tribal Development Blocks as primary unit of planning called 'Micro Area' and a number of geographically contiguous Tribal Development Blocks and other areas having more than fifty percent concentration grouped into a 'Meso Planning Region'. However, this meso planning region should not intereseect existing district boundaries, the population size being 3 to 5 lakhs depending on the local conditions. The meso regions having geographical contiguity are to be further grouped into a macro planning region whose population may be between 10--15 lakhs. The functions of this multi-level planning process have been given in the following schematic outline:

MICRO LEVEL:

- 1) Education upto higher secondary level;
- 2) Elementary health services;
- 3) Agricultural extension;
- 4) Supply of Agricultural inputs;
- 5) Smaller minor irrigation schemes;
- 6) Elementary Veterinary services;
- 7) Multi-purpose Co-operative Societies providing integrated services of credit marketing, supply of inputs, smaller godowns at market centres;
- 8) Organisation of local Panchayats;
- 9) House-hold industries; and
- 10) Village Approach Roads.

MESO LEVEL: (Tribal Development Project)

- 1) Higher general education;
- 2) Technical and vocational training;
- 3) Man power planning and employment services;
- 4) Advance health services with preferential facilities;
- 5) Agricultural Research Extension;
- 6) Seed multiplication farms;
- 7) Soil Conservation and Land management;
- 8) Apex Integrated Credit Marketing structure with adequate godown and buffer stocks facilities;
- 9) Development of road and communication infrastructure connecting Markets with State/District Highways;
- 10) Distribution net work of power, rural electrification etc.
- 11) Local resource based industries with adequate market linkages;
- 12) Forest management;

- 13) Horticulture development;
- 14) Complimentary development programmes in the hinterland and of bigger industries;
- 15) Minor and Medium irrigation projects; and
- 16) Research, Statistics and Evaluation.

MACRO LEVEL:

- 1) Coordination of activities in tribal development projects;
- 2) Agricultural Research on a Regional basis;
- 3) Direction of the various sectoral programmes in the projects;
- 4) Major irrigation projects;
- 5) River Valley Development;
- 6) Industrial and Mineral Development of the Region and ensuring complementarity of project level development programmes;
- 7) Marketing support to projects; and
- 8) Evaluation.

Accordingly the Institute has initiated a State wide exercise for (1) Identification of areas with 50% tribal concentration so as to carve out areas for implementation of Integrated Area Development Plan and (2) preparation of plan for integrated development of these areas on the basis of inventory of resources made in their areas.

As a result of the State wide exercise, 5 Meso regions have been identified of which Visakhapatnam tribal area is the largest and most compact. Naturally the first exercise in Integrated Area Development Plan for a Meso region is carried out for Visakhapatnam Meso region. The outcome of this exercise is furnished in the following pages.

Integrated Area Development envisages judicious selection of places for location of social and economic activities over a physical space for the balanced development of a region. This approach is based on the idea of selectivity on the one hand and decentralisation on the other. While decentralisation of development ensures balanced development of the tribal areas, the selective location of functions facilitates optimum location of development investment. A logical concomitant of this proposition is identification of a net work of centres composed of a hierarchy

of places with particular service function effectively distributed in space and with efficient linkages for the movement of commodities, people and expertise.

On the basis of general objectives outlined in the preceeding paragraphs and on the concepts of integrated area development and micro level planning, several operational sub-objectives were formulated for detailed analysis and preparation of perspective plan in various spheres of socio-economic activity of the project area such as agriculture, industry, social facilities and transportation.

The sub-objectives are:

- 1) to delineate basic units of planning and to identify growth centres, service centres and central village in these units for the location of specific investment.

2) To estimate and project for each block (Unit of planning) agricultural production, consumption and marketable surplus.

3) To estimate and project for each Block requirements of agricultural inputs, irrigation, markets and storage facilities and to recommend optimum locations for the provision of these facilities.

4) To assess the industrial potential of the project area in the light of its mineral, forest and agricultural potential and to suggest locations for establishment of industries in the project area.

5) To assess the future requirements of educational and health facilities for each planning unit and to recommend locations for various levels of these facilities.

6) To suggest an efficient transport and communication system for integrated development of the agriculture, industries, education, health etc.

The Government of India wanted a perspective plan for 20 years i.e., 1974 to 1994. The plan period is long enough for long term investments but short enough to make fairly accurate projections. As agriculture is the backbone of the economy of the project area, in this backward region, it will take 20 years to develop agriculture to its full potential. Hence a 20 year plan period from 1974 to 1994 was adopted for development of Agriculture in the Project Area. The plan period for other sectoral programmes has been fixed according to the time required to implement the various sectoral programmes drawn for removing the differences in the levels of development between plains and tribal areas, the maximum period being 15 years.

The project area can provide only the universe for planning. Actual units of planning should, however be smaller. The existing administrative units - Taluks are also too large.

A suitable methodology was developed to delineate the basic units of planning in the project area. The methodology employed in delineating basic planning units has been discussed in detail in Chapter Three.

Data for the present plan were collected in the month of March, 1974. While the secondary data ^{were} gathered from the publications (Census 1961) for identification of meso area, primary data on locations of various centres in the hierarchic scale at micro level were gathered from the elected tribal representatives, extension staff of the Blocks and District authorities. A special training programme for Standing Committee members was conducted by selecting standing committee members from all tribal panchayat samithis of project area with a view to elicit their felt needs and other development requirements. Thus various official and non-official functionaries contributed for the formulation of the programme. Secondary data on

resource inventory, progress under various development programmes, existing infrastructure for various economic activities and social services in the project area were gathered from various Block and District Offices.

The absence of reliable records at village level about the per acre crop yields necessitated a survey of crop yields in various blocks of the project area. For estimating the consumption standards in the project area a diet survey was conducted in a typical village of the project area.

Vast corpus of data gathered from both primary and secondary sources has been analysed and the draft plan has been prepared by the Institute in consultation with subject matter specialists. The expertise of Dr. Saradhindu Bose of National Institute of Community Development, Hyderabad has

been availed of at various stages of analysis and formulation of the draft plan. The Institute owes its gratitude to Dr. S.Bose.

The Andhra Pradesh Agricultural University has kindly extended its technical know how and expertise in finalisation of the Chapters on Agriculture and Animal Husbandry. The Institute expresses its deep gratitude to Shri M.R.Pai, I.A.S., Vice Chancellor, Andhra Pradesh Agricultural University. We are also grateful to Dr.A.Appa Rao, Director, Research, Andhra Pradesh Agricultural University and Dr. Venkat Ratnam, Dean of Veterinary Sciences for offering valuable suggestions on the draft chapters on Agriculture and Animal Husbandry programmes. The Institute also expresses its deep sense of appreciation for Sarva Shri T.B.Dasarathi, Horticulturist, A.V.Parthasarathy, Millet Specialist, Guntur and G.Narasimha Rao, Agronomist, Sugarcane Research Station, Anakapalli of Andhra Pradesh Agricultural University who constituted a team of experts to

study the technical feasibility of the cropping pattern and various inputs envisaged in the draft plan on the basis of first hand study of agro-climatic conditions in the project area. We are grateful to each one of them for their valuable suggestions.

The Institute is thankful to Girijan Cooperative Corporation Ltd., and to various development functionaries at District and Block level and Samithi Presidents, Sarpanches of the Project Area for furnishing valuable information for preparation of the plan and offering concrete suggestions and comments on the draft plan.

HYDERABAD-A.P.
JUNE, 1974.

P. KAMALAMANOHAR RAO
DIRECTOR, TRIBAL WELFARE

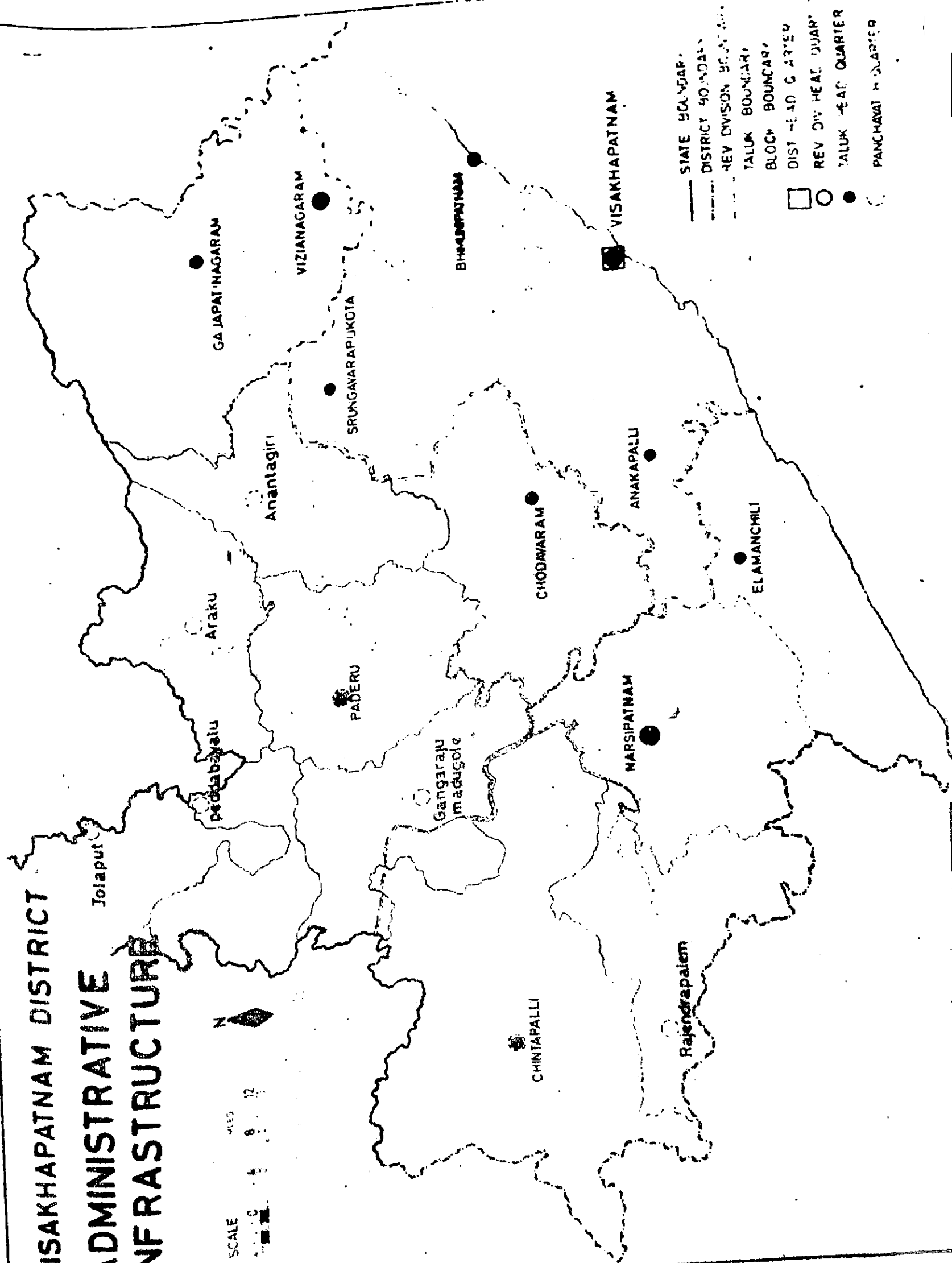
CHAPTER - I

I N T R O D U C T I O N

Visakhapatnam is one of the oldest districts of the composite Madras State. In the year 1936, when Orissa State was constituted, a portion of the Visakhapatnam District and a large portion of the Ganjam district were transferred to Orissa State, while the residuary portions of the two districts were clubbed and constituted into Visakhapatnam district with Visakhapatnam town as its headquarters. Even this area was found to be very unwieldy for administration and split into two parts viz., Srikakulam and Visakhapatnam districts on August 15, 1950. However, there were some changes in the year 1959 such as transfer of some portions from one taluk to the other and re-naming of certain taluks. Gudem taluk was split

VISAKHAPATNAM DISTRICT ADMINISTRATIVE INFRASTRUCTURE

SCALE
0 4 8 12
KMS



- STATE BOUNDARY
- DISTRICT BOUNDARY
- REV. DIVISION BOUNDARY
- TALUK BOUNDARY
- BLOCK BOUNDARY
- DIST. HEAD QUARTER
- REV. DIV. HEAD QUARTER
- TALUK HEAD QUARTER
- PANCHAYAT HEADQUARTER

into two parts the south west portion of the taluk was constituted into Chintapalli Taluk while the Northeast portion of the Taluk was constituted as Paderu Taluk. The major portion of the hilly tracts lying in North-West of Srungavarapukota taluk was tagged on to the newly constituted Paderu Taluk. Golugonda taluk was renamed as Narsipatnam, Sarvasiddi as Yelemanchali and Veeravilli as Chodavaram. However, the jurisdiction as well as names of other taluks of the district remained unchanged until 1968.. In the year 1969 Vizianagaram taluk was split into two Revenue Taluks i.e., Vizianagaram and Gajapathinagaram. This is significant as the formation of new taluk brought about changes in the administrative boundaries of Srikakulam and Visakhapatnam Districts. The new taluk was constituted with 177 villages transferred from Vizianagaram taluk of Visakhapatnam district and Salur and Bobbili Taluks of Srikakulam District. Map No.1

The geographical area of the district extends over an area of 5,179 Sq.miles with 28.05 lakh persons living in 3,524 villages (1961 Census).

The district has eleven taluks and it is divided into three Revenue divisions viz., Visakhapatnam, Vizianagaram and Narsipatnam. The density of population of the district works out to 208 per Sq.KM.

Visakhapatnam district is one of the medium sized districts in Andhra Pradesh. It lies mostly between 17°-15' to 18°-35' North latitude and between 81°-52' to 83°-45' East longitude. The district as a whole may be divided into three units viz., Coastal Taluks, slightly interior taluks and far Interior taluks from Sea Coast. The Coastal Taluks consist of Yelemanchili, Anakapalli, Visakhapatnam and Bheemunipatnam, whereas slightly interior taluks are Narsipatnam, Chodavaram, Vizianagaram and Gajapathinagaram. The far interior taluks are Chintapalli, Paderu and Srungavarapukota. Of these Chintapalli and Paderu taluks are entirely hilly which are scheduled.

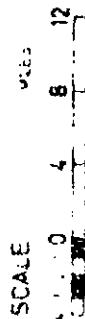
Orissa State and Srikakulam on the North, Bay of Bengal on the East, East Godavari

district on the south and Orissa State on the West form boundaries of the district. The agency tract comprises hill ranges covered by Eastern Ghats run parallel to the coast from North East to the South West. The district presents a picturesque but varied landscape due to geographical contrasts. Yelamanchili and Anakapalle are separated from the rest of the Visakhapatnam district by a narrow strip of the Eastern ghats. This range comes closer to the sea coast towards the north of Visakhapatnam surrounding the Visakhapatnam taluk. Yelamanchili and Anakapalli are mostly plain taluks with few isolated hills whose heights do not exceed 1000 feet.

PROJECT AREA:

The Project area consists of eight Tribal Development Blocks viz., Koyyuru, Chintapalli, Paderu, Gangaraju Madugula, Pedabayalu, Munchingput, Araku and Ananthagiri and a long strip in the adjoining plains areas of Narsipatnam Block of Narsipatnam Taluk, V. Madugula, K. Kotapadu and Ravi Kavitam of Chodavaram Taluk Srungavarapukota and Viyyampeta

STUDY AREA IN VISAKHAPATNAM DISTRICT



MADHYA
PRADESH

SRIKAKULAM DISTRICT

VISAKHAPATNAM
IN ANDHRA PRADESH

SRIKAKULAM

VIZIANWARAM

SRIKAKULAM

POTI

PADERU

CHODWARAN

BOHARIPATNAM

VISAKHAPATNAM

GOUDAPALLE

NUSSERPETNAM

ELAMANCHILI

EAST GODAVARI DISTRICT

PAJANAMACHERI

KAKINADA

REFERENCE

- STATE BOUNDARY
- DISTRICT BOUNDARY
- TALUK BOUNDARY
- DISTRICT HEAD QUARTER
- TALUK HEAD QUARTER
- STUDY AREA
- MAJOR ROADS
- MAJOR RAILWAYS

Blocks of Srungavarapukota Taluk and Gajapathinagaram Block of Gajapathinagaram Taluk of Visakhapatnam District where the tribal component of the total population is more than 25%*. The Project area is bounded on the north and west by Orissa State, on the North-East by Srikakulam District, and on the South-east by East Godavari District. Map No.2

PHYSIOGRAPHY:

The project area presents a variegated landscape, ranging from intensively cultivated wide plains to rolling hill ranges of Eastern ghats clothed in dense vegetation and valleys chequered with fields, alternate with low ridges. Proceeding from southern side of the Project area towards North sudden increase in altitude is noticed with the approach of the main range. The main range running in a North-East and

* List of villages lying outside the Scheduled area with 25% or more of Scheduled Tribes population is furnished in Annexure No.1

VISAKHAPATNAM DISTRICT PHYSIOGRAPHY

MAP No 1

REFERENCE

HIGHEST POINT

5000 Ft

4000 Ft

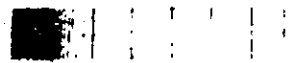
3000 Ft

2000 Ft

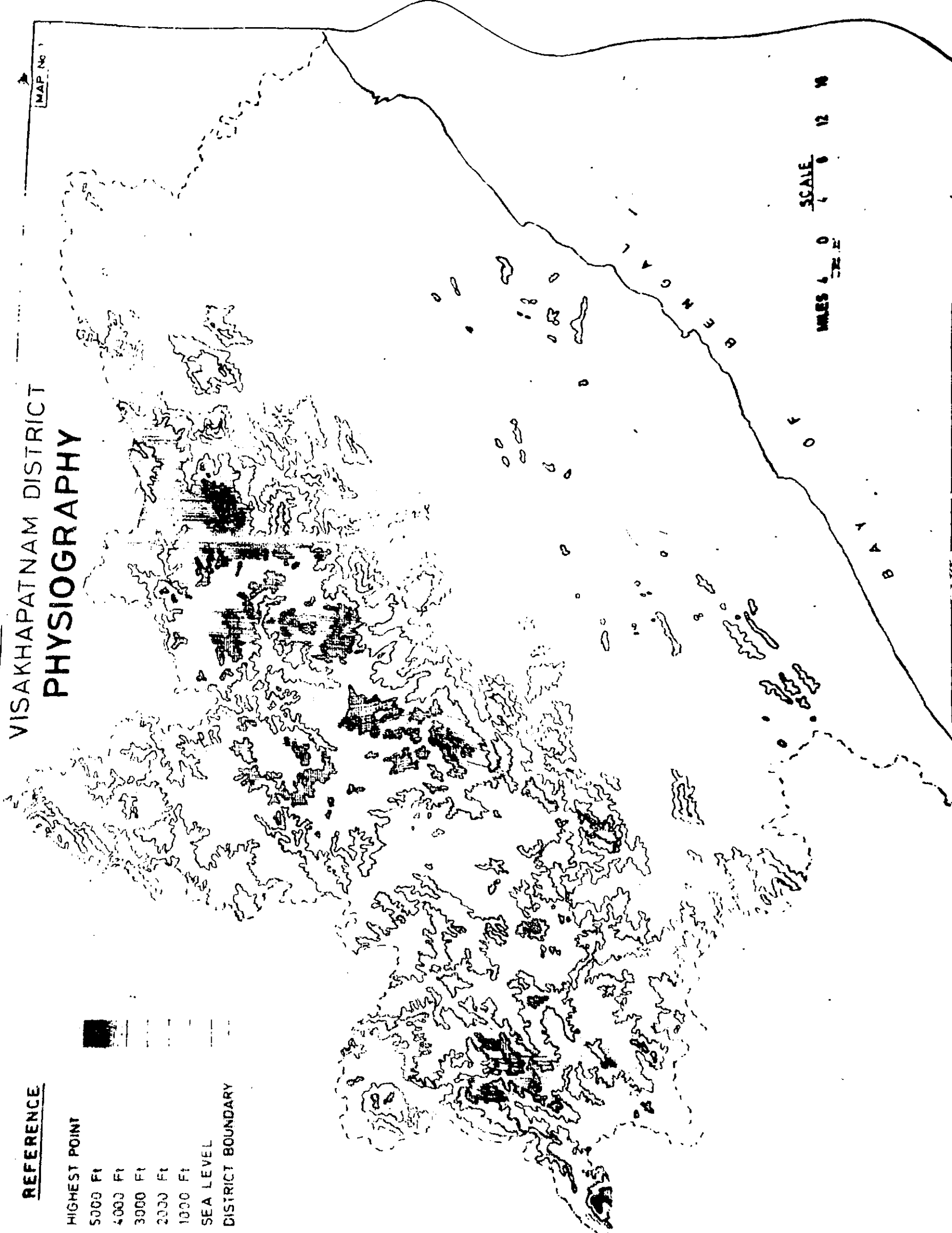
1000 Ft

SEA LEVEL

DISTRICT BOUNDARY



MALES 4 0 12 18
SCALE
4 6 8 10 12 14 16 18 20



South-West direction walls off the scheduled area from the plains as though to afford protection to its aboriginal inhabitants from the on slaughts of the outsiders. The entire main hill range is the dividing line between the two main physiographic units forming a water-shed between ^{West} flowing rivers like Machkhund and East flowing streams like Gosthan, Tandava and Sarada. Map No.3/

The Southern part of Paderu and Northern part of Ananthagiri present complex physical features characterised by rugged hills and higher ranges. The hills rise in altitude in quick succession from Sivalingapuram and reach highest point near Galikonda. From Sunkarametta village, the hills start descending into the gorgeous Araku Valley. From Araku towards northern border of Munchingput, it is less rugged and the altitude is low. Along the Eastern border of Chintapalli also, the terrain is rugged, but the altitude is not so high as it is in Ananthagiri. Sandwiched between these hill ranges are numerous narrow valleys of which Araku, Guntaseema, Malasingaram, Sujanakota, Paderu, Choudupalli, Devapalli, Karakapalli and Nedavalasa are important.

The entire area is hilly and the altitude varies from area to area. The maximum and minimum altitude ranges from 5396 to 400 feet.

Physiographically the study area is divided into three parts viz. (i) Foot Hills area; (ii) Rugged Hilly area; and (iii) Gentle Slope area.

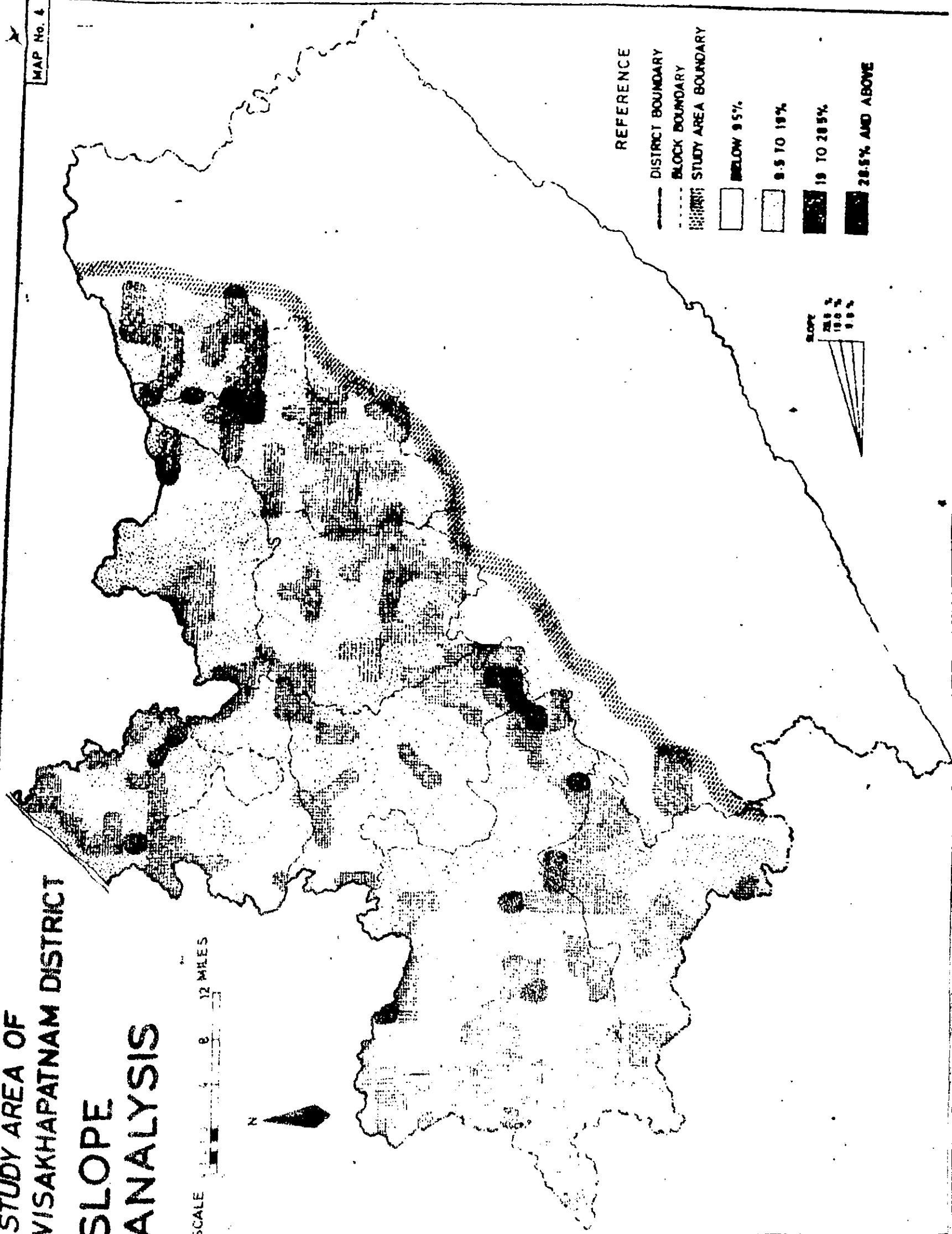
i. Foot Hills:- The Foot Hills area covers Koyyuru and portions of Chintapalli, V. Madugula and South East portion of Ananthagiri Blocks. The density of population is low and percentage of Forest area is fairly high in this area. Slope of the land towards the north is very steep but there are pockets of gentle slope area towards the southern border. Settlement pattern is quite distinct in this area. Bigger settlements of population in isolated pockets is the typical feature. A slope analysis of this zone indicates that the average slope of the southern side of this area is 14%. But towards the north of this area, or near the hill range it is 23%. The rain fall is fairly high in this zone.

ii. Rugged Hilly Area:- The rugged hilly area along the main range situated in Western part of Chintapalli, South of G.Madugula and Paderu and almost the entire area of Ananthagiri fall within this zone. Due to the inhospitable terrain and dense vegetation, the density of population in this zone is the lowest. Percentage of forest is high. Due to peculiar terrain, small settlements are found scattered in this zone. Eventhough the Northern part of Munchingput is not contiguous with this zone, it has similar land-scape and population distribution pattern. This area is therefore included in this zone.

iii. Gentle Slope Area:- This area covers Eastern side of Chintapalli Central part of G.Madugula, Central and Eastern part of Pedabayalu, southern portion of Munchingput, whole of Araku and northern part of Paderu. This is the largest zone covering almost half of the study area and economically at present, the most important zone. Slopes are gentle ranging from below 9.5% to 19% and density of population is

STUDY AREA OF VISAKHAPATNAM DISTRICT SLOPE ANALYSIS

SCALE 0 8 12 MILES



high. Due to extensive use of land especially through slash and burn cultivation the area is shorn off dense vegetation. Because of favourable conditions for human habitation in this zone, the density of population is high in this zone. Araku Block has the highest density (80 per Sq.K.M) and next in order comes Paderu with 70 per Sq.K.M.

Steep slopes i.e., (above 28.5%) are found in Chintapalli, Koyyuru, Ananthagiri, G.Madugula and Pedabayalu. However the major portion of the scheduled area is covered with slopes varying from 9.5 to 19 per cent. The slopes of these hilly tracts are generally from West to East and from North to South but in Chintapalli Agency where the terrain is mostly hilly with a number of valleys the slope is in a South Eastern direction. Map No.4

CLIMATE:

The Scheduled area being located nearer to the sea-coast is subject to high humidity round the year. They experience extremely cold winter and

salubrious climate in summer. In these parts, the year is marked by 3 distinct seasons viz., the Winter from October to February, the Summer from March to Mid-June and the Monsoon from Mid-June till September. Low temperature of 2° to 5° centigrade is common over elevations of about 3,000' in Winter. The average temperature prevailing in different periods of the year is furnished hereunder:

T A B L E - 1

MAXIMUM AND MINIMUM TEMPERATURE

Sl. No.	P e r i o d	Range of variation	
		Maximum (Deg.C) 3.	Minimum Deg. C) 4.
1.	2.		
1.	Average Annual Temperature (January to December)	26 to 30	18 to 22
2.	Average temperature over Winter(November, December and January)	23 to 26	14 to 17
3.	Average temperature during pre-hot weather and dry period (February, March and April)	28 to 33	18 to 22
4.	Average temperature in Summer (May)	32 to 39	22 to 23
5.	Average temperature during Monsoon (June to October)	25 to 28	20 to 24

RAINFALL

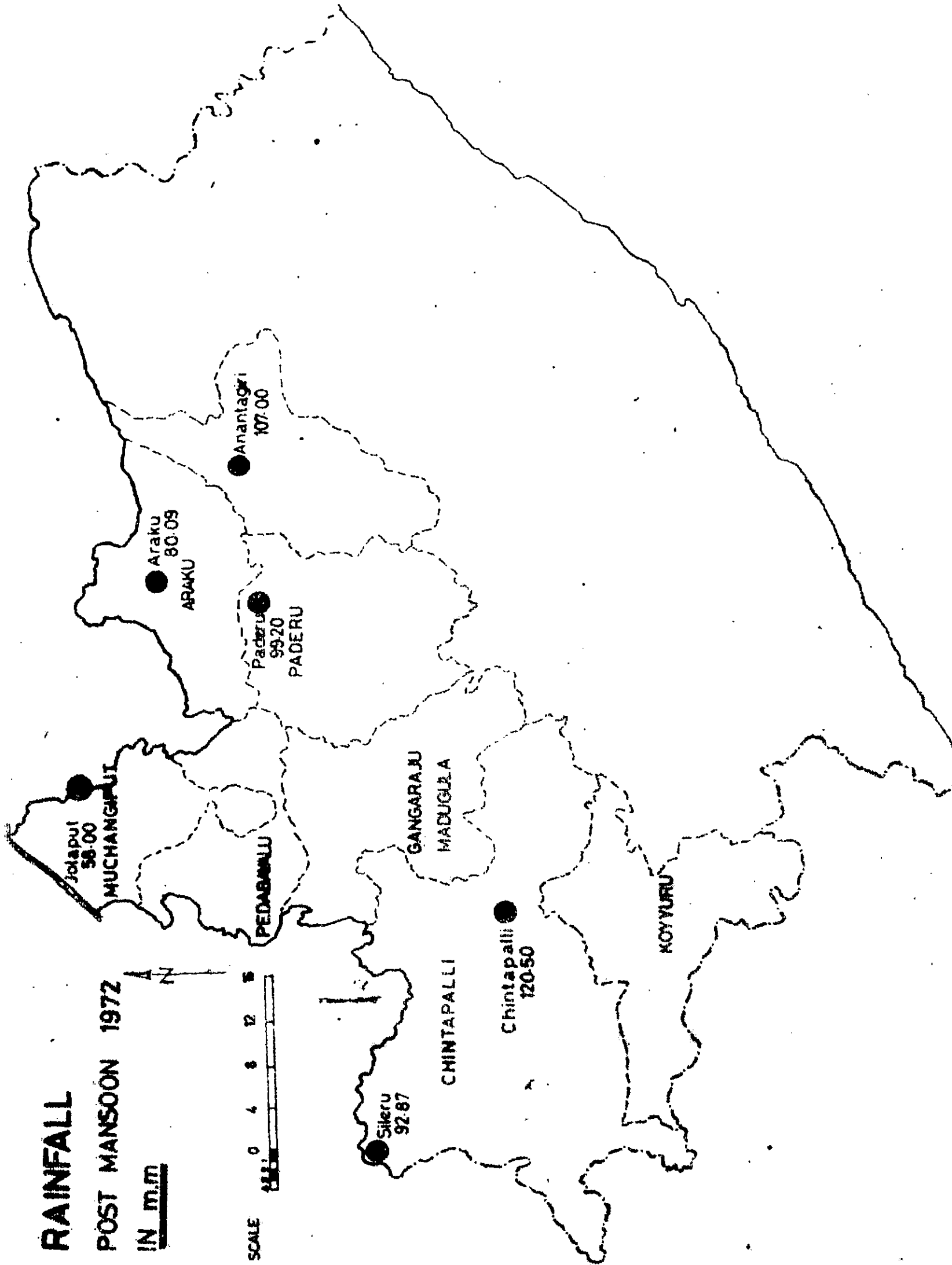
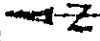
The South-West monsoon sets in the month of June and continues till October in the project area. Pre-monsoon showers in the months of April and May are not uncommon. 80% of the rain is received during the months of June to October from the South West as well as the North East monsoon with no pronounced cloudy or foggy weather. Most of the rainy days are sunny and bright interspersed with sudden out bursts of rain.

The Pre-monsoon (Jan.-April) rainfall data for six stations distributed over the project area for 1972 (Chintapalli, Sileru, Paderu, Araku, Ananthavaram and Jolapur) indicate that Paderu received relatively heavy rains (112 mm) followed by Chintapalli, while the minimum rainfall is recorded at Jolapur (31.27 cm). During monsoon of the year 1972, Sileru has recorded the highest rainfall (310.37 mm), followed by Jolapur (232.31 mm) while the minimum rainfall is received in Araku (78.86 mm). During post-monsoon (October-December) period, Chintapalli

RAINFALL

POST MANSOON 1972

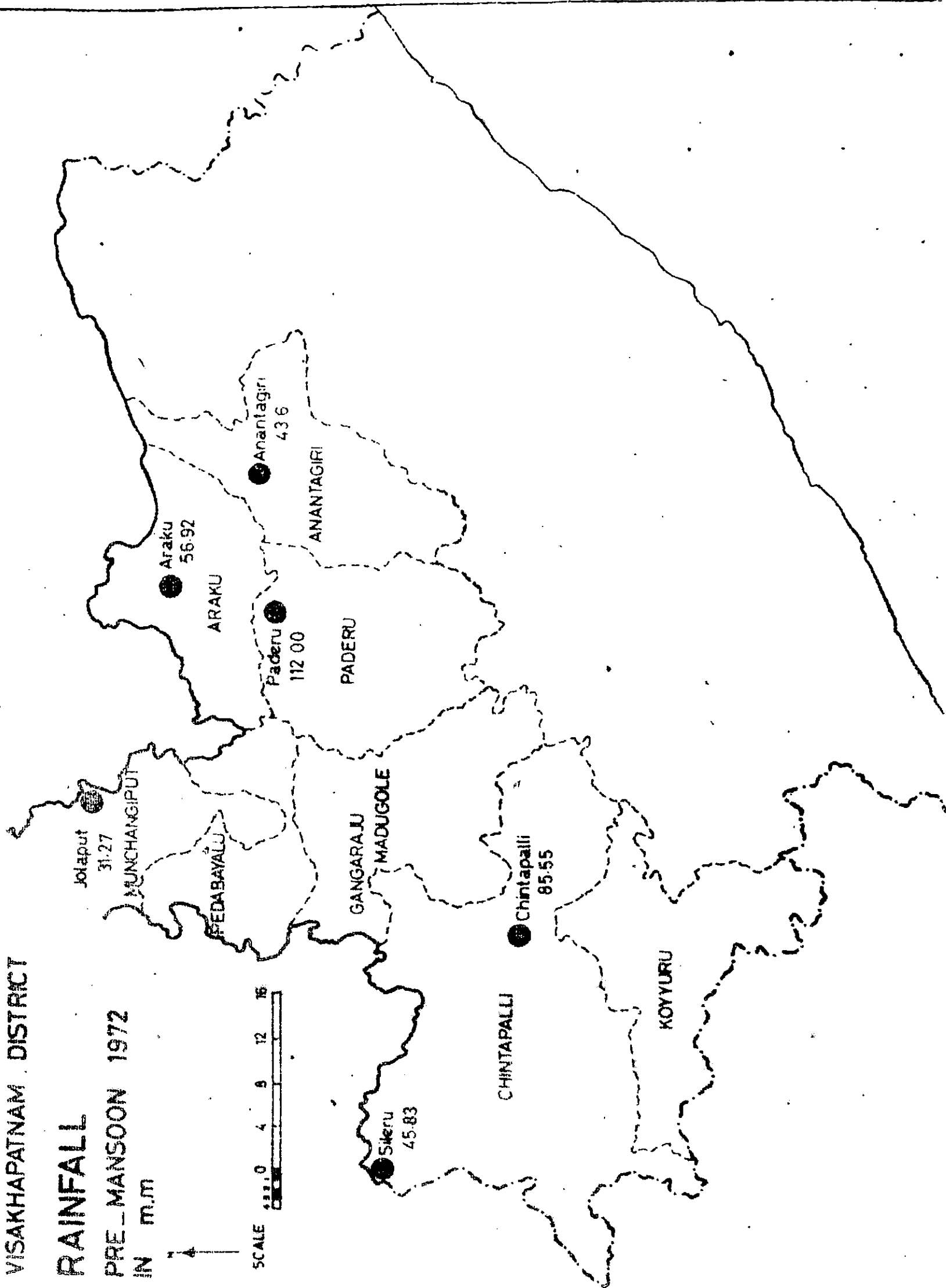
IN m.m



VISAKHAPATNAM DISTRICT

RAINFALL

PRE-MANSOON 1972
IN m.m



has recorded the highest rainfall (120.50 mm) while the minimum is recorded at Jolaput (58.00 mm).

The rainfall data of 10 years from 1963 to 1972 for Chintapalli and Paderu taluks are given in the Annexure No.2. The maximum rainfall in Chintapalli taluk was received in the year 1969(2812.25mm) while the minimum was in the year 1964 (1067.00 mm). The average annual rainfall* for Chintapalli Taluk works out to 1,531.37 mm, while Paderu has recorded 1,114.59 mm. In Paderu taluk, annual rainfall during the 10 years(1963-72) varied from 779.00 mm., to 1,438.60 mm. /Map Nos. 5a, 5b, 5c/

DRAINAGE PATTERN:

As already stated the drainage set up of the district could be studied under two different sections. One is confined to the plains lying below

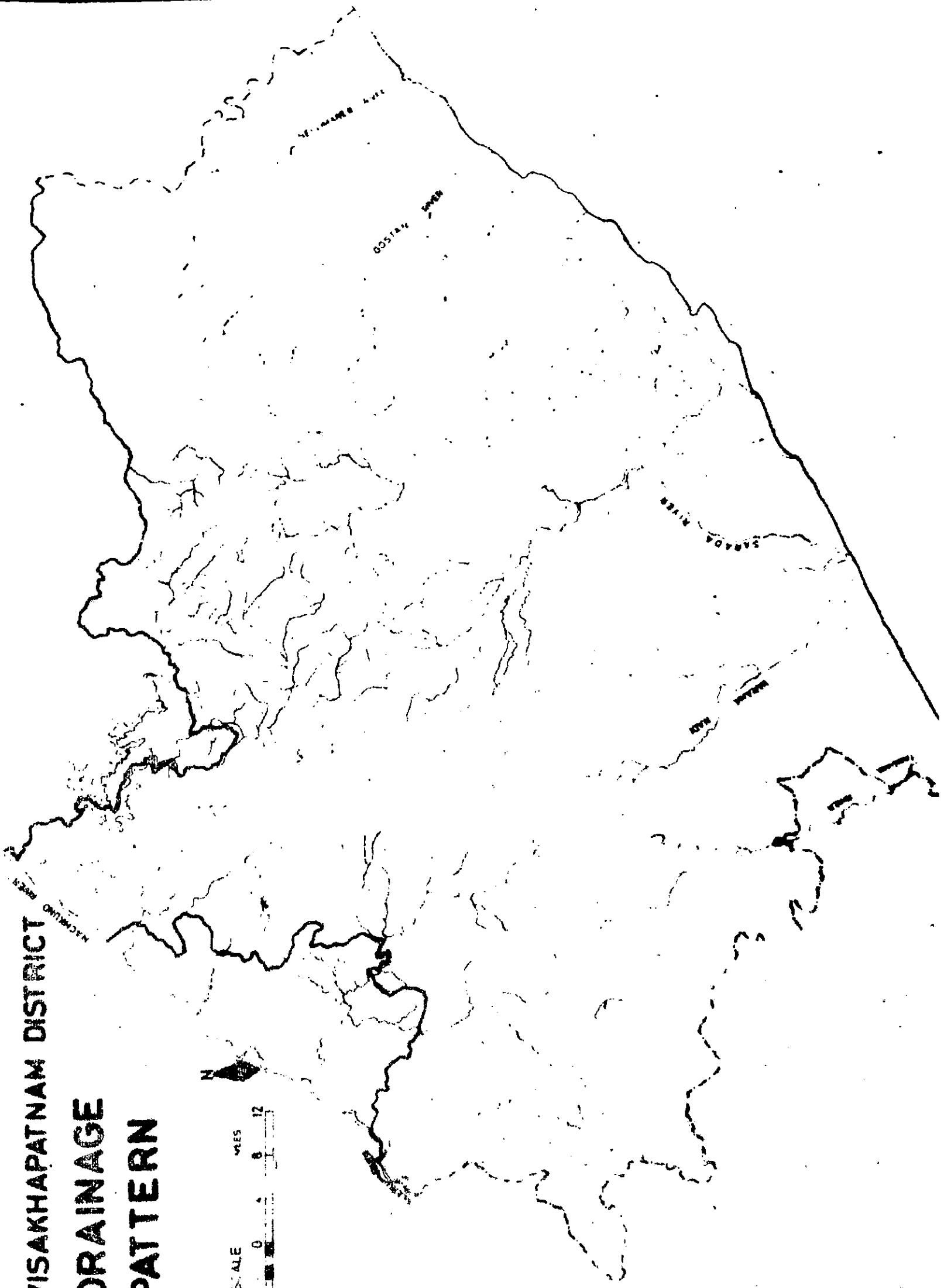
* The average annual rainfall was worked out on the basis of 10 years (1963 to 1972) rainfall data for Paderu and Chintapalli Taluks.

the foot hill area of the Eastern ghats up-to the sea coast and another section is the main hill range.

Of the first section, the important rivers are Tandava, Varahanadi, Sarada, Naravagedda, Costkani and Nellimarla and finally Kandi Velasa. All these rivers take birth in the main Eastern ghats towards the foot hills and flow in south eastern direction dissecting the lower narrow strip of parallel hill range at several places and finally join the sea. The first three rivers are perennial and the rest are non-perennial. These rivers being confined to the plain area are meandering in their course and are short in their run way.

The drainage net work of the main massive hill range of the Eastern ghats is confined to the valleys depending on the topography. Many of these rivers are sub-tributaries to the Sileru-Nachkund tributary river system. Almost the whole of the net work of rivers is perennial in character which probably may be the main reason for the development

**WISAKHAPATNAM DISTRICT
DRAINAGE
PATTERN**



of the Nerbudda river valley project. Araku valley which is now being developed for coffee plantation is also located in one of the clearings of the main ranges of the Eastern Ghats.

The detailed study of ground water potential was not taken up in the project area. However, four sample wells were sunk in Araku, Taderu, Chintapalli and Sarabhanapalem. The details of the sample wells are as follows:

T A B L E - 2

GROUND WATER ANALYSIS

Sl. No.	Name of the place	Total depth of the well	Depth to water level	Diameter	Quality of water
1.	2.	3.	4.	5.	6.
1.	Araku	19.35'	4.84'	2.50'	Good
2.	Taderu	6.40'	5.98'	2.05'	Good
3.	Chintapalli	15.55'	14.38'	2.75'	Incipient
4.	Sarabhanapalem	16.48'	15.46'	1.93'	Good

The depth of the well ranges from 6.40' to 19.35' while the depth of water level ranges from 4.34' to 15.46'. The average depth of the well works out to 12.14' while the average depth upto water level is 10.13'. The quality of ground water available in the areas occupied by granitic and gneissic rocks is very much controlled by soils. Thus in areas occupied largely by red soils, wells generally yield water of good quality suitable for domestic and irrigation purposes. However, in heavily irrigated and poorly drained, 'ayacut' areas or in the black soil areas, the quality of ground water is by and large very brackish. Map No.6

G E O L O G Y:

The rocks that are most commonly met with in the project area are those belonging to the Khondalite suits. Generally Khondalites and Charnockites are found in Srungavarapukota taluk. In addition to these, a number of bands of lithomarge of greenish white, purplish white and yellow colours a few occurrences of red and yellow ochres are also found. In

Chintapalli taluk garnetiferous Sillimanites
Gneisses and Garnetiferous quartzites are found
whereas in Paderu taluk - Chernockites associated
with pyroxene granulite and the more basic forms
of hornblende are predominantly found.

M I N E R A L S:

Minerals such as Graphite, Iron, Mica, Manganese, Gold, Beryl and Coal are located in different places of the agency. The occurrences of crystalline limestone is found near Borra caves (18°-16' - 45", 83°-2' - 45") situated in Ananthagiri Panchayat Samithi. The limestone band has a maximum length of about 3,500 feet and width of about 900 feet. It is generally massive and medium grained and magnesium bearing in character. The limestone deposit persists to a minimum depth of 20 feet and this deposit was estimated to yield as much as 40 lakh tons of limestone. In addition to the main band, another band of 1.5 KM., which is situated to the west of Borra caves supplements the reserve estimated for the Borra limestone.

This could be utilised in glass manufacturing and for making mild abrasives for polishing metallic surfaces. Red Ochre is found at about 6 furlongs to the West of Sarai village ($18^{\circ}-10': 82^{\circ}-45' -30''$) of Srungavarapukota taluk and a furlong to the West of Araku ($18^{\circ}-20': 82^{\circ}-51'$). This is useful in paint manufacturing.

I R O N O R E:

Iron-ore in the form of magnetite veins 1.6 ft., in thickness occurs along with apatite bearing pegmatites near Killankota area which is situated in Gangarajumadugula Panchayat Samithi and in Sitaramapuram area ($18^{\circ}-17': 83^{\circ}-9'$). The ore is a high grade massive magnetite containing 69.08% of Iron and the estimated reserves are only of the order of about 2 lakhs tons for 100 ft., depth.

B A U X I T E:

Huge Bauxite deposit has been discovered in the Eastern ghats of Ananthagiri Block. Many

hardships were faced to carry on the prospecting work in the agency areas. About 50 pits at an interval of 100 metres were dug. Samples were collected at various levels and were sent for analysis. Convenient spots were selected for drilling and the drilling operations are in progress.

S O I L S:

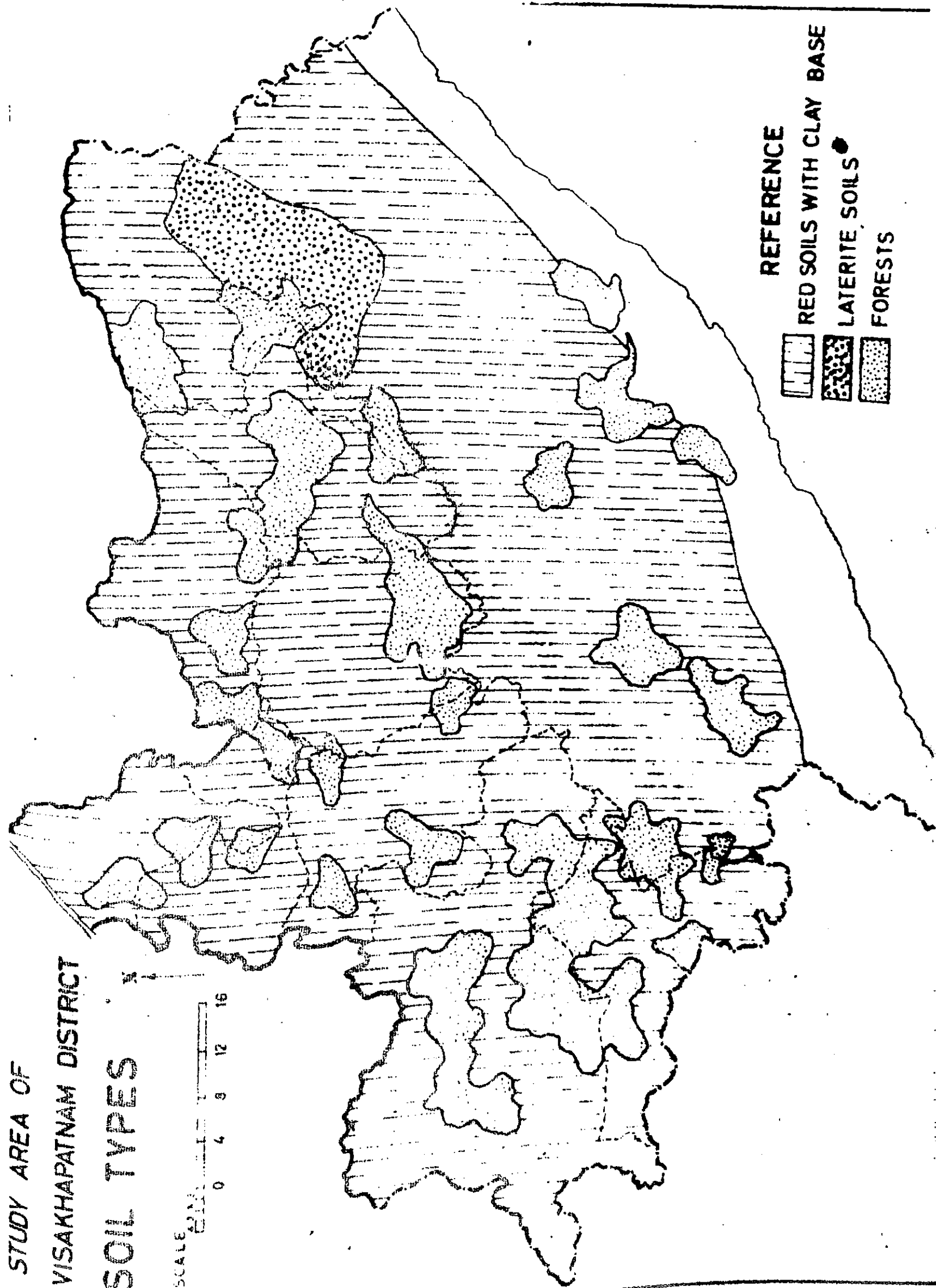
The soils are varying from place to place all over the area. The soils that are commonly met with are loamy soils, sandy loams and clay loams with varying proportions of sand and clay and patches of humid soils are found in Chintapalli and Chodavaram taluk. Red varieties of soils are predominant in the hilly areas but towards the coast the soil becomes finer and in the valleys there is fertile black clay with a tendency to crack on drying.

The soil content is medium carbon and low phosphorus except in Paderu Taluk which has got high phosphorus and high carbon. Generally red ferruginous type of soil is found in Chintapalli taluk.

Patches of black humid soils are seen in Deverapalli, Chintapalli and Tajangi valleys. Reddish and brownish coloured clay loams with gravelly patches are found in Srungavarapukota taluk. Greyish soils and sandy loams are found in Chodavaram Taluk. Clay loams are found in many places of Chodavaram and Paderu Taluks. Soils of high organic status indicate high level of easily mineralisable Nitrogen. Soil reaction varies from 6.8 pH to 7 pH. They show a very low phosphorous status and very high potash status. In red soils, crops like groundnut, castor and pulses have luxuriant prosperous growth.

In Koyyuru Block, the soils around Koyyuru and Mampa villages of Koyyuru block are black and red loams. A few patches around Koyyuru village are sandy in nature. The soils around Sarabhannapalem village are red loamy and that of Kantaram and Chammachinta are black and red loamy in nature. The sandy loamy soils near Adakula, G.K.Gudem require more water. By and large, this block consists of red loam and black loam soils and the percentage of oil in sand

STUDY AREA OF
VISAKHAPATNAM DISTRICT
SOIL TYPES



- REFERENCE
- RED SOILS WITH CLAY BASE
 - LATERITE SOILS
 - FORESTS

loams is negligible. Nitrogen content in the soils is generally medium in nature. The content of potash is adequate while the phosphorus content is generally deficient and the PH of the soils is natural. Map No. 7

FLORA AND FAUNA:

A major portion of the forests in the project area belongs to mixed deciduous species of low density and poor girth and height except in some areas where the growth is fairly dense. The principal natural factors which determines the floristic composition of the forest is the variations in altitude. The forests of the project cover areas whose altitude varies from 250 ft., to 5,300 ft., above the mean sea level. The hilly portions and the northern side of Chintapalli taluk are well wooded except a few scattered areas where 'podu' was practised in the past. The principal species are *Terminalia Tomentosa*, *Pterocarpus marsupium* (Rosewood), *Albizia odoratissima*, *Ougeinia dalgargioffes*, *Gmelina arboras*, *Adina Cordifolia*, *Grewia tiliacfolia*. *Lager Stroemia parvifolia*, *Codreels toon*, *Anogaissus latifolia*, *Eugenia Jambolina*, *Eridelia retuea*, *Buchania Latifolia*,

Geruga pinnata and Teruinalies. Bamboo is found all over project area. Sandal is popular in Gudem region and also it occurs as wild growth near Sanivaram and found in scattered patches near Chintapalli and Antarla villages. Teak is found in Marripakala reserve. In these parts, most of the unreserves are fit for growing coffee, Pine-apple and other fruits.

In Narsipatnam taluk, the forests are not so dense as in Chintapalli taluk due to less rainfall.

The growth varies in density and quality according to the nature of the soil and steepness of the hill slopes. The chief species are *Terminelia Tomentosa*, *Interocarpus Marsupium*, *Seymida*, *Lebriguga*, *Anogeisum latifolia*, *Xyliexylon*, *Carpachloroxlon*, *Scientenia*, *Adine Cordifolia*, *Bridelia retuse*, *Buchania latifolia*, *Diospyros*, *Ixora nerviflora* and *Ochna Squarrosa*. *Bambusa arundincha* occurs in small patches along the stream banks. Tamarind is the chief minor forest produce. Sandal is found spreading near K.D.Keta. podu is not practised on such a large scale in this taluk as in the Upper Agency as sufficient flat land is

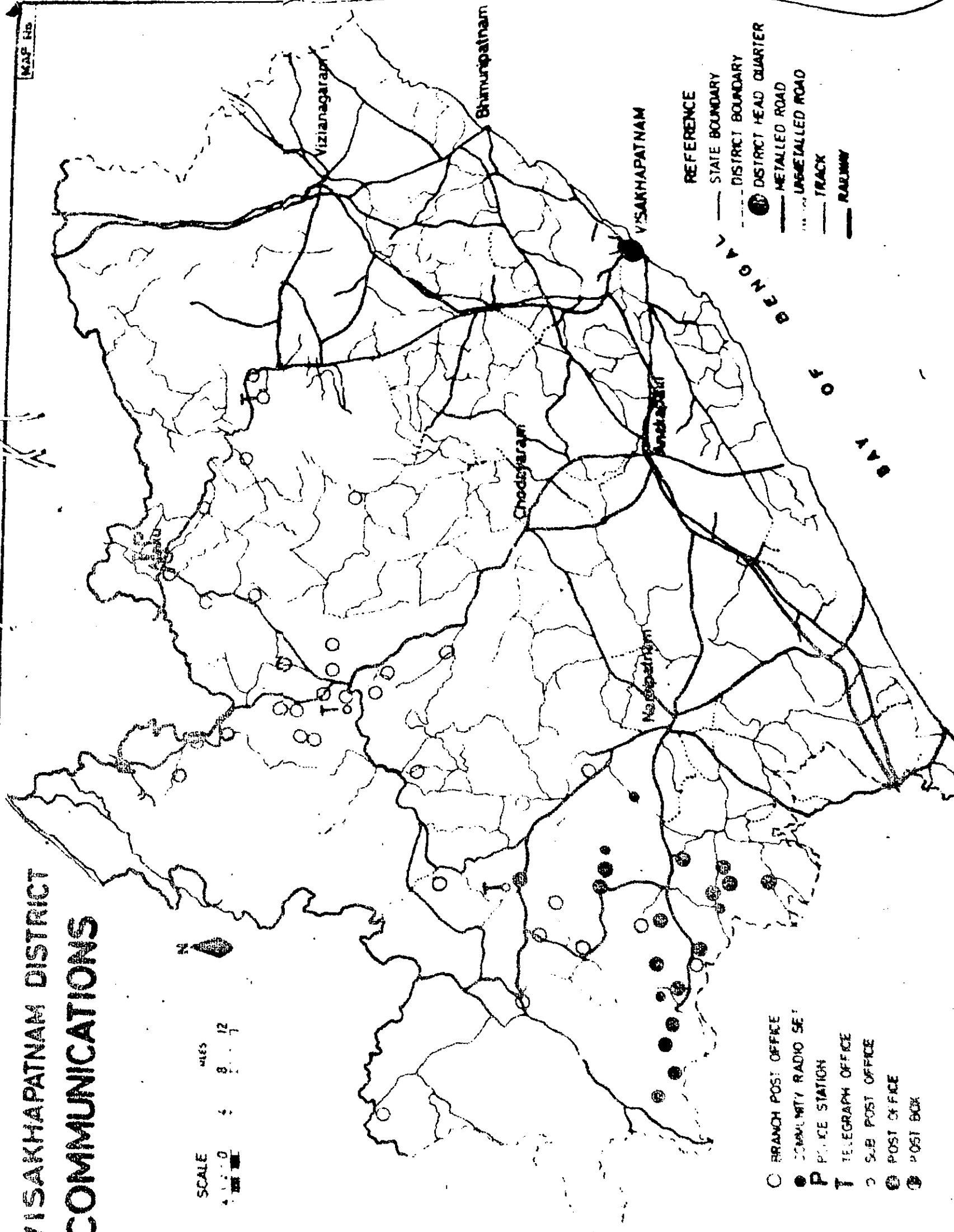
available for cultivation. The area is undulating and is intersperced by hills of low elevation.

In Kaderu taluk the northern portions contain thick growth of forests, the chief species being *Terminalia Tomentosa*, *Pterocarpus Marsupium*, Rose-wood and *Xylia* with a good admixture of bamboo, Teak plantations are found in small patches. The northern portions are shady and receive fairly good rainfall and hence coffee plantations were introduced.

The project area in Srungavarapukota taluk starting from 38 1/2 mile and extending upto 78th mile on Visakhapatnam - Machkund road, can be broadly divided into two tracts, viz., the hilly tracts covered with thick forest growth with very narrow perched valleys extending from the beginning of the ghats to Sunkarametta right upto Orissa border. In these tracts, the forest belongs to semi-deciduous type. The main species are *terminalia tomentosa*, *pterocarpus marsupium*, *Tamarindus Indicus*, *Pongamia glabra*, *Mangifera Indica*, *Semecarpus Anacardium*,

VISAKHAPATNAM DISTRICT COMMUNICATIONS

SCALE
0 4 8 12
MILES



- REFERENCE
- STATE BOUNDARY
 - - - DISTRICT BOUNDARY
 - DISTRICT HEAD QUARTER
 - METALLED ROAD
 - - - UNMETALLED ROAD
 - TRACK
 - RAILWAY

- BRANCH POST OFFICE
- COMMUNITY RADIO SET
- P POLICE STATION
- T TELEGRAPH OFFICE
- SUB POST OFFICE
- POST OFFICE
- POST BOX

Nelia Azadiracta, *Albizzia amara*, *Allizzia tebbek*, *Coadrelo toma*, *dilleria pentagyne*, *Bobx malan bari-* cum and bamboo. Sandal wood is found only in small patches. Cinchona plantations are also raised in the forest area. Camphor and Eucalyptus trees were planted near Araku and are flourishing. Kodu is common even on steep slopes.

Though the wild life has enormously decreased due to the depra-dations of the poachers, bears and chitas are preponderant. Tigers pose a threat occasionally to human and animal life. The animals like Bison, Deer, Sambar, Rabbit, Porcupine and wild boar are also found in large number in the project area.

TRANSPORT AND COMMUNICATIONS:

The D.B.K. Railway line passes through the project area cutting across Srungavarapukota, Araku and Ananthagiri Samithi areas to carry iron ore from interior Madhya Pradesh to Vizag port for exporting to Japan.

State High way roads pass through the project area. These state high ways connect important places like Sileru Hydro-electric Project, Chin-tapalli, Kakarpadu, Anantagiri, Araku, Jolaput and Taderu with the towns of the plains areas. The total length of fair weather roads in 8 Tribal Development Block comes to 768.50 KMs., while the surfaced all weather roads works out to 219.00 KMs. The surfaced road length of all weather roads per 100 Sq.Kms., varies from 0.7 KMs., to 6.2 KMs., in these Blocks.

Map No.8

ECONOMIC STRUCTURE:

The economy of the tribals of this District is agro-forest based. Though the tribal groups mainly subsist on agriculture of one type or the other, the forest plays a vital role in their economy for it provides a variety of foods, in the form of fruits, tubers, leaves, flesh of animals besides various items of Minor Forest Produce for domestic and commercial purposes. The collection and sale of Minor Forest Produce precludes the tribals

from other avocations from the second fortnight of December onwards to the fag end of April and enable them to earn a sizable income in order to supplement the meagre and uncertain income from agriculture. However, the agro-forest based economy is not free from the vageries of nature. The tribals are entirely at the mercy of nature.

The project area was under the control of feudatories till the abolition of estates. A major portion of the project area covering, Araku, Pedabayalu, Munchingput were under Jeypore Estate while the other areas were under the rule of Vizianagaram and G. Madugula Estates. Every feudal lord has in turn appointed a number of Muttadars who are the de jure heads of the respective groups of the Muttas from which they collected land revenue and paid a fixed amount, locally called, 'Kattubadi' to the land lord and also enjoyed rent free lands and free services of the tribals. Gradually in the course of time these Muthadars have assumed authoritarian role, emerged as local leaders and wielded all pervasive

powers in their respective Muttas. Despite the fact that Muttas are abolished* and ryotwari system introduced in its place, the feudal lords continue to wield considerable influence over the tribals living in villages of their former jurisdiction. The land in the Scheduled areas of the District was not developed due to the absence of occupancy rights and poor economic conditions of the farmers. Consequently it has deprived them of certain facilities like cheap credit and allied benefits from credit institutions. The Government have since taken steps to survey the land and confer pattas to tribal cultivators. The survey and settlement operations in the project are now in full swing.

OCCUPATION PATTERN:

Agriculture, constitutes the backbone of tribal economy as is evident from the fact that

* The Andhra Pradesh Muttas (abolition and conversion into Ryotwar) Regulation, 1969.

1,25,492 out of 1,35,044 workers are engaged in agriculture sector either as cultivators or agricultural labourers. The improvement in transport and communications and eradication of endemic diseases like Malaria, Yaws and Black-water Fever in some parts of the agency have accelerated the influx of non-tribals into hitherto inaccessible and inhospitable areas to eke out their livelihood as traders, agriculturists etc. These immigrants are mainly responsible for reducing the land owning tribals in those areas to farm labourers by alienating their lands through deceitful and unlawful business transactions. The distribution of tribal population in agriculture sector is furnished here under:

Cultivators	94,107
Agricultural labourers	31,385
Total workers engaged in Agricultural sector.	<u>1,25,492</u>

The distribution of tribal working population in non-agricultural sector is furnished in the following statement:

<u>Occupation</u>		<u>Total</u>
Mining and quarrying	..	1,991
Household industry	..	709
Manufacturing other than Household Industry.	..	249
Construction	..	614
Trade and Commerce	..	1,327
Transport	..	1,542
Other services	..	4,357
	Total:	<u>10,789</u>

LAND USE PATTERN:

It is clear from the above tables that as much as 94% of the total working population depend on agriculture for livelihood while the land available for cultivation is very much limited in the tribal areas due to various factors like extensive reserve forests, hilly and rocky terrain etc. Even the limited land available for cultivation is not very fertile. The land utilisation statistics of the Project area are based on rough estimates as the area is not surveyed and settled.

The land use pattern of the project area is as follows:

T A B L E - 3

LAND UTILISATION OF PROJECT AREA

Sl. No.	I t e m	Total area in Hectares	Percentage
1.	2.	3.	4.
1.	Total geographical area	6,19,385	..
2.	Total area under forest	4,61,577	74.49
3.	Net area sown	60,825	9.82
4.	Current fallows	13,061	2.10
5.	Cultivable waste	28,655	4.62
6.	Other fallows	12,273	1.98
7.	Area sown more than once	8,787	1.42
8.	Permanent pastures and grazing land.	32,156	5.19
9.	Misc. tree crops and groves	10,839	1.75
10.	Total cropped area	69,612	11.23

The net area sown constitutes 9.82% to the total geographical area whereas the area under forest works out to 74.49%. Current fallows, other fallows and cultivable waste land constitute 8.70% to the total geographical area which can be brought under cultivation for the benefit of the tribals. The most important feature is that the area sown more than once constitutes only 12.6% to the total cropped area.

The principal crops grown in project areas are Paddy, Jowar, Sama, Niger, Red gram, Black gram etc. The main sources of irrigation are Kuntas and hill streams. Most of the cropped area is however, rainfed.

AGRICULTURAL PRACTICES:

The tribals practise both shifting (Podu) and settled cultivation. Most of the tribes practise podu cultivation on the hill slopes. 'Podu' cultivation is the main source of livelihood for Khonds,

Konda Doras, Borja and Gadabas also mostly depend on 'Podu'. The tribals clear suitable patches of forest on hill slopes, burn the cleared vegetation, rake the fields with archaic agricultural implements and sow seeds of various millets with the onset of monsoon. The crop is harvested when ripe. The process is repeated for a few years and the 'Podu' field is abandoned after that.

Land under wet cultivation is less as the irrigation facilities are meagre. In these parts the main sources of irrigation are hill streams and tanks which are not fully harnessed. Many of the tribals eke out their precarious livelihood, from the innumerable small fragments of dry land. Their agriculture is more subsistence oriented as the area under food crops like Paddy, Jowar, Bajra, Ragi, Sama, Korra and other millets constitutes (60.6%) percentage of the total cropped area. Tribals also grow commercial crops like niger, ginger, turmeric, redgram, black gram, horse gram etc., on a small scale. Some of the progressive

cultivators among Bagathas and Valmikis have taken to Sericulture and Coffee plantation. Mali is particular and other tribal groups in general raise vegetable gardens in these hilly tracts. Some of the tribals do not have the basic agricultural implements like spade and cro-bar due to their low purchasing power. They frequently go in for petty loans to purchase minimum inputs viz., seed and other requirements. Many tribal cultivators are unable to draw institutional credit for want of ownership right in the land.

The variegated nature, antiquated agricultural equipment, absence of irrigation, primitive technology, use of low yielding local variety of seed, lack of knowledge of improved methods of cultivation and plant protection are mainly responsible for the low productivity in agriculture in the Project area. The tribal farmers are slow in adopting improved methods of cultivation mainly due to lack of assured water supply, infertile soils and uncertain climate.

Hill streams, tanks and wells constitute Minor Irrigation sources in the scheduled areas and those sources are not perennial. Even these sources are very limited in number and many of them are yet to be fully harnessed. There is no single major or medium irrigation project to cater to the needs of the tribal people. Though Machkund and Sileru originate in Project Areas they do not afford irrigation facilities to tribal cultivators. The irrigation potential has not been properly tapped. It is strange that the tribal areas where most of the electricity is generated are denied electricity due to economic considerations. The extension of electricity to tribal villages will help to bring large chunks of hitherto unirrigated land under irrigation and boost up agricultural production. More land can be brought under cultivation and agricultural production can be raised by harnessing the existing minor irrigation resources.

MARKETING:

Absence of regulated markets have adversely affected the prices of agricultural

produce. Lion's share of this even meagre agriculture produce is robbed off by the usurious money lenders in lieu of the loans given to the tribals. With the result, tribal has to fall back on collection and sale of Minor Forest Produce which sustains them for a short period in year. During lean months tribals resort to the consumption of roots, tubers and other edible forest produce. The other source of income is casual labour in forest and P.W.D. Departments which is uncertain to fully depend upon.

Most of the project area lack adequate transport and communication facilities. The Minor Forest Produce collected by the tribals and the agricultural produce raised in the fields was being purchased by the petty traders at very low prices. Due to the absence of regulated markets, the price structure of the Minor Forest Produce and agricultural produce was left to the mercy of private traders who always tried to exploit the helpless tribals. Mostly these transactions used to take

place at weekly markets or at centrally located villages. To mitigate these conditions and save the tribal from private sowkars and money lenders the Girijan Cooperative Corporation was started to purchase Minor Forest Produce from tribals at fair price and offer for sale their daily requirements at cheaper rates. The Corporation, with its monopoly rights is trying to eliminate the interference of petty traders in Minor Forest Produce business. Consequent on the establishment of Girijan Cooperative Corporation the number of shandy centres has increased. At present there are 37 weekly shandies and 57 Daily Requirements Depots functioning in the project area of the district. Besides this the Corporation also opened Daily Requirements Depots which are some times the purchasing centres of Minor Forest Produce and Agricultural Produce.

SCHEDULED TRIBE POPULATION:

The total geographical area of this district measures 5,179 Sq.miles of which the scheduled area accounts for 2,677.4 Sq.miles(51.6%).

The Scheduled area measuring 2.67 thousands of Sq.mile is inhabited by 2.83 lakh of persons.

The density of population in Tribal Development Blocks varies from 24 to 80 per Sq.KM., while the average density of population per Sq.KM., works out to 53.6. Maximum density of population is recorded in Araku Block (80) followed by Paderu while the minimum is recorded in Chintapalli (24). Chintapalli Block is the largest one in size and has dense forest and hilly tracts.

The Scheduled Tribes population is heavily concentrated in Paderu, Chintapally, and in parts of Srungavarapukota, Chodavaram, Narasipatnam and Gajapathinagaram Taluks. The highest concentration of Scheduled Tribe population is in Paderu (93.54%) Taluk followed by Chintapalli (82.09%) taluk.

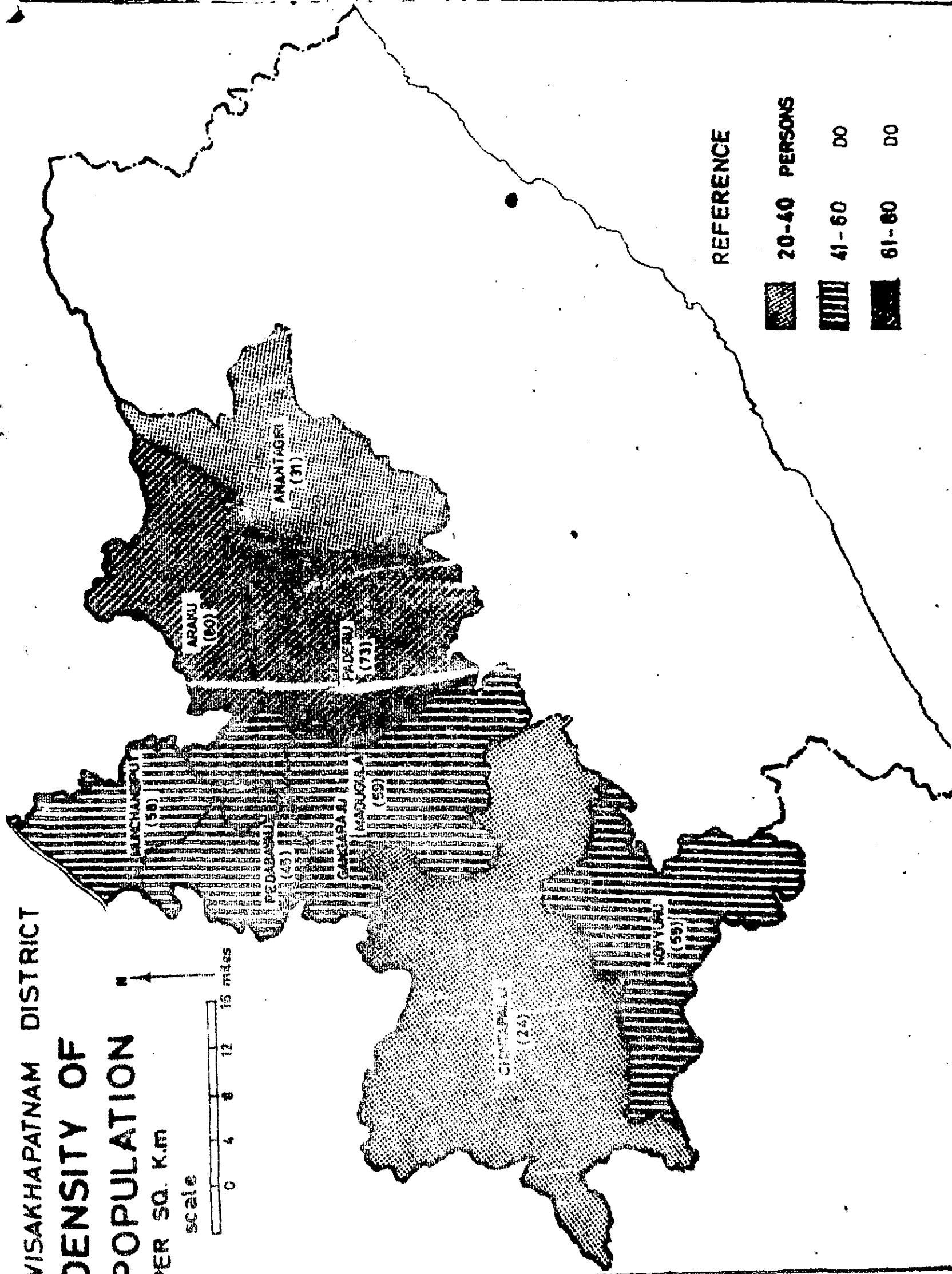
The decennial growth of population in Project Areas from 1941 onwards indicates a linear growth starting from 1.32% to 42.7% till 1971.

VISAKHAPATNAM DISTRICT

DENSITY OF POPULATION

PER SQ. K.M

scale



REFERENCE

	20-40 PERSONS	41-60	DO	61-80	DO

TABLE - 4

BLOCK-WISE POPULATION

Sl. No.	Tribal Development Block	Area in Sq.Kms.	Total population	Scheduled Tribes population
1.	2.	3.	4.	5.
1.	Ananthagiri	741	23,794	20,242
2.	Araku	533.76	42,951	38,479
3.	Munchingiput	440.32	25,719	25,338
4.	Pedabayalu	563	25,726✓	23,648
5.	Paderu	704	51,580	47,399
6.	G.Madugulu	568.32	33,912	29,946
7.	Chintapalli	273	52,553	47,608
8.	Koyyuru	181.11 Sq.M)	27,730	21,672
			2,83,395	2,54,332

Map No. 97

ETHNIC MATRIX:

The major tribal groups, inhabiting the project area/Bagatha, Konda Dora, Valmiki, Konda Kapu, Kondh, Kammara, Kotia, Porja, Gadaba, Mukha Dora

Mannedora, Gouda, Yerukula and Mali. Bagatha, Mukha Dora, Kotia and Gadaba are mainly cultivators. Valmiki are traditionally traders but practice agriculture. Goudus are traditionally cattle breeders. Konda Dora, Kondh or Samantha and Gadaba are mainly shifting cultivators.

The tribe-wise population according to 1961 Census is given below:

Tribe	1961 Census	1971 (Projected)
Bagatha	52,920	75,488
Konda Dora	44,598	62,457
Valmiki	19,653	27,514
Konda Kapu	16,167	22,651
Kondh	15,764	22,069
Kannara	11,544	16,161
Kotia-Bentho Oriya	10,737	15,031
Korja	9,292	13,003
Gadaba	6,632	9,554
Mukadora	7,820	10,348
Mannedora	3,683	5,156
Yerukula	1,875	2,625
Mali	1,048	1,467

* Tribe-wise figures for 1971 Census have not been released by Census Department.

belt. The most striking similarities are the performance of fertility festivals, first fruit eating ceremonies (Kothas) and ancestral worship by all the tribes of the District.

Almost all the tribal groups continue to have their traditional councils besides the statutory Panchayats which were introduced into tribal areas in the year 1962. In tradition bound tribal society, authority is still vested with the traditional leaders who in most of the cases have occupied the offices of the statutory Panchayats. Every tribe has a head in each villages who functions as a liason between Government and the village. These authoritarian leaders have all pervasive powers. Though there has been culture change and diffusion of technological innovations on account of introduction of democratic decentralisation and Community Development programmes certain socio-cultural legacies continued to prevail. The tribals have inherited a primitive world view, a fatalistic philosophy,

There are 15 major tribal groups inhabiting the project area of the district which gave-rise to a broad cultural configuration with an under current of racial, linguistic and occupational diversity. In ethnic, linguistic, social, economic and cultural diversity the tribes of project area present a minia-
ture of tribal Andhra Pradesh. While Khond exhibit mongoloid strain, Konda Dora, Mannedora and other tribes have proto-Australoid characteristics. The Khond, Porja, Benthopriya and Gadaba have their own languages belonging to Dravidian and Monkhamer family of language, while the other tribes speak Telugu. The social structures of these tribes vary from each other. Most of the tribal groups possess clan system while Gadaba and Khond Social structure is characterised by loose phratry organisation which is a product of prescribed and proscribed marital relations. The tribes like Konda Dora, Manne Dora, Muka Dora, Bagatha, Konda Kapu have also clan organisation.

Ritually there are broad similarities between the various tribal groups inhabiting the

characterised, conservative conception of materialistic advancement which is reflected in their magico-religious practices and low level of aspirations which hinder their progress. Appalling illiteracy consequent web of superstition and low level of aspirations are acting as barriers to developmental programmes. However, there are certain positive elements in the tradition bound socio-economic organisation of the tribals. Though community ownership gave way to individual ownership, reciprocity continues to be the hall mark of the tribal economy. The sacred bond friendship which cuts across the group barriers and fosters harmonious relationship among tribal groups is a shining example of ceremonial tribal reciprocity. The hazardous life of tribals in the inhospitable hilly regions which has necessitated corporate life is exemplified by existence of cooperative farm societies in the district. The tribals have been involved in various stages of development of their areas. They are now represented in various committees of Panchayat Samithi and Zilla Parishads to

design various schemes for planned development. Further the tribals are also involved in cooperative Corporation and its primary societies which are wedded to their economic development. The tribals are involved in the decision making process of development programmes even at the grass root level as members of Gram Panchayats.

DEVELOPMENT IN RETROSPECT

Tribal areas have registered a modest progress as a result of various developmental programmes implemented in these areas. But the gap between the tribals and the non-tribals was so large that it was not possible to bridge it in such a short period. Hence the backwardness of the Scheduled areas still persists.

These tribal areas are backward as they have low levels of employment, income and consumption. The economy of the tribals of the project area revolves around Agriculture and its allied activities. As such the indicators mostly related to agriculture and service sector like

health and education have been chosen to guage the level of development and extent of backwardness.

The indicators are:

- 1) Percentage of net area sown to the Geographical area.
- 2) Cultivable area per agricultural worker.
- 3) Net area sown per agricultural worker.
- 4) Percentage of Area sown more than once to the Net Area Sown.
- 5) Percentage of area irrigated to the net area sown.
- 6) Percentage of villages electrified.
- 7) Cultivable area per capita.
- 8) Road length per 100 Sq.K.Ms.
- 9) Hospitals per 1 lakh of population.
- 10) Hospital beds per 1 lakh of population.
- 11) Number of Veterinary Institutions per 1 lakh of cattle.
- 12) Density of population per Sq.K.M.
- 13) Road length per 1.00 lakh of population.
- 14) Percentage of literacy.
- 15) Number of Schools per 1 lakh of population.
- 16) Hostels per 1,000 students.

With the help of afore=mentioned indicators an exercise is made hereunder to throw into relief the relative degree of backwardness of the project area.

The state average values of each one of the above indicators was worked out. Similarly the average value of the above indicators has been worked out for the project area and district. The percentage deviation from the state average for each indicator for the project area and district has been worked out and compared with that of State. Positive(+) and negative(-) signs have been assigned to indicate the trend. The values of these deviations so noted above with positive or negative signs are totalled up to arrive at composite index. The composite index thus arrived has been compared with that of State. This index compares unfavourably with the State as the district and the project area have recorded negative value. The District and region (Project Area) have registered negative value of composite index (District-272; Region-1,199)

This indicates that both district and the project area are backward and the gap between the district and project area is also considerable as the project area compares unfavourably with the district.

A programme for intensive development of certain tribal areas like Paderu and Araku was put on ground by way of starting multi-purpose projects during II plan period (1956). Subsequently 6 more blocks were started in the III Five Year Plan. In view of the backwardness of the area, these 6 blocks were converted into tribal development blocks along with the 2 multi-purpose blocks with special financial allocations. These 6 blocks also had the benefit of budget allocations both from community development and tribal development funds.

The expenditure on tribal welfare schemes in the project area since II plan period onwards was as follows:

II Plan	Rs. 53.64 lakhs
III Plan	Rs. 63.37 lakhs
Annual Plans	Rs. 82.05 lakhs
IV Plan	Rs. 115.35 lakhs

There has been gradual increase in the investment over the three plan periods during the past 18 years.

As a result of the implementation of a multi-sided programme of development, the following services have come into existence in the project area:

1. Seed Stores	8
2. Agricultural Farms	3
3. Primary Veterinary Dispensaries	8
4. Veterinary Hospital	1
5. Minor Veterinary Dispensaries	4
6. Rural Veterinary Dispensaries	3
7. Artificial Insemination Centres	3
8. Veterinary First Aid Centres	8
9. Rinder Pest Check Post	1
10. Training-Cum-Production Centres	3
11. Fruit Canning Centres	2
12. Sericulture Culture Farms	2
13. Primary Marketing Societies	5
14. D.R.Depots	57
15. Shandies	37
16. Primary Agril. Credit Co-Op Societies	39
17. Primary Schools	286
18. Upper Primary Schools	10
19. High Schools	8
20. Hostels	32
21. Ashram Schools	28
22. Government Hospitals	2
23. Government Dispensaries	8
24. Mobile Medical Units	4
25. Primary Health Centres	5
26. Maternity & Child Welfare Centres	2
27. S.E.T.Centres	2
28. Special Nutrition Programme Centres	262
29. Villages Electrified	30
30. Creche Centres	9
31. Women Welfare Centres	5
32. Sub-Post Offices	1
33. Branch Post Offices	38
34. Telephone & Telegraphic Offices	3
35. Livestock Farm	1
36. Banks	3
37. Rice & Flour Mill	1
38. Drinking Water Wells	591

Besides establishment of the services enumerated above, certain other activities not listed in the foregoing table were undertaken and which are summed up sector-wise in the following paragraph.

AGRICULTURE:

Distribution of improved seed, fertilisers, pesticides and fungicides, pumpsets, plough bullocks, seedlings was undertaken on either free of cost or subsidy basis, thus inducting the tribal to the use of sophisticated inputs.

Padmapuram orchard and Kothavalasa Seed Farm have been established in Araku Tribal Development Block. The main aim of these farms is to explore the possibility of growing different crops and fruits and to demonstrate the improved methods of growing crops to the local tribals.

Besides these, one seed multiplication farm at Tajangi in Chintapalli block was established to produce suitable seeds for local tribal cultivators.

This farm is also a demonstration centre for improved agricultural practices.

SOIL CONSERVATION:

Soil erosion is a serious set-back to Agricultural development and Irrigation project as it leads to silting of the reservoirs. High elevation, Slopy terrain, heavy rainfall contributed much to soil erosion. A soil conservation scheme in Machkund basin was therefore taken up in the year 1957 with the following objectives:

- 1) To wean away the tribals from Podu or shifting cultivation and to settle on permanent Agriculture.
- 2) To bring about permanent improvement of lands in the Machkund basin by prevention of Soil Erosion and replenishment of soil fertility.
- 3) To increase the agricultural production by way of good land management including adoption of improved farming practices to provide employment and economic relief to hill tribes.

- 4) To prevent silting up of Jolaput and diversion dam reservoir and construction of Machkhund Hydro-Electric Scheme and thus increase their life. Machkhund basin covers catchment area measuring 1,597.95 Sq.K.Ms. of Andhra Pradesh lying in Machkhund area. The above area falls under 10% slope and it was proposed to cover up the area under soil conservation measures.

The State Soil Conservation Scheme of Agriculture Department was merged with the Centrally Sponsored Scheme and the soil conservation works are being executed under the control of State Forest Department as an integrated Scheme. Two forest divisions and one Deputy Director of Agriculture with his staff are incharge of these works.

The following measures were taken up under this scheme:

Diversion drains at 10% slope or at the foot of the hills, (2) Graded bunds with grassed water in cultivated area of less than 10% slope, (3) Control of Gully erosion by rock fill dams, (4) Spill ways and bench terracing of bed and banks, vegetative protecting of gullies, diversion dams,

water ways and bunds (5) fringe foresting along the banks of the stream, (6) stone terracing of moderate hill slopes with sufficient soil depth upto 25% slope and afforestation or raising of grasses on the hills outside the reserve forest. So far an amount of Rs.160.87 lakhs was spent on this scheme upto the end of February 1974.

The physical and financial targets and achieved merits under forestry and agricultural sectors of the scheme from 1961-62 to 1972-73 are given hereunder:

T A B L E - 5

PHYSICAL AND FINANCIAL TARGETS AND ACHIEVEMENTS
UNDER SOIL CONSERVATION PROGRAMME

Year	Forestry Sector (Hectares)		Agricultural Sector (Hecs)		Financial Targets achieved(Rs.in lakhs)
1.	2.		3.		4.
	T	A	T	A	
1961-62	--	--	2000	6577.60	7.98
1962-63	660	66.78	2000	5359.20	9.52
1963-64	520	536.41	1350	2981.20	12.16
1964-65	594	602.16	800	3290.00	15.56
1965-66	760	770.92	995	1645.20	15.93
1966-67	760	769.58	450	1805.60	15.21
1967-68	648	647.50	6416	7861.20	14.71
1968-69	1296	1295.00	1942	3777.60	13.95
1969-70	648	662.50	640	3872.00	11.96
1970-71	648	643.35	535	3954.00	13.01
1971-72	648	659.00	320	694.00	12.46
1972-73	480	495.00	490	490.00	10.57

T = Targets; A= Achievements

During the year 1973-74, an amount of Rs.7.85 lakhs was spent till the end of February 1974 on Soil Conservation works. Under Agricultural sector, graded bunding, Vegetation protection works, Stream bank protection works, Gully control works and stone terracing are undertaken in 247.40 hectares, 74.00 hectares 10.00 K.Ms., 465 and 186.690 hectares respectively. Further soil conservation works were undertaken in 320 hectares under Forestry Sector.

ANIMAL HUSBANDRY:

The Animal Husbandry Programme comprised distribution of Bulls, Rams and ewes Sows/Boars, Poultry and Eggs of exotic variety in addition to setting up of Veterinary Institutions in the Project Area. Government Livestock Farm, Chintapalli established in the year 1956, has been supplying improved livestock needed for upgrading the local stock, to improve their milk potentiality and draught capacity in the agency areas. The Farm is serving as a demonstration unit to the tribals for improved livestock rearing

practices. Sindhi and cross bred animals suitable to the agency areas are being maintained at the Farm. Generally exotic bull is used to cross breed the local cattle, besides the Farm animals. Improved fodder grasses are being cultivated, for demonstration purposes and also to meet the demand of green fodder for Farm animals. About 60 breeding bulls, and other improved livestock have been supplied to the tribal areas of the State.

LAND COLONISATION SCHEMES:

With a view to wean away tribals from shifting cultivation and to encourage them to take up settled cultivation, to rehabilitate the tribals displaced by projects and provide land to landless tribals, land colonisation schemes were taken up as early as 1959. The tribals were provided with reclaimed lands, plough bullocks, irrigation wells, drinking water wells, houses etc. Under this scheme 5 colonies were started at Tajangi, Kothagudem, Kasiguda, Balimela and Mampa Kunchavanipalem in the district at a cost of Rs.2,43,400. Tribal families numbering 145 have

been provided with dry land, houses, agricultural implements, plough bullocks etc. Under this scheme land was reclaimed and assigned to tribals to rehabilitate them.

ASSIGNMENT OF LAND:

24,800 workers are landless in the scheduled areas of the district. These workers are subsisting either on Agricultural labour or on collection and sale of Minor Forest Produce. The income from these sources is seasonal. In order to help these landless tribals, Government have undertaken a programme of assigning the land.

Under this scheme 80,785.87 acres were assigned to landless tribals. Government land measuring 10,669.94 acres is available for assignment to tribals.

MINOR IRRIGATION:

Common practice in the hilly tracts is to construct crude bunds across the hill streams and divert water to adjoining fields on both flanks by

running channels/along the contours. There is ample scope for construction of dams across the hill streams in these areas. Hill streams, Diversion walls/and canals constitute the Minor Irrigation sources. The programme of Minor Irrigation implemented so far comprises of restoration of the existing sources and the construction of new sources. 745 sources of various categories are existing in the tribal areas of the District irrigating an area of 7,755 Hectares.

T A B L E -- 6

BLOCK-WISE MINOR IRRIGATION SOURCES

Sl. No.	Block	HILL STREAMS				
		Kuntas	Ayacut Hecrs.	Hill-streams	Ayacut (Hecs)	Total Ayacut (Hecs)
1.	2.	3.	4.	5.	6.	7.
1.	Ananthagiri	-	-	70	448	448
2.	Araku	30	240	94	826	1066
3.	Chintapalli	40	480	148	2300	2780
4.	G.Madugula	10	114	32	348	462
5.	Koyyuru	63	384	69	466	850
6.	Munchingiput	20	178	--	--	178
7.	Paderu	87	336	46	1028	1364
8.	Pedabayalu	4	17	32	590	607
		254	1749	491	6006	7755

Minor Irrigation sources of various categories numbering 70 with an ayacut of 1,196 hectares are to be restored in the Scheduled areas of the District.

VILLAGE INDUSTRIES:

The following village industries are existing in the Project area:

- | | |
|--|---|
| 1. Bee Keeping Sub-Stations
for Collection of Honey | Lothugodda
Rajupakala
Sarabhannapalem
Kommika
Madupalem
Sarugudu |
| 2. Establishment of Modern
Apiaries-cum-Nurseries | Lammasingi
Rinthada |
| 3. Cane processing Unit | Tajangi |

Under the Rural Arts and Crafts Programme, training was imparted to the tribals in various trades like Carpentry, Blacksmithy, Brickmaking etc. During 1971-72 an amount of Rs.14,000 was spent on training programme for tribal youth in Masonary. The trainees are supplied with the necessary implements like Metna, Plumb, Tapi etc., free of cost.

SERICULTURE:

Government have introduced seri-culture under cottage industry scheme to help the tribal to supplement their income. The scheme was first introduced in Chintapalli as early as 1956. A basic sericulture seed farm was established in the year 1956-57. While a demonstration Silk Farm was started in Araku Valley, Agency sericulture development schemes was put on ground in 1960-62 in Chintapalli which has both experimental as well as extension wings. The sericulture scheme started in Araku Valley was expanded in the year 1958-59. Chawki rearing unit and grainage was established in the year 1960.

To motivate the tribals to take up sericulture as subsidiary occupation, Government have provided incentive like free supply of Mulbury seed cuttings, high yielding graft, technical grafting, technical guidance in silk worm rearing, sanction of loan to meet the initial expenditure in raising mulbarry gardens, necessary equipment etc., L.R.seeds numbering 1.23 lakhs were produced and distributed under demonstration programme.

TASSAR SILK INDUSTRY:

Nallamaddi is the main food species for the Tassar Silk worms. *Terminelia Tomentosa* (Nallamaddi) trees are found abundantly in the reserve and un-reserve forest areas of Chintapalli Samithi. The climate and environmental conditions are congenial for the development of Tassar Silk Industry.

The Tassar Development Scheme was originally started by Chintapalli Panchayat Samithi on 21-2-1966 and was closed in March 1970 for want of funds, though the scheme had good response from tribals. The Government, while recognising the role of Tassar industry in improving the economic conditions of tribals, have sanctioned a scheme for development of Tassar industry at Chintapalli. This scheme was implemented from 1-10-1970 after taking over 20 acres of Nallamaddi plot which was originally under the Panchayat Samithi, Chintapalli.

The achievements of Tassar Industry at Chintapalli since inception are given hereunder:

T A B L E -- 7

DETAILS OF ACHIEVEMENTS OF TASSAR INDUSTRY AT CHINTAPALLI

S.No. 1.	Particulars 2.	1966-67 3.	1967-68 4.	1968-69 5.	1969-70 6.	1970-71 7.	1971-72 8.	1972-73 9.	1973-74 10.
1.	Quantity of Seed Cocoons.	15,589	1,827	12,326	-	1,000	5,960	14,530	2,410
2.	Layings prepared	1,249	486	1,897	-	200	1,834	590	7,622
3.	Cocoons harvested	31,132		29,706	-	640	7,759	3,059	3,562
4.	Number of private tribal rearers	2	--	10	-	2	4	6	36
5.	Cocoons produced by tribals	7,350	--	18,496	-	652	222	17,300	5,972
6.	Income earned by tribals @Rs.40/- per 1,000	Rs. 294.00	--	1,140.00	-	30.00	120.00	680.00	--
7.	Number of reeling Machines installed	--	1	1	-	5	5	5	5
8.	Number of spinning Machines installed	--	1	1	-	5	5	5	5
9.	Quantity of Cocoons reeled	--	1,325	4,039	-	1,400	--	--	Grams:2,975 Pieces:4,105

T A B L E -- 7

DETAILS OF ACHIEVEMENTS OF TASSAR INDUSTRY AT CHINTAPALLI

S.No. 1.	Particulars 2.	1966-67 3.	1967-68 4.	1968-69 5.	1969-70 6.	1970-71 7.	1971-72 8.	1972-73 9.	1973-74 10.
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9.	Quantity of Cocoons reeled	--	1,325	4,039	-	1,400	--	--	Grams:2,975 Pieces:4,105

(Table-7 Contd...)

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
10. Production of Spun Yarn (K.Gs)									
		--	--	3,040 K.Gs	--	0.080 Grms.	0.995 Gms.	0.285 Gms.	2.090
11. Production of Reeled Yarn (K.Gs)									
		--	1	2,498 K.Gs	--	4.070 Grms.	1.195 Gms.	0.400 Gms.	0.760
12. Number of looms installed									
		--	--	1	--	3	3	3	--
13. Tassar Silk Cloth produced									
		--	--	20 Meters	40 Meters	6 Meters	--	--	--

The coarse and fine silk cloth was manufactured by the Samithi during the year 1969-70, but it was not upto the standard. During 1970 to 1973, the production of cloth was not undertaken for want of funds and for want of suitable weaver, even though sufficient silk yarn was available in the farm.

FORESTS AND PLANTATIONS:

Teak Plantations were raised in an area of 103.14 hectares at a cost of Rs.38,156. For maintenance of plantations in 383 hectares an amount of Rs.44,170/- was spent. An area of 195.90 hectares of plantation was fire protected at a cost of Rs.1,460/- Plantations like Silver Oak and Eucalyptus were raised in an area of 240 hectares. Under quick growing species schemes, silver oak and Bamboo plantations were raised in 260 hectares.

GIRIJAN CO-OPERATIVE CORPORATION:

Government of Andhra Pradesh was a pioneer State in starting this Co-operative Institution to ensure a better deal and fair price to the tribals

for their Minor Forest Produce. Government have conferred monopoly rights over the corporation for purchasing Minor Forest Produce from the tribals. The Corporation is striving its best to wipe out the depredations of the private merchants and sow-cars who have been robbing tribal income from Minor Forest Produce and agricultural produce. The main objectives of the corporation are to purchase Minor Forest Produce at reasonable prices, to provide short term credit, agricultural implements, and purchase of agricultural produce. The Girijan Cooperative Corporation has net work of Cooperative Marketing Societies, and Daily Requirement Depots. in the scheduled areas of the District.

There are five Primary Marketing Societies of Girijan Cooperative Corporation in this District at S.Kota, Madugula, Downuru, K.D.Peta and Gajapathinagaram. The Gajapathinagaram Society was formed during 1971-72. There are 57 sales Depots in the Agency areas of this district through which the Girijan Cooperative Corporation is selling domestic requirements to the tribals. The turn over of

business in Minor Forest Produce, Agricultural Produce and Domestic requirements is as follows:

T A B L E -- 8

BUSINESS TURN OVER IN MINOR FOREST PRODUCE AND AGRICULTURAL PRODUCE

Sl. No.	Society	(Rs. in lakhs)			
		MINOR FOREST PRODUCE		AGRICULTURAL PRODUCE	
		Purchase	Sales	Purchase	Sales
1.	Downuru	27.02	36.70	14.22	14.69
2.	Madugula	41.21	59.27	28.59	30.35
3.	K.D.Peta	24.94	29.78	6.22	6.57
4.	S.Kota	41.91	53.66	5.82	4.92
Total:		135.08	179.41	54.85	56.53

	DAILY REQUIREMENTS	
	Purchase	Sales
1. Downuru	57.30	62.28
2. Madugula	36.91	39.39
3. K.D.Peta	29.59	31.17
4. S.Kota	28.23	30.29
	152.03	163.13

There are some Minor Forest Produce processing units like honey pasturisation, seekai grinding and addaleaf stitching units attached to Downuru A.P.C.Ms. 10,226 Quintals of Adda Leaf plates worth

of Rs.34,000/- were stitched. A cane industry centre is also located in Tajangi where Cane Chairs and cane baskets are being manufactured. In order to secure a better price for tamarind, the processing of 'concentam' (Concentrated tamarind extract) was started during 1971-72 in collaboration with M/s.Foods and Fruits of Visakhapatnam and 10,000 bottles of 'Concentam' was manufactured and sold. The corporation has been purchasing fruits and vegetables from the tribals and has been selling them in Visakhapatnam town.

Out of the amount of Rs.25 lakhs sanctioned to the Corporation under the Revolving Fund Scheme a sum of Rs.5,90,000 was released to the 4 Primary Societies of this District to disburse to the tribals as loan. The grant of the above loans went a long way in helping the tribals to increase agricultural production.

There are 39 Primary Agricultural Credit Co-operative Societies under the control of Registrar of Co-operative Societies. An amount of about

Rs.2.92 lakhs was advanced as loan to 5,054 tribal families. Besides, the Cooperative Central Bank, Vizianagaram advanced loans to 5,054 tribals to the tune of Rs.4.37 lakhs under short term credit for agricultural purpose during the year 1972-73. The details of the loans advanced by Cooperative Central Bank Ltd., Vizianagaram are given below:

T A B L E -- 9

LOANS ISSUED BY CO-OPERATIVE SOCIETIES
IN TRIBAL DEVELOPMENT BLOCKS

Sl. No.	Block	Amount distributed:Rs	No.of beneficiaries:Rs	Amount recovered Rs/-	Amount Outstanding: Rs
1.	2.	3.	4.	5.	6.
1.	Chintapalli	46,631	626	14,524.00	32,107.00
2.	Koyyuru	1,34,319	1,046	2,745.00	1,31,574.00
3.	Paderu	1,32,761	1,193	39,768.96	92,992.04
4.		21,574	433	7,437.43	14,136.57
5.	Araku	24,441	470	14,443.66	9,997.34
6.	Ananthagiri	35,804	597	1,990.90	33,813.10
7.	Munchingiput	41,562	689	38,624.00	2,938.00
Total:		4,37,092	5,054	119,530.95	3,17,558.05

TRIBALS AS VILLAGE OFFICERS:

The Government have sanctioned a scheme for training tribals as village officers. The training is for a period of 3 months and 15 tribals are trained in this District. Further, the Government have sanctioned a scheme for providing financial assistance to the Scheduled Tribes for setting up trade or business. An amount of Rs.9,640/- was sanctioned as loans to 10 tribals.

SPECIAL NUTRITION PROGRAMME:

The Special Nutrition Programme was implemented to combat malnutrition and undernutrition, among tribal children particularly in the age group 0--3 years. Government of India have sanctioned Rs.2,56,240/- for implementing the Special Nutrition Programme for the benefit of children in the specified age groups. Accordingly, the scheme was implemented in all 8 Tribal Development Blocks and 18 Community Development Blocks with concentrated tribal population. During this year, 177 feeding centres were opened by enrolling 13,569 beneficiaries. Of Rs.2.56 lakhs allotted Rs.2.53

lakhs was utilised under this scheme. During 1971-72, Rs.7,83,630 was spent over the 177 feeding centres for the benefit of 13,569 beneficiaries and in the year 1972-73 an amount of Rs.13,00,700/- was allotted to this district out of which, an amount of Rs.13,00,640.78 was spent. The scheme was extended to cover 20,954 beneficiaries in 262 centres.

SURVEY AND SETTLEMENT:

Taluk

659 villages of Paderu/were surveyed under Machkund basin soil conservation scheme. Consequent on the abolition of Muttas, Government have established special units for conducting survey and settlement operations. Under this programme survey operations are in progress in 5 Taluks, viz., Paderu, Chintapalli, Narsipatnam, Chodavaram and Srungavarapukota. 1454 Sq.Miles of area has been surveyed covering 1823 villages under five taluks. The taluk-wise coverage of survey operations is furnished hereunder:

T A B L E -- 10
PROGRESS OF SURVEY WORK IN THE PROJECT
AREA

Sl. No.	Name of the Agency	Name of the Taluk	No. of villages		Measurement work	
			Area allotted	Area in	completed	Area in
1.	2.	3.	4.	5.	6.	7.
			Villa- ges	Sq.K.M	Villa- ges	Sq.K.M
1.	Anakapalli	Chintapalli including 5 others	372	372.18	368	369.18
		Only Agency	367	366.64	367	366.64
2.	Anakapalli	Paderu	537	300.00	409	290.41
				(19 under progress)		
3.	Vizianagaram	Paderu	384	257.00	278	183.93
				(43 under progress)		
4.	Rajahmundry	Paderu	200	43.00	116	52.05
		Narasipatnam	3	3.44	--	--
5.	Vizianagaram	S.Kota	154	99.00	151	97.37
		Chodavaram.	134	94.43	134	94.43
Total:			2151	1535.69	1823	1454.01

IMPLEMENTATION OF PROTECTIVE LEGISLATION:

For the effective implementation of the provisions of protective legislations like Andhra Pradesh Debt Relief Regulation, 1960 the Money Lenders Regulation 1960 and the Land Transfer

Regulation 1959, the Government have sanctioned special staff consisting of five Deputy Tahsildars one each to the Five Agency Taluks of this District.

1416 cases of illegal land transfers involving an extent of 4076.00 acres were detected of which an extent of 565.00 acres of land involved in 432 cases has been restored to the tribals. 1091 cases were detected under Debt Relief Regulation involving an amount of Rs.2,30,738/- of these debts were scaled down in 689 cases involving an amount of Rs.1,55,542/- and decrees were passed. Under the Money lenders Regulation, 29 prosecutions have been filed, of which 17 have been disposed of by the Agency Criminal Courts. All excepting one were convicted. Consequent on the implementation of protective regulations, the exploitation by the non-tribals was controlled to some extent.

IDENTIFICATION OF GROWTH CENTRES

As a corollary to the approach to the Fifth Five Year Plan envisaging preparation of Integrated Area Development Plans for tribal areas, areas of 50% tribal concentration were identified in each district and plan formulations were taken up for the tribal areas of Visakhapatnam District. As a part of the new approach envisaged an attempt has been made to find out potential growth centres in the tribal areas of Visakhapatnam District.

Before explaining the methodology adopted for this study a brief review of the methods adopted in other studies is discussed in the following paragraph.

Central place theory exponents like Christaller, B.L.S. Berry and others have evolved different techniques to identify central places i.e., both existing and potential with reference to functional hierarchy and cluster of functions. These techniques have been modified subsequently through various exercises in different areas for identifying both existing and potential growth centres. In the light of the basic guidelines several exercises have been undertaken in regional planning for identifying the Central places. Under growth centre study series National Institute of Community Development has conducted a study in Miryalaguda taluk in Nalgonda District. In their study, Scalogram analysis was found to be inappropriate tool in measuring the centrality of functions in an under developed areas like Miryalaguda Taluk. As an alternative, population threshold method was adopted for ranking the functional hierarchy. The settlements were ranked based on the hierarchy of functions. In similar exercise for Raichur district of Karnataka population threshold and entry points

were used for identification of growth centres and their hierarchy.*

M E T H O D:

Micro level planning with the help of growth centres for an integrated area development is the new strategy adopted for accelerated growth in tribal areas of Visakhapatnam District. The main theme behind this approach is that a correct investment at a correct place (Potential Centre) helps to generate growth and start chain reactions which may have far reaching effects. Identification of these basic planning units is the first step in the formulation of area development plan and provision of growth impulses in these locations in right proportions is the second step as different settlements will have different potentials to sustain different levels of functions. The region selected for the study comprises of all the villages in 8 Tribal Development Blocks,

* Growth Centres in Raichur - An Integrated Area Development Plan for a District in Karnataka, Mimeographed. National Institute of Community Development, Hyderabad.

though the project area includes also the villages with tribal concentration lying very close to the outer side of the block boundaries.

LIMITATIONS:

Primary data on people's movement pattern for different functions were not collected because of the shortage of time. Collection of such data needs extensive field work in a number of villages. The data on some non-policy functions like Barber, Blacksmith, Carpenter etc., was not collected for the same reason. Moreover, in most of the villages, a tribal is a 'multi functionary'. He does the job of a carpenter, blacksmith and even a barber. So analysis of the data was restricted to only 40 functions list of which is enclosed in the appendix. Data on these functions were collected from secondary sources.

Another limitation is that the area is not surveyed for detailed mapping. No data is available on area or boundary or even the location

of each village in these 8 blocks. The locations of selected villages were traced out from the topo sheets of the Survey of India. As such block was chosen as the smallest unit for identifying the boundaries. Even the block boundaries were not found correct. This was checked and improved by using topo sheets. After delienating the block boundaries, villages with a population of 150 and above were identified because it was noticed from the data that functions tend to concentrate above that level.

SETTLEMENT PATTERN:

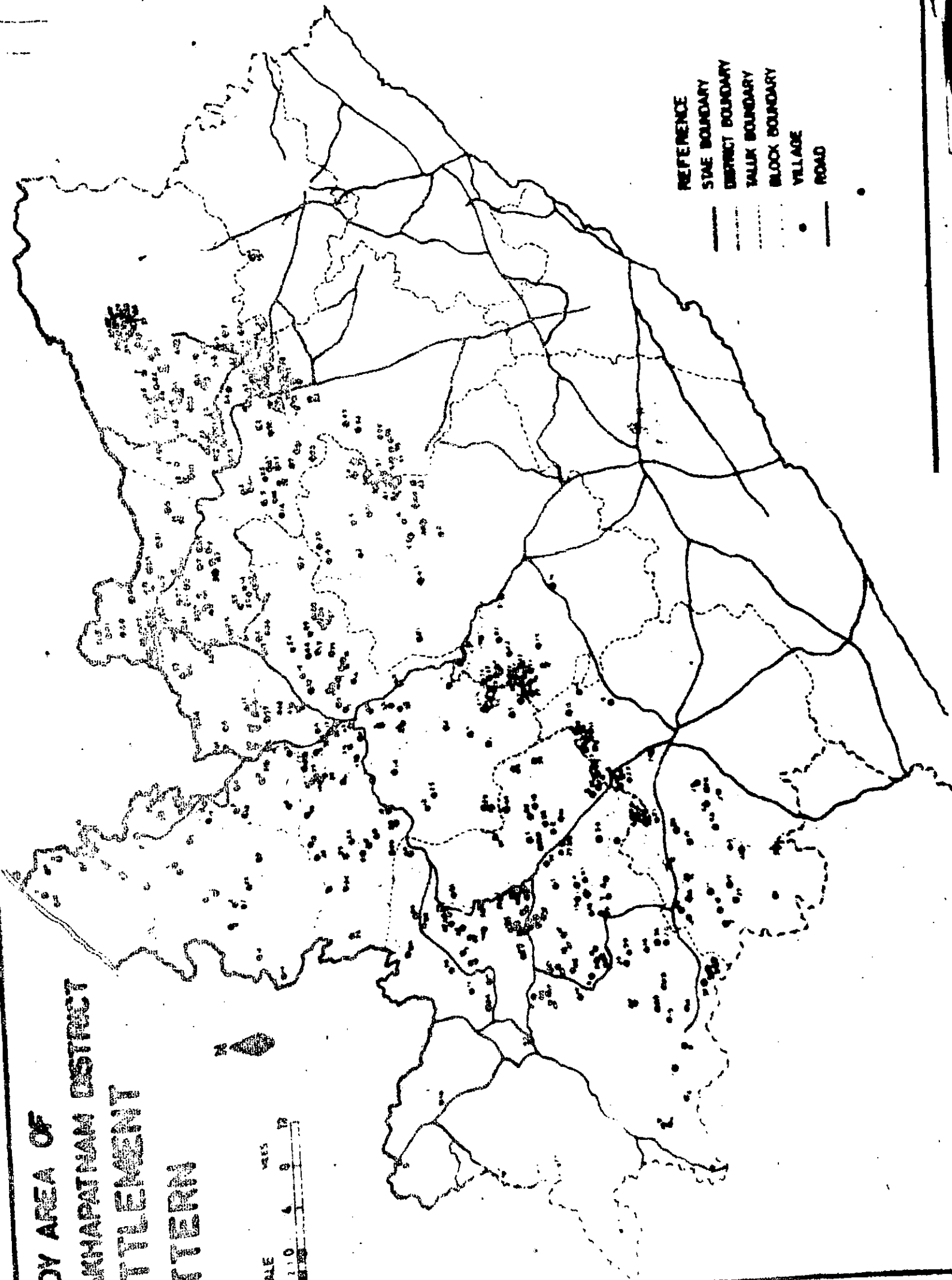
After studying the settlement pattern on the map it was observed that there are two distinct divisions in this area. The first division (i.e., smaller) consists of areas where only a few villages have 150 and above populations. These are North-West portion of Munchingput block, Western parts of Machkund river of Pedabayalu and Gangaraju Madugula blocks and a portion between the

STUDY AREA OF VISAKHAPATNAM DISTRICT SETTLEMENT PATTERN



SCALE
0 4 8 12
KMS

REFERENCE
STATE BOUNDARY
DISTRICT BOUNDARY
TALUK BOUNDARY
BLOCK BOUNDARY
VILLAGE
ROAD



STUDY AREA OF VISAKHAPATNAM DISTRICT ACCESSIBILITY PATTERN

SCALE 0 4 8 12



REFERENCE

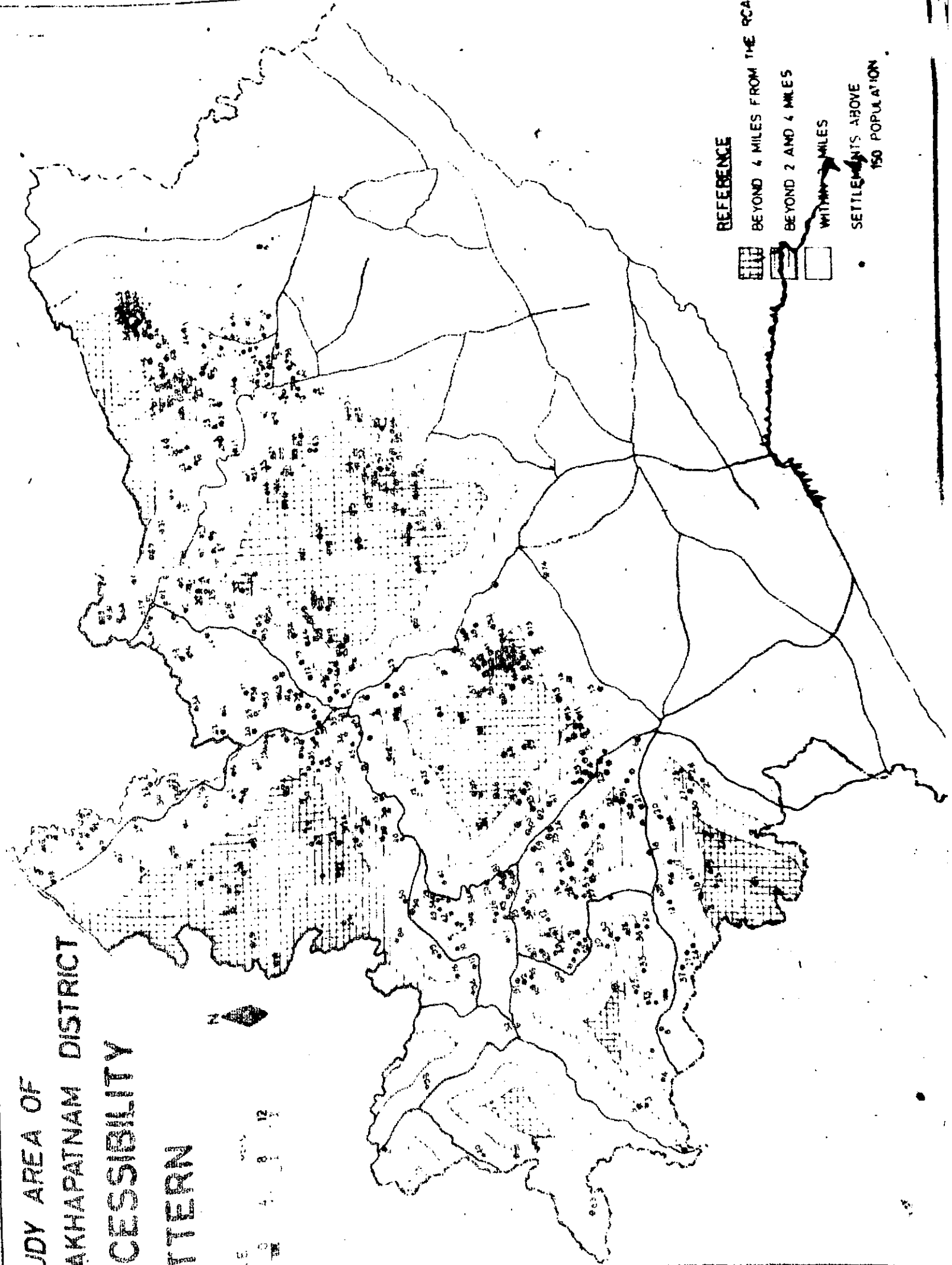


BEYOND 4 MILES FROM THE ROAD

BEYOND 2 AND 4 MILES

WITHIN 2 MILES

SETTLEMENTS ABOVE
150 POPULATION



hinterland areas of Sileru, Chintapalli and Rajendrapalem villages. The other areas i.e., larger come under the second region. Map No.10

Identifying and developing only those villages with 150 and above population may result in neglecting the first division. As one of the objectives of area planning is to Integrate Backward areas with advanced area it was decided to give special consideration to this division. The analysis of the accessibility pattern has also shown that these areas are at present inaccessible

Map No.11

E X E R C I S E:

The characteristics of tribal areas greatly differ from non-tribal areas. The tribal areas are sparsely populated and the villages are generally small. Till the advent of directed change through community development and tribal development programmes, the tribal societies were

almost static. As the introduction of tribal development programmes was done with a welfare motive, no serious thought was given to the locational aspects of different functions. As a result, the distribution of functions is sometimes erratic.

It was tried to arrive at certain conclusions by working out the centrality of villages according to road links. The roads were categorised as metalled, unmetalled and tracks. Better the condition of the road, faster is the movement of men and material. It was estimated that the movement will be three miles an hour on a hilly track, 12 miles an hour on unmetalled road and 27 miles an hour on metalled road. Weightages were given to the three different types of roads as ONE to Track; FOUR to Unmetalled road, and NINE to metalled road, basing on the average distance covered on these types of roads in one unit of time i.e., an hour. But this method also could not give any meaningful result as the traffic network in these areas is not developed. As such the centrality scores of the

settlements calculated through this method did not show any correlation with the population size or functional importance of these settlements. Moreover, tribal people do not take full advantage of vehicular traffic in this area. Instead, even now they depend mainly on foot tracks etc. though motor roads are available.

It was tried to understand the pattern of distribution of functions first by studying the "Entry Point"* of each function. Secondly the "Median population Threshold"** for each function was also studied for finding out the hierarchy of functions.

Primary school appears first at 150 population. There are 288 settlements within 150-250 population range, and only 27 percent of the villages

* Entry point is the minimum Unit of population where a particular function tends to occur first.

** In between entry point and saturation point (above which function occurs in every settlement) there may be 'Median Point' above which presence of function has a regularity and below which presence is very irregular.

have that function. For certain functions even saturation point is not traceable clearly. For example, "Veterinary First Aid Centre" appears last at 2,059 population. But it never appears again in villages with more population. Moreover, certain functions appear with more frequency at lower population levels and with less frequency at higher population levels. A higher order function like "Primary Veterinary Centre" appears first at 386 population level and the lower order function of the same department like "Veterinary First Aid Centre" appears first at 608 population level. Normally it is felt that higher order places will have functions which lower order places have. Besides, higher order functions will tend to concentrate at higher order places, which are not available at lower order places. But here this system is not strictly followed because of some reasons. (1) Functions were allotted to some settlements not on the basis of population but on some other criterion. There are different schemes like Applied Nutrition Programme etc. Under special scheme

any village may have drinking water well or primary school. (2) Functions were controlled department-wise and such department followed their own norms which are not identical. Besides this there may be other factors like political pressures etc.

All the villages in the 8 Tribal Development Blocks were arranged in the ascending order of their population* and presence or absence of each function was noted.

Though data were collected initially for 40 functions, 22 functions which were found very irregular, were eliminated from the exercise. These functions are Breeding Bull Centre, Rice and Flour Mill, Fruit Canning Centre, Basic Training Centre etc. Certain other factors like availability of raw material in the case of fruit canning centres, cattle population in the case of breeding bull centre, amount of food grains available in the area for Rice and Flour Mill etc. determine the need for the occurrence of these items.

* Annexure No.4

Of the remaining 18 functions, Primary School and Ashram Primary School were treated as one item serving the same function Primary Education eventhough the facilities available and coverage of these two functions differ. Cutting points or median population threshold (after which the occurence of the function is more or less uniform) were determined for each of the 16 services. These population thresholds were plotted against their frequency on a double logarithmic graph. Two clear cut levels of functions were identified, though first level is not so prominent(See Table 11)

T A B L E -- 11

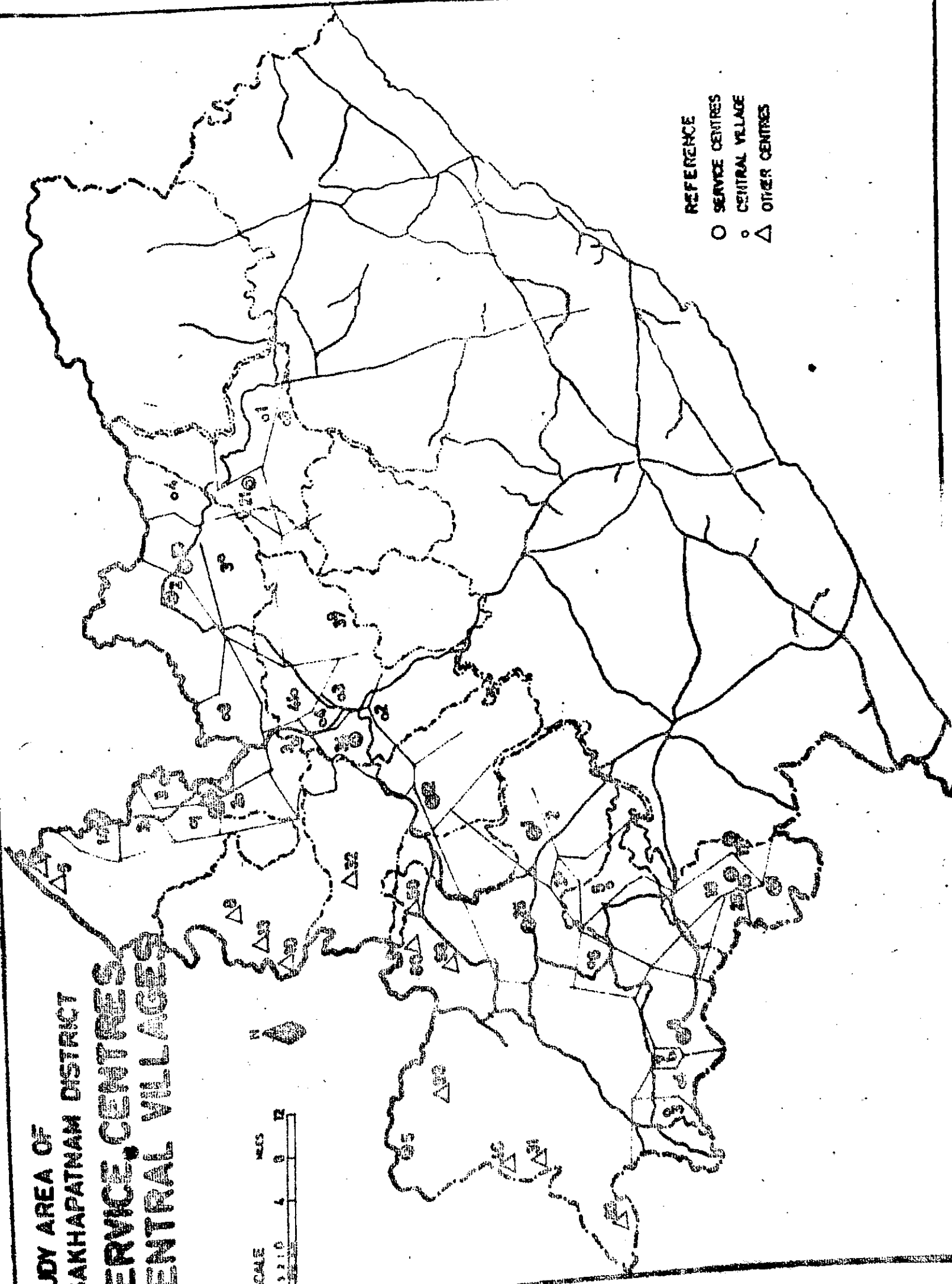
LEVELS OF FUNCTIONAL HIERARCHY

Relative position of level in Hierarchy	Functional levels	Population levels	No. of functions at each level
Lower	I	200--302	2
Middle	II	523--548	10
Higher	III	1,116 and above	4

STUDY AREA OF VISAKHAPATNAM DISTRICT SERVICE CENTRES CENTRAL VILLAGES



- REFERENCE
- SERVICE CENTRES
 - CENTRAL VILLAGE
 - △ OTHER CENTRES



Altogether three levels of functions are identified. As "Entry Point" does not give correct picture, "Median Population Threshold"* was considered as threshold point for each function.

Drinking Water Well and Primary School or Ashram Primary School were identified as first level functions. When cutting points against all these functions were noted and examined, a clear cut three levels of settlements were noticed. There are about 224, first level or lowest level settlements with their populations ranging between 200 and 522. These were termed as FOCAL POINTS. Drinking Water Well, Primary School or Ashram School and Road connectivity with higher order villages were recommended for these settlements if they are not already present in those villages as they are to be provided under Minimum Needs Programme also.**

* This is the point where from presence of function is very regular.

** Annexure No.5

About 27 second order or Middle order settlements were identified and these were termed as Central Villages. These villages have a population ranging from 523 to 1,115 except two centres which were relegated from III order or Higher order settlements to II order as they lacked higher order functions. Further all these settlements which are in close proximity of one II order settlement or the other have been eliminated on the basis of existence of relative level of functions i.e., deleting the settlements with comparatively lower level of functions. Apart from Drinking Water Wells, Primary School and a Road, the functions suggested were Veterinary first aid Centres or Rural Veterinary Dispensaries, Daily Requirement Depot., Branch Post Office, Hostel, Maternity and Child Welfare Centres, Shandy, National Malaria Eradication Programme Centre, P.H.C.Sub.Centre, Cooperative Marketing Society, Seed Stores, Bus Stop, Cooperative Credit Society, Family Planning Centre and an Upper Primary School if they are not already existing in those villages. These functions have their

cutting point at 523 and lie between 523 and 1,115 population levels. The Credit and Marketing Facilities should go together because the tribals have a sentiment to sell their produce to the source from where they received a loan. That source need not always be a private one.

Nine centres were identified initially at the third level. After the completion of the exercise it was found that there are no service centres at all in four blocks viz., Munchingput, Pedabayalu, G.Madugula and Ananthagiri. It was also found that out of these 9 centres, 5 centres are too close to other centres of the same level. When two centres were very close, the less important centre having less centrality (on the basis of availability of level of functions) was eliminated. In this way those less important 5 Centres were eliminated from this level. But these were considered as second level centres. To the remaining 4 centres, 5 Block Headquarters were also added to make a total of 9 centres at third level, eventhough

they do not fall into the population range of the higher order centres. As per the policy of the Government, provision of higher order functions will be made to all the block headquarters irrespective of its size. Besides services suggested for the central villages, the additional services suggested for service centres are dispensary or hospital, Telegraph and Telephone Office, Sub-Post Office and a High School*

As already stated the Western side of the study area is more backward. Scattered settlements with smaller population is the characteristic feature of this area. Population threshold of the adjacent developing area will not help for identifying centres in this area. So, individually one village cannot sustain a function. But group of villages jointly can support a function as such. Certain villages which are geographically centrally located with more than 150 population were selected from the backward

* Annexure No.6

area. These centres were called as 'Other Centres'. They are 13 in number. As there is no development potential already existing in these villages, only a few said facilities like Daily Requirements Depots, and Lower Order Veterinary Services like Veterinary First Aid Centres were suggested apart from first level functions like Primary School or Ashram School, Drinking Water Well and road connection with higher order settlements. It is necessary in view of peculiar conditions prevailing in those areas. Firstly, they are the most under-developed villages of the agency and so they need some growth impulses. Secondly, the population in a service centre of these areas itself cannot sustain certain higher order functions. It necessarily requires some feeding points distributed over its hinterland. For example, the population in a block headquarters (ex: Pedabayalu) itself cannot sustain a high school. It can continue to function only when certain other centres with primary schools feed the students to it. So these 'Other Centres' act as feeding points. This also helps in integrating the backward areas within the agency with the developing tribal areas.

Growth Centres in the tribal area lying outside the T.D.Blocks could not be identified and consequently programmes under Integrated Area Development Plan could not be indicated for the spill over areas even though these areas are included in the project area due to the following reasons:

1. Difficulty in identification of the tribal settlements and their boundaries in the spill over area on the map.
2. Lack of contiguity in distribution of the tribal settlements.
3. Paucity of data on availability of policy functions in these villages.

However, the tribals inhabiting the spill over area will not be left out as they will be benefitted by household need based programmes.

CHAPTER - IV

PLAN IN OUTLINE

This plan embodies various programmes for integrated development of the tribal areas of Visakhapatnam District in the State of Andhra Pradesh. Recommendations have been made for a period of 20 years starting from 1974. The plan suggests various programmes to harness the existing as well as potential resources through an optimum method of decentralizing benefits of such development.

The recommendations made in the plan fall under the following broad categories: Agriculture, Animal Husbandry, Industries, Social

facilities and Transportation. Once implemented these programmes will bring about an Integrated Development of the Project Area in all the 5 Sectors.

The Plan envisages two types of integration in its overall strategy: (1) Functional Integration of Agriculture, Animal Husbandry, Industries, Social facilities, Transport has been suggested by making use of a spatial model in which the development in one sector brings about development in another. (2) The existing hierarchic linkages between tribal settlements of different sizes based on service relations have been used for optimum location of new investments as well as decentralization of developmental activities.

The spatial model employed for achieving these two levels of integration is based on carefully selected basic units of planning at various hierarchic levels. The optimum locations of various

orders of investments in Agriculture, Industries and Social facilities are provided by focal points, Central villages and Service Centres.

1. Identification of basic units of planning in the use of growth centre for future development of the Project area:

The basic units of Micro level planning on a three tier hierarchic scale have been identified in this plan. At the lowest/224 focal points and their hinterlands, at the middle level 24 central villages and at the highest level 14 higher order centres and their hinterlands have been used for location of services of higher, middle and lower orders to foster the balanced development in all the sectors.

Besides three potential urban centres from among the service centres have been identified for location of meso level programmes.

The focal points and their hinterlands have been mainly employed for planning social facilities of lowest order. The Central villages and their hinter lands have been used for planning agricultural infrastructure and social facilities of middle order. The service centres and their hinter lands have been used for planning medium level agricultural infrastructure, social facilities of higher order and industries.

AGRICULTURE:

Agricultural production is proposed to be stepped up by introducing qualitative and quantitative shifts in the cropping pattern. Through quantitative shift additional area is brought under cultivation by (1) increasing net cropped area; and (2) total cropped area.

The net cropped area is proposed to be increased by 51.1% as a result of (1) developing and bringing the entire cultivable waste land;

(2) 50% of the land under pastures and (3) entire land under various kinds of fallows with the adoption of proper crop rotation.

The total cropped area is envisaged to be increased by increasing crop intensity with (1) adoption of short duration varieties of crops; and (2) provision of irrigation by harnessing all the minor irrigation source. The total cropped area is anticipated to increase from 69,612 hectares to 1,07,162 hectares in the project period.

Adoption of the concept of economic cum ecological cafeteria is recommended for bringing about qualitative shift. As the tribal agriculture is mainly subsistence oriented nutritional requirements of the project population are also taken into consideration while bringing about changes in cropping pattern. As a result of the qualitative shift the cropping pattern by the end of 1994- in the project area would be as follows:

Agricultural productivity is envisaged to be increased sharply with the adoption of fertilizer responsive, High Yielding and short duration varieties of food and fruit crops with application of improved inputs - fertilisers, High Yielding Variety seeds, pesticide and fungicides, improved implements.

In order to induce the tribal farmers to adopt the improved inputs, it is envisaged to supply the improved inputs - chemical fertilisers, High Yielding Variety seeds, pesticides and fungicides and farm implements at subsidised rates. The subsidies would gradually be tapered off.

As irrigation is the most important variable in increasing the production, all the investigated minor irrigation works are proposed to be completed within the V Five Year Plan. With the completion of these works, area with assured water supply would increase to 13,318 Hectares.

AGRICULTURAL INFRASTRUCTURE:

Agricultural input requirements and the needs for marketing and storage were estimated on the basis of the projected volume of agricultural production for each Block.

Separate estimates were made for fertilizers, seeds, fungicides and insecticides on the basis of the qualitative and quantitative shifts in the cropping pattern envisaged under the plan:

The location of input distribution centres and warehouses were based on the following considerations: (1) volume of production in each block; (2) the required population threshold of each function; (3) the required distance threshold of each function.

ANIMAL HUSBANDRY:

The strategy for livestock development consists of the following programmes.

1. The artificial insemination centres and the number of breeding bull centres will be increased for effective breeding programme.
2. Stray indigenous bulls are castrated for ensuring the success of the breeding programme.
3. (a) To provide effective and efficient veterinary care, the existing Veterinary Institutions will be upgraded.
(b) During the project period it is proposed to establish 38 Veterinary First Aid Centres at central villages.

4. The existing fodder shortage is proposed to be overcome by growing hybrid and nutritious fodder crops in the project area.
5. To promote poultry development in the project area it is proposed to establish 910 Poultry Units. Each unit consists of 50 crossbred hens and 5 cocks and deep litter and cafeteria systems of feeding are adopted. The projected egg production by the end of V Five Year Plan is 3.75 lakhs.
6. 16,000 ducklings of Indian runner breed will be supplied to the tribals of the villages identified for duck rearing.
7. To upgrade the local sheep, the distribution of cross bred Rams and Ewes to the tribal families is envisaged. The improved sheep will be supervised by the First Aid Centres for effective

implementation of upgrading programme.

8. To upgrade the local variety it is proposed to supply cross bred pigs to the tribals. Upgraded Boars will be supplied to the tribals having 2 to 4 local sows.
9. To promote dairy industry it is proposed to distribute 8000 Milch Cattle. The milk production is projected to be about 50,000 litres by the end of 5th Five Year Plan as a result of distribution of milch animals.
10. To give the research support needed for successful the implementation of livestock development the Livestock Farm at Chintapalli is proposed to be strengthened and streamlined.

I N D U S T R I E S:

The project area has very poorly developed industrial sector and the industrial employment is negligible. Although the area is known to be endowed with mineral deposits, their exploitation on a large scale has to wait until thorough geological and feasibility surveys are undertaken and completed. In the absence of such studies, it is only possible to envisage the following agro-forest based industries to siphon off some of the increasing pressure on land.

1. Koperi and Sisal rope making Units at Rajendrapalem, Araku and Chintapalli.
2. Niger Seed Oil extraction Units at Araku and Lammasingi.
3. Starch Making Unit (from Tamarind Seed) at Rajendrapalem.

4. Fruit Processing and Preserving Units at Chintapalli and Araku.
5. Manufacture of splints and Veneers at Paderu.
6. A Unit for Extraction of Alkaloids from Nuxvomica Seeds.
7. Sago Manu-facturing units at Chintapalli, Araku and Paderu.
8. Adda leaf stitching centres at Chintapalli, Araku, Munchingiput, Pedabayalu, G.Madugula and Ananthagiri.

To develop sericulture in the project area the existing Sericulture Units - Basic Seed Farm at Chintapalli, Chawkie Rearing Units for Tassar Culture at Chintapalli Chawkie Rearing Unit at Anfoda ~~are~~ proposed to be strengthened besides establishing the following units:

1. Establishment of 2 Chawkie Rearing Units at Tajangi and Paderu.

2. Establishment of a Cottage Basin Unit at Araku.
3. Shawkie Rearing Units for Tassar Culture at Chintapalli and Darakonda.

SOCIAL FACILITIES:

Education:- The education strategy has been formulated taking into consideration the socio-economic and geographical factors. During the project period, it is proposed to open another 4 High Schools at Higher order centres i.e., Ananthagiri, G.Madugula, Tajangi and Munchingiput. The Upper Primary Schools are proposed to be started at 19 second order centres and 131 Ashram Schools are proposed to be started at Lower order centres.

Medical and Health:- At present there are only five Primary Health Centres and 2 Hospitals. During the Project period it is proposed to open

3 Primary Health Centres at Ananthagiri, G.Madugul and Pedabayalu. Up-grading the existing 3 Primary Health Centres have been proposed in this Plan.

Communications:- Most of the road mileage in the Project area is unsurfaced on account of which the movement is slow and uncertain particularly during the rainy season.

The success of proposed programmes especially the net work of growth centres depends upon the road system. Therefore necessary proposals have been included in this plan for improvement of existing roads and formation of new link roads which facilitates smooth flow of goods and services from and into tribal areas. It is proposed to construct 285 KM. length of road during the Project period. Further 171 KM. length of road is proposed to be improved in the Project period.

FINANCIAL OUTLAY:

The programmes suggested in the plan is based on the resource oriented and on the Need for a closer economic integration of the entire project area. However, the agricultural, industrial and transport development programmes suggested in the plan will definitely be of great significance in meeting the requirements. For implementing the programme the total financial outlay for the 20 year period would be Rs.53.77 crores, out of which 60% would be for agriculture, 12% for communication and roads, 28% for education, 10% for Animal Husbandry, 2% for Minor Irrigation and Medical and Health, 1.5% for Industry and 5% for Marketing.

FINANCIAL IMPLICATIONS OF PLAN

Sl. No.	Programme.	Subsidy (Rs. in lakhs) 3.	Loan (Rs. in lakhs) 4.	Grant (Rs. in lakhs) 5.	Total (Rs. in lakhs) 6.
1.	2.	3.	4.	5.	6.
1.	Agriculture:			593.28	593.28
	a. Land development	..	..	..	112.10
	b. Supply of seed	56.00	56.05	..	197.60
	c. Supply of fertilizers	98.80	98.80	..	
	d. Plant protection and supply of improved implements.	87.63	87.63	..	175.26
	e. Vegetable development	..	..	15.00	15.00
	f. Schemes for shifting cultivation.	225.00	225.00	..	450.00
	g. Scheme for Tapoica	9.60	9.60	..	19.20
	h. Coffee plantation:				
	i) Private holding	15.00	15.00	..	30.00
	ii) Public sector	..	..	440.00	440.00
	i. Soil Conservation programmes.	..	..	400.00	400.00

(Contd...)

1.	2.	3.	4.	5.	6.
2. Irrigation and Power:					
i) Irrigation	13.50		13.50	93.37	120.37
ii) Power	..	..	..	30.00	30.00
3. Animal Husbandry	..	..	..	492.33	492.33
4. Industries	..	..	..	51.90	51.90
5. Communications	..	..	..	531.15	531.15
6. Marketing	..	..	..	6.13	6.13
7. Education	..	..	..	1619.81	1619.81
8. Medical and Health	..	..	..	59.22	59.22
9. Meso-level Programmes	..	..	..	34.34	34.34
10. Administration	..	..	..	108.40	108.40
	505.58		505.58	4474.93	5486.09

PERSPECTIVE FOR DEVELOPMENT

The project area comprising the hills and forest tracts of Chittoor, Narasipatnam, Chodavaram, Paduru and Srungavarapukota Taluks has remained under developed. Due to its economic backwardness, the project area has not fully integrated into the economic fabric of the District. The topographic and physiographic features of the project area are chiefly responsible for its isolation. Due to its geo-ethnic characteristics, the problems of the project area differ from those of the rest of the District.

The project area is endowed with adequate water resources as many streams and

rivers traverse the project area. However, much of its water cannot be harnessed on irrigation purpose. It is rich in forest wealth and mineral resources. It has a favourable climate and good soils for development of agriculture and horticulture. There are extensive pastures holding a promise for livestock development.

The most striking feature of the economy of the project area is its virtual dependence on single sector. Even though forest provides the main subsidiary source of livelihood, as much as 94% depend upon agriculture for their main stay. It is therefore necessary to identify the factors that have so far prevented development of agriculture and to analyse the potential for development in agricultural and allied sectors and formulation of suitable strategy for development to full potential over the plan period.

Topography and forests, condition the land use pattern in the project area. The hilly

terrain and presence of forests restricted the net cropped area to 11.2% to the total geographical area. There are various factors responsible for inefficient use of this limited land under plough. The agriculture is subsistence oriented as the cropping pattern is predominantly characterised by cereals and millets. The factors responsible for subsistence agriculture based on a few food crops can broadly be classified as follows:

1. Primitive agrarian technology.
2. Lack of adequate irrigation facilities.
3. Poor quality of land for the improvement of which the tribal lack resources.
4. Practice of shifting cultivation has contributed high incidence of soil erosion.
5. The absence of efficient and adequate institutional facilities for the supply of improved inputs and for marketing the produce. Lack of communication net work which is sine-quanon for rendering institutional services effectively is also a major factor which retarded the growth.
6. Inadequate extension effort to induce the tribals to the improved practices in agriculture leading to increase crop intensity and crop outputs.

STRATEGY FOR DEVELOPMENT:

While formulating the strategy for development of the project area the socio-economic contours of the project population have been identified. The human material available in the project area has been broadly classified in-to two major categories on the basis of their major source of livelihood, viz. settled cultivators and shifting cultivators and landless tribals. The programmes are designed keeping in view these two main groups. As far as the programmes for the settled cultivators are concerned, harnessing of human as well as water resources and strengthening of the economic infrastructure are given importance. Programmes of universalistic nature within the ambit of traditional activities are selected for special attention. Thus, development of economic spheres like Agriculture, Animal Husbandry, Irrigation, Industries and Marketing are given priority, the essential services which improve the human material and quality of tribal life - education, public health and communications are also given equal importance.

The programmes for the other section of the tribal population, viz. the landless and the shifting cultivators, are designed keeping in view their traditional callings, local resources and felt needs. Thus the shifting cultivators are proposed to be weaned away from the wasteful practice of slash and burn cultivation, while schemes are built into the plan to provide them alternate but assured and more remunerative sources of income for these people. The traditional cattle breeders, Goudus will be given preference in cattle development programmes, while the other village functionaries will be provided ^{with} necessary skills and infrastructural facilities for improving their lot in their traditional chores.

Agricultural development constitutes the nucleus of the plan as it constitutes main stay of life for 94% of the project population. It is envisaged to step up agricultural productivity and to convert the subsistence agriculture into market oriented agriculture by adopting the following measures.

1. Removal of all the constraints on tribal agriculture which retarded the agricultural productivity in the project area.
2. Introduction of qualitative and quantitative shifts in the cropping pattern.
3. Timely supply of all the improved agrarian inputs, and
4. Provision of marketing and communication to facilitate smooth in flow of agrarian inputs and out flow of marketable surplus of agricultural and minor forest produce etc.

Under removal of all constraints on tribal agriculture, it is envisaged (1) to harness all the investigated ground water sources to bring more area under assured means of irrigation:

2. Channelisation of cheap and easy institutional credit.
3. Efficient distribution system with a network of delivery points and storage facilities.

4. Vigorous extension agency committed to propagation of S.D. and High Yielding varieties and improved inputs
5. Effective soil conservation measures.
6. Adequate soil testing facilities along with an efficient fertilizer advisory service and
7. Efficient plant protection service.

By effecting quantitative shift in the cropping pattern it is expected to increase the total cropped area of 69,612 Hectares by 51.6%, while under qualitative shift it is envisaged to cover the entire cropped area under fertilizer responsive short duration, and high yielding varieties of various remunerative food crops and commercial crops suited to the agro-climatic conditions of the project area, over a span of 20 years.

The tribal farmer is essentially a producer at a low level of production which in

turn is a cumulative result of a number of factors operating on his economic environment. Any programme of development for this under privileged producer must aim at removal of the constraints on him as well as on his environment, which confine him to the present low level of production and consumption. The plan's main objective is to extricate the tribal farmers from low level of production and consumption, so as to achieve a marked improvement in his living standards while increasing the G.N.I. This necessitates induction of these farmers into improved practices in crop-husbandry and then integration of these people with the process of green revolution i.e., sweeping through the other parts of the country. This process will have to be initiated with creation of growth impulses. Mere dissemination of knowledge on improved agrarian practices, however effective it may be, is not enough to motivate these farmers. Subsidies and farm requisites can be effective motivational agents in inducting the tribal farmers into the improved practices. The salient aspect of this plan is therefore the supply

of improved farm inputs at subsidised rates to tribal farmers. The provision of subsidies is envisaged in the first five years during which the farmer is expected to stabilise his agriculture.

The subsidies are proposed to be tapered off even during the five year period. Programmes have been built in the plan to wean away the shifting cultivators from wasteful practice of 'Podu' and rehabilitate them in orchards planned in the hill slopes on cooperative basis. This would not only solve the alarming incidence of soil erosion and deforestation, but provide assured and more remunerative source of income for the shifting cultivators.

It is also realised that the meagre area available for cultivation cannot absorb sizeable manpower. Therefore there is need for diversification of occupational pattern. The Project promises many new cottage and small Scale Industries in addition to the independent action envisaged for starting Aluminium factory in Ananthagiri hill area. It is

also realised that the success of these programmes and the marketing net work proposed mainly depends upon developing existing major roads besides laying a net work of new link roads so that while improving the existing linkages with the larger markets in plains area the subsidiary linkages which also play a vital role in the outflow and inflow of goods from and into tribal areas are taken to the maximum number of villages. Fourthly as a adjunct of agricultural programme and as an alternate source of livelihood, Animal Husbandry programme has been suitably evolved, the highlights being the development of milkshed area wider dispersal of Veterinary services by opening small Veterinary Institutions, Increased Meat production through large-scale introduction of Piggery and Poultry Units and the extensive cultivation of fodder grasses and pastures coupled with starting of feed mixing plant and the introduction of hitherto unknown diagnostic laboratory.

LEVEL OF DEVELOPMENT

INDEX

UPTO IV PLAN →



V PLAN →



ENTIRE PROJECT
PERIOD →



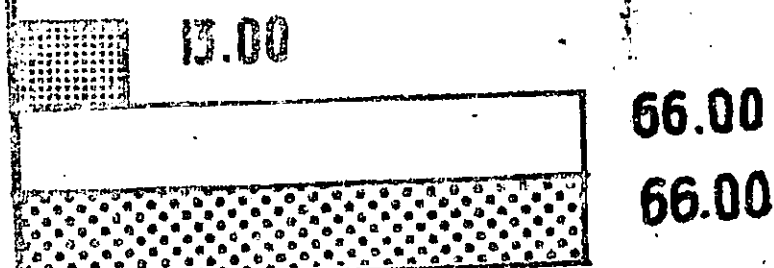
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SECTORWISE
INVESTMENT

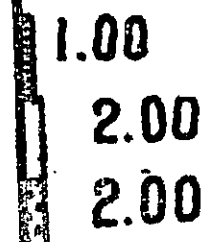
FIGURES IN LAKHS OF RUPEES

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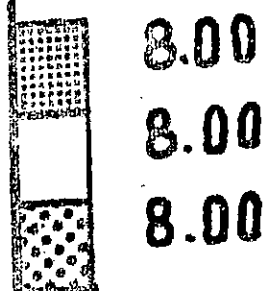
HOSPITAL BEDS
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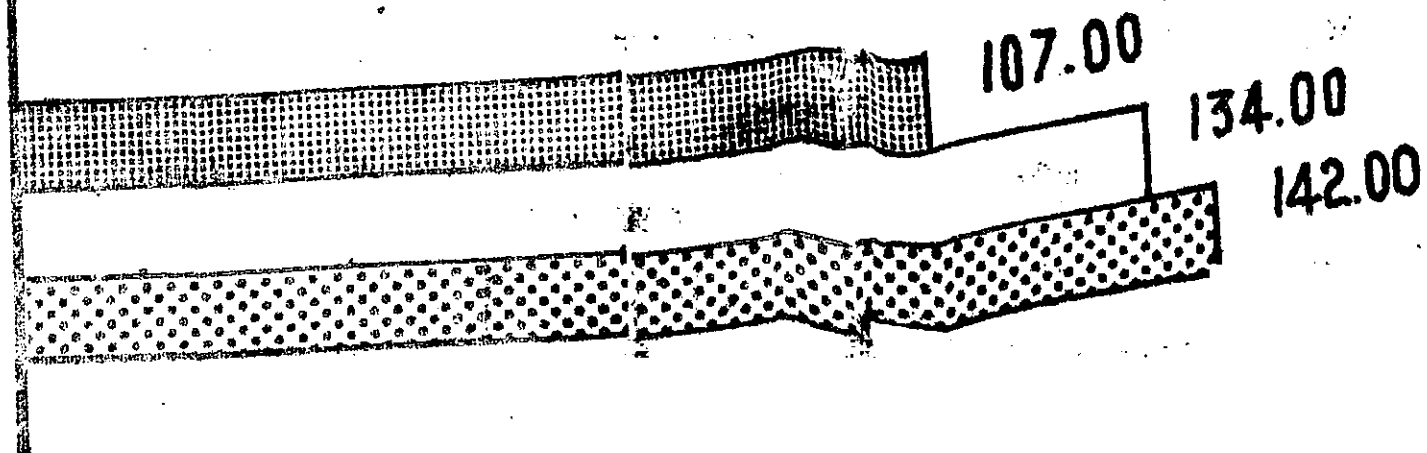
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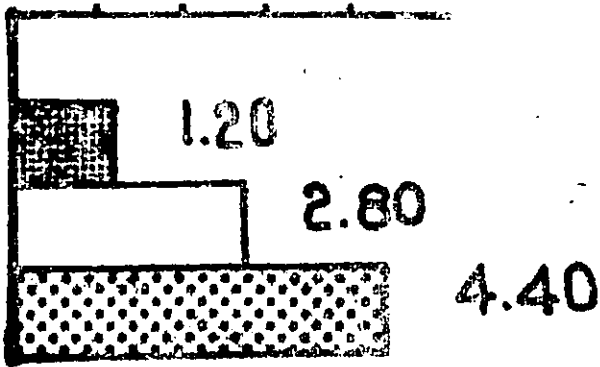
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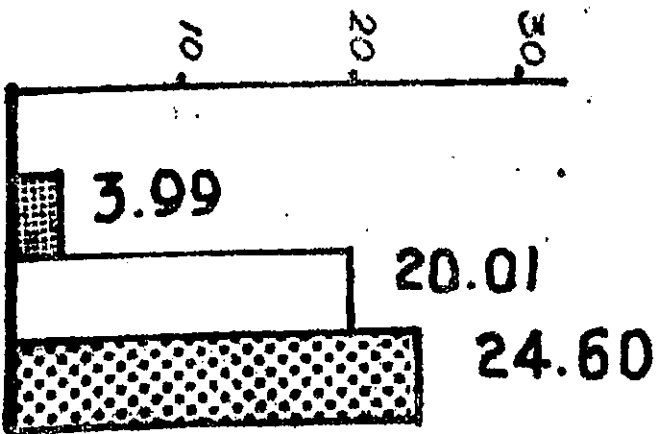
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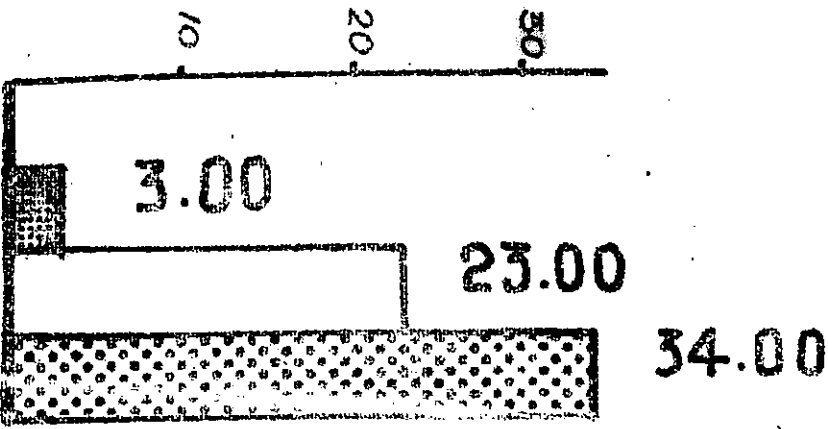
PERCENTAGE OF
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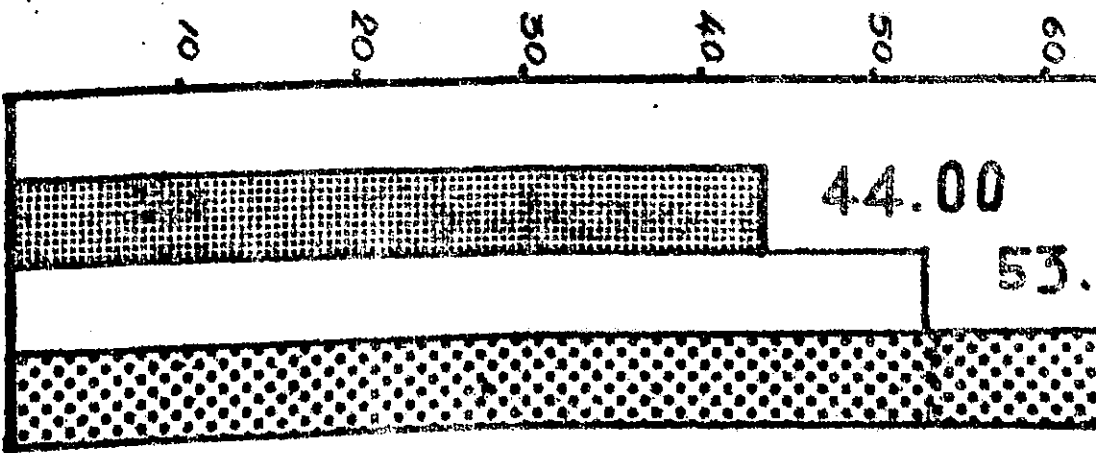
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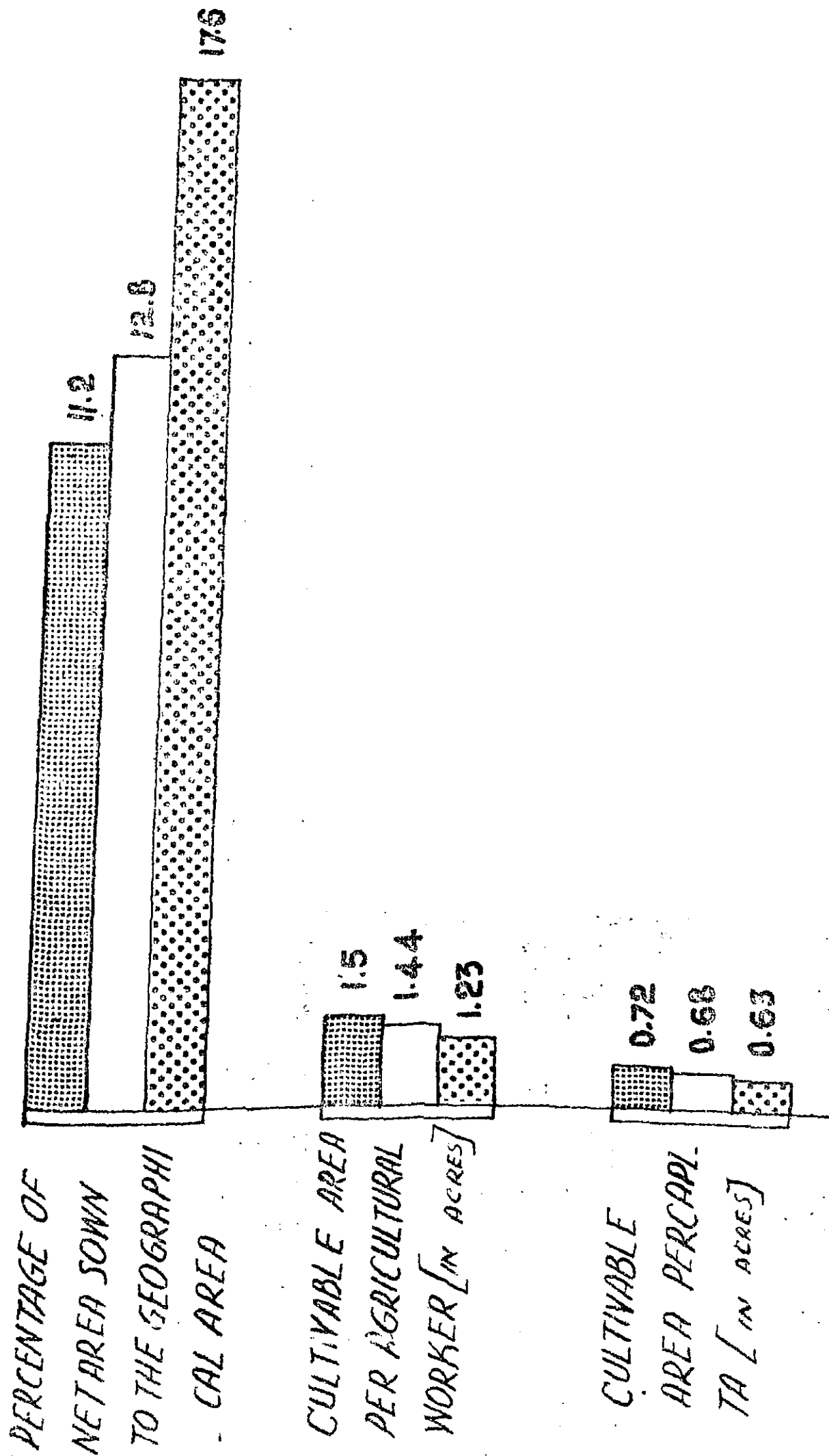


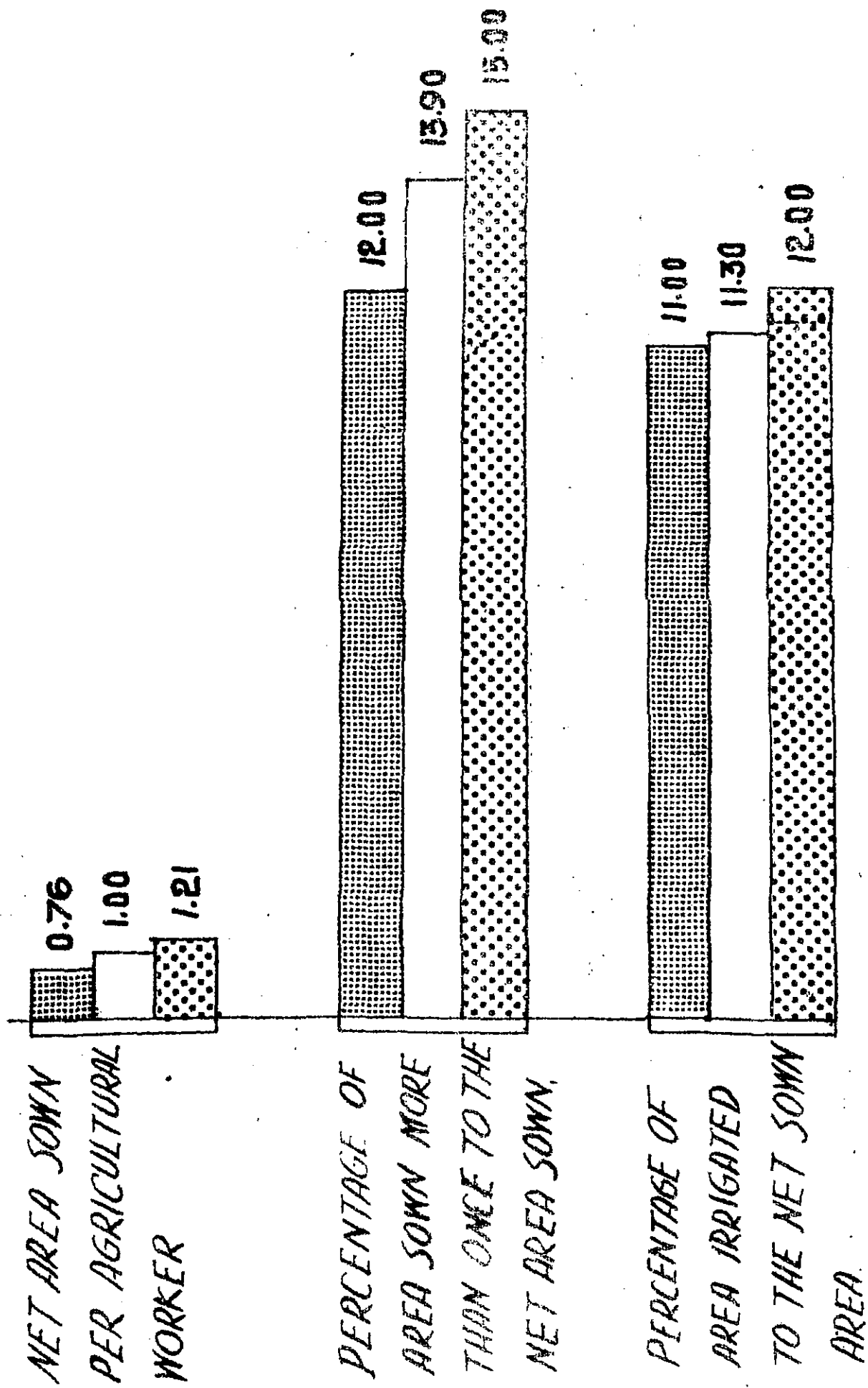
PER
1000 STUDENTS



DENSITY OF
POPULATION
PER SQ Km.







AGRICULTURE &
ANIMAL HUSBANDRY

22.62

729.94

MINOR IRRIGATION
AND POWER

17.44

55.49

150.37

COMMUNICATION

54.30

531.15

531.15

INDUSTRIES

7.78

32.72

61.30

EDUCATION

13.39

264.81

MEDICAL AND
HEALTH

12.92

67.40

144.85

The social service programmes like education and health are mainly evolved on the basis of minimum needs programmes especially for evolving programmes for fifth five year plan.

PROJECTIONS:

It has not been possible in this exercise to work out the output estimates in each sector on account of paucity of data pertaining to the project area. However, it has been tried to work out the expected output based on the data available. The programme estimation of agricultural output works out to four-fold (Gross) increase over a period of two decades. It is presumed that the estimated output may meet the food requirements of the population in the project area. Diagram

P R O G R A M M E SAGRICULTURE

Agriculture is the backbone of tribal economy as much as 94% of the tribal working population eke out their livelihood from agricultural sector. The dependence of tribals on agriculture sector is strikingly high in the project area when compared to the State percentage. Though Agriculture is the main stay, the income from this source is very low as the output per hectare and per agricultural worker is abnormally low. This is due to various factors like pressure of workers on land in the hilly

tracts, infertile soil, soil erosion, inadequate irrigation facilities and primitive technology of cultivation. Further wasteful practices like 'Podu' cultivation have contributed to the low agricultural output.

LAND USE:

The land use pattern is conditioned by the topographic, economic and institutional factors. The agricultural production is closely associated with land use pattern. As physiography varies from lower altitudes to higher altitudes, the land use pattern also varies. Hill ranges and forests influenced the land use pattern. The land use pattern analysis indicates that the net cropped area constitutes only 9.82% to the total geographical area and the total cropped area 11.2%. Area sown more than once is very low (14.4% to the net cropped area). The area under forests is very high as 74.49% of the total geographical area is under forests. The area sown more than once constitutes 14.4% to the net cropped area. The

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Block wise analysis of land use pattern brings into sharp focus certain important features in relation to topography. Chintapalli Block has the lowest percentage of net cropped area (3.4%) followed by Anantagiri (3.9%), while the highest percentage is found in Munchingiput (22.5%) and Araku (19.5%). The large extent of forest and hill ranges contributed most to such low percentage of cropped areas in Chintapalli and Anantagiri, while presence of extensive valleys endowed with good irrigation potential are responsible for the relatively higher percentage of cropped area in Araku and Munchingiput Blocks followed by Koyyuru. The altitude in Koyyuru Samithi varies from 1,000 ft. to 2,000 ft. and also has a large extent of levelled lands. The land utilisation particulars of the Project area are given in the following Table.

T A B L E - 12

LAND USE PARTICULARS IN THE PROJECT AREA

	Ananta- giri	Araku	Chinta- palli	G.Medu- gula	Koyyuru	Munch- ing- put.	Paderu	Peda- boyulu
1. Total Geographical Area	74,089	53,376	2,17,393	56,832	46,907	44,030	70,448	56,310
2. Area under Forestry	68,947	41,268	1,99,078	18,736	16,172	31,494	37,352	48,530
3. Area under Pasture	-	-	1,636	6,893	11,596	-	10,916	1,115
4. Land under Tree Crops and Groves	875	715	768	2,176	4,721	270	338	975
5. Cultivable Waste-land	392	249	5,363	11,151	2,937	891	7,057	615
6. Other fallows	489	460	1,835	4,664	1,624	729	2,001	471
7. Current Fallows	492	264	1,304	5,745	1,719	857	2,256	424
8. Net area sown	2,894 (3.9%)	10,420 (19.5%)	7,409 (3.4%)	7,467 (13.1%)	8,138 (17.3%)	9,789 (22.2%)	10,528 (14.8%)	4,180 (7.4%)
9. Area sown more than once	1,699	2,645	1,113	NIL	1,743	1,107	300	180
10. Total Cropped Area.	4,593	13,065	8,522	7,467	9,881	10,896	10,828	4,360

LAND HOLDINGS:

The survey and settlement operations are not yet completed in the scheduled areas. As such, the extent of land is based on crude estimates. The per capita holding* works out to 0.59 acres in Paderu Taluk while in Chintapelli Taluk, it is 0.51 acres. The pressure of population on land in tribal areas works out at five persons per hectare of cropped area.

PRODUCTIVITY:

The productivity of land depends upon the various factors like topography, cropping pattern, soils, irrigation, inputs etc. The productivity of an area in tribal areas is low. The value of output per agricultural worker works out to Rs.102.72.

* Per Agricultural worker.

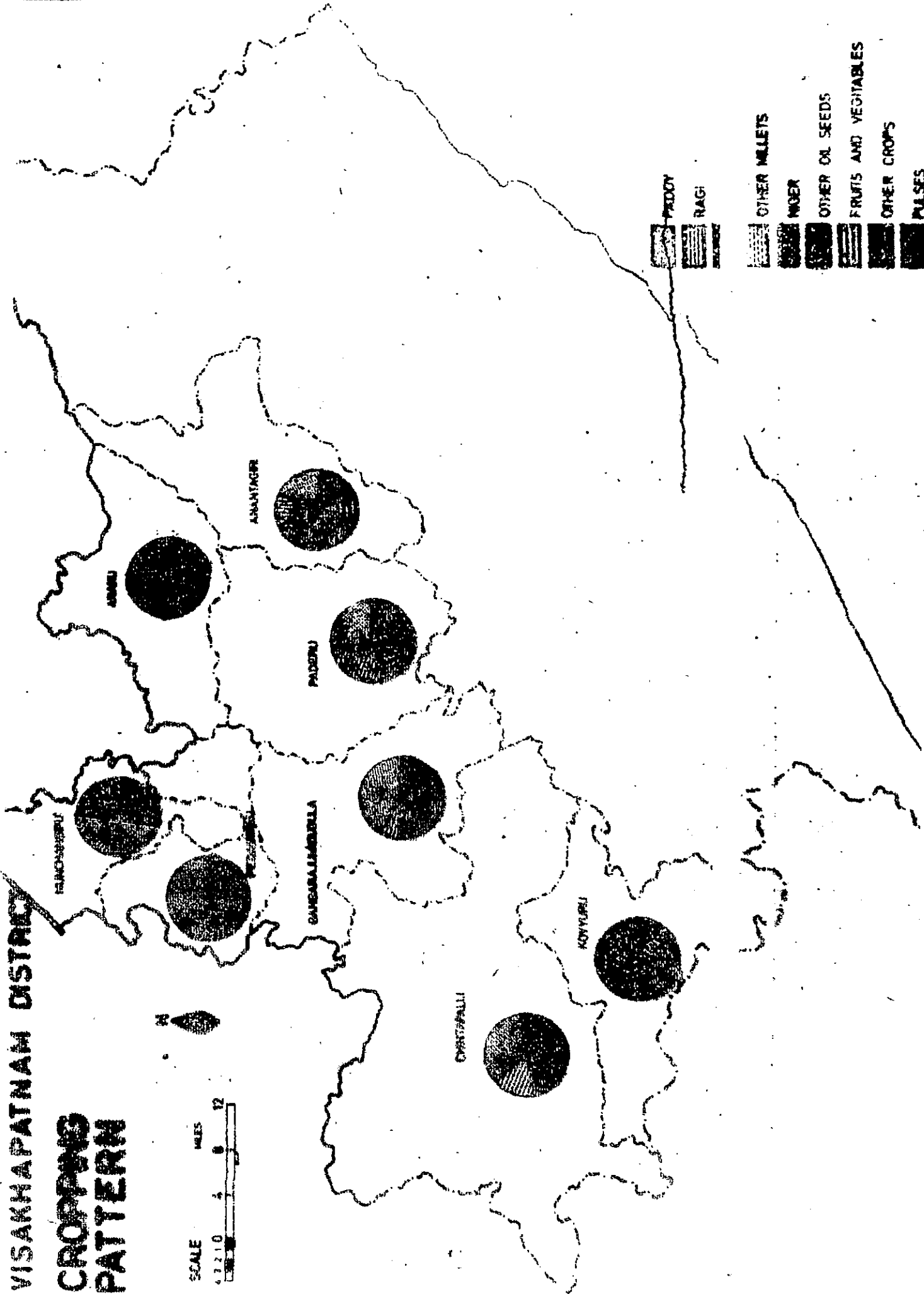
CROPPING PATTERN:

The cropping pattern in these hilly areas is characterised by predominance of food grain crops. The principal crops grown in these hilly areas are paddy, ragi, sama and bajra. Paddy is the predominant crop among cereals, while Ragi is a major crop among Millets. 19% of the cropped area is under oil seeds, while 4% of the area is under fruits and vegetables, 22% of the total cropped area is under miscellaneous crops.

Paddy is grown throughout the project area but it is predominant in Pedabayalu, G.Madugole, Chintapalli and Paderu. Jowar is grown mostly in Koyyuru, Anantagiri, Araku, Chintapalli and Pedabayalu, and it is absent in Paderu and Munchingput. Koyyuru recorded high percentage of area under Bajra, while Anantagiri and Chintapalli have a small percentage. Bajra cultivation is totally absent in Araku, G.Madugole, Paderu and Pedabayalu. As pointed out earlier, the next important food

VISAKHAPATNAM DISTRICT

CROPPING PATTERN



crop is Ragi. Ragi is more prevalent in Paderu, Munchingput, Chintapalli and Araku, while it is not grown in Pedabayalu. Maize is grown in Anantagiri, G.Madugole, Koyyuru, Munchingiput and Pedabayalu. Pulses like Black gram, Red gram and Green Gram are grown in almost all the Blocks. Sunflower is cultivated in Araku. Oil seeds like Niger and Mustard are mostly grown in Anantagiri, Araku, G.Madugole, Paderu and Pedabayalu. Sugarcane is also grown in Anantagiri, Chintapalli, Koyyuru, Munchingiput and Paderu. Fruits and vegetables are mostly grown in the Uppar Agency, Anantagiri, Chintapalli, Araku, Munchingput, G.Madugole and Paderu. The area under commercial crops is very limited in tribal areas.

The cropping pattern in the project area is furnished in Table-13. Map No.13/

T A B L E - 13

CROPPING PATTERN - 1972-73

CROP	Anantha- giri	Araku	Chinta- Palli	G.Madu- gulu	Keyyuru	Munchin- gurut	Paderu	Peda- bavelu
Paddy	21.07%	23.66%	34.78%	41.40%	12.19%	28.27%	29.95%	64.72%
Jowar	5.83%	6.13%	2.60%	1.70%	20.08%	0.11%	--	6.12%
Bajra	0.27%	--	0.70%	--	14.95%	0.01%	--	--
Ragi	15.21%	22.01%	18.27%	8.04%	2.58%	24.60%	33.02%	--
Maize	10.19%	--	--	9.46%	1.44%	4.80%	--	12.62%
Sama	2.29%	11.06%	--	--	--	15.87%	--	--
Other Cereals	--	6.06%	12.69%	--	7.10%	--	14.33%	3.78%
Blackgram	1.98%	--	--	--	24.10%	0.17%	0.09%	--
Redgram	--	0.97%	2.28%	--	1.09%	0.17%	0.88%	2.34%
Other Pulses	4.94%	1.72%	4.06%	2.06%	10.37%	--	1.20%	2.20%
Niger	15.31%	16.22%	--	5.21%	--	--	--	2.64%
Other Oilseeds	--	2.88%	6.47%	10.11%	0.11%	--	--	--
Fruits and Vegetables	9.67%	2.46%	7.29%	2.81%	1.26%	3.30%	2.68%	2.23%

Y I E L D:

The output per Hectare for most of the crops in the hilly regions is lower than the state average as is evident from the crop-wise yield rates. The per hectare yield of certain major crops is given below:

Paddy	..	10	quintals
Ragi	..	5	"
Maize	..	5	"
Sama	..	5	"
Jowar	..	5	"
Niger	..	3	"
Redgram	..	5	"
Black Gram	..	5	"
Mustard	..	3	"

The poor yield rate is attributed to many factors like soil erosion, poor soil contents, cultural practices, meagre irrigation facilities, primitive technology etc.

S O I L S:

The soils in these hilly regions belong to Red loamy type and of poor quality. The soils in Chintapalli Block belong to Red Ferruginous, while patches of black loamy soils are also met with

in Devarapally, Chintapalli and Tajangi valleys. In Srungavarapu Kota Taluk soils are reddish and brownish coloured clay loams with gravelly patches. The carbon content of soils vary from low to high percentage. Similarly the phosphate content differ in degrees ranging from low to high percentage.

SOIL NUTRITION:

The soil in the project area is more hungry than thirsty. The continued and indiscriminate use of land for the last several centuries has drained of its essential nutrients and it is one of main causes for low agricultural yield. Farm yard Manure is used only in plots of settled cultivation. Rought calculations show that two and half pairs of bullocks(animals) can provide the requisite manure for one hectare of land provided the entire dung is used for the purpose. In the project area, on an average, there are 27,600 animals per 100 Sq.K.Ms. However, the entire quantity of the dung even on this basis is not

available for manurial purposes. Due to lack of tradition of stall feeding, the cattle mostly live in the nearby forest area for grazing. Proper care is not taken to preserve the dung for manurial purposes. The night dropping of the cattle in the backyard are largely converted into fuel, thus leaving very little of the dung for the manurial purposes.

Green manure which could be another source for soil nutrition is practised only marginally in the project area. Its contribution to soil nutrition is negligible.

The use of chemical fertilisers has in the recent past become popular in the irrigated fields of the project area. However, due to lack of scientific knowledge, the use of fertilisers is indiscriminate and erratic. The soils in the project area need Nitrogenous and Phosphatic fertilisers. Optimum use of these fertilisers should be preceded by soil analysis and intensive extension work.

SOIL EROSION:

Soil erosion in the hilly areas poses a serious threat to cultivation. Due to high elevation, steep slopes and heavy rainfall, erosion is very severe which results in removal of fertile top soil and soluble salts. Further it also washes away the manures and fertilisers. This erosion also leads to silting of river basins like Machkund and Sileru. Deforestation also contributes to high incidence of soil erosion. Further Podu cultivation aggravates the situation.

In the project area many perennial hill streams and rivers carry lots of silt and flow down at great velocity. Some times changing their course and eroding soft layers of earth in their course. This situation is very acute due to denudation of forests especially near the source of rivers and streams. This has also contributed to gradual decline of rainfall. The rains received in those areas instead of percolating into the ground flow off and excavate for themselves deep ravines, furrows and gullies and carry large quantity of

debris in the process. With the result, long sheets of sandy infertile soils or rocky beds remain while top fertile soil gets washed away.

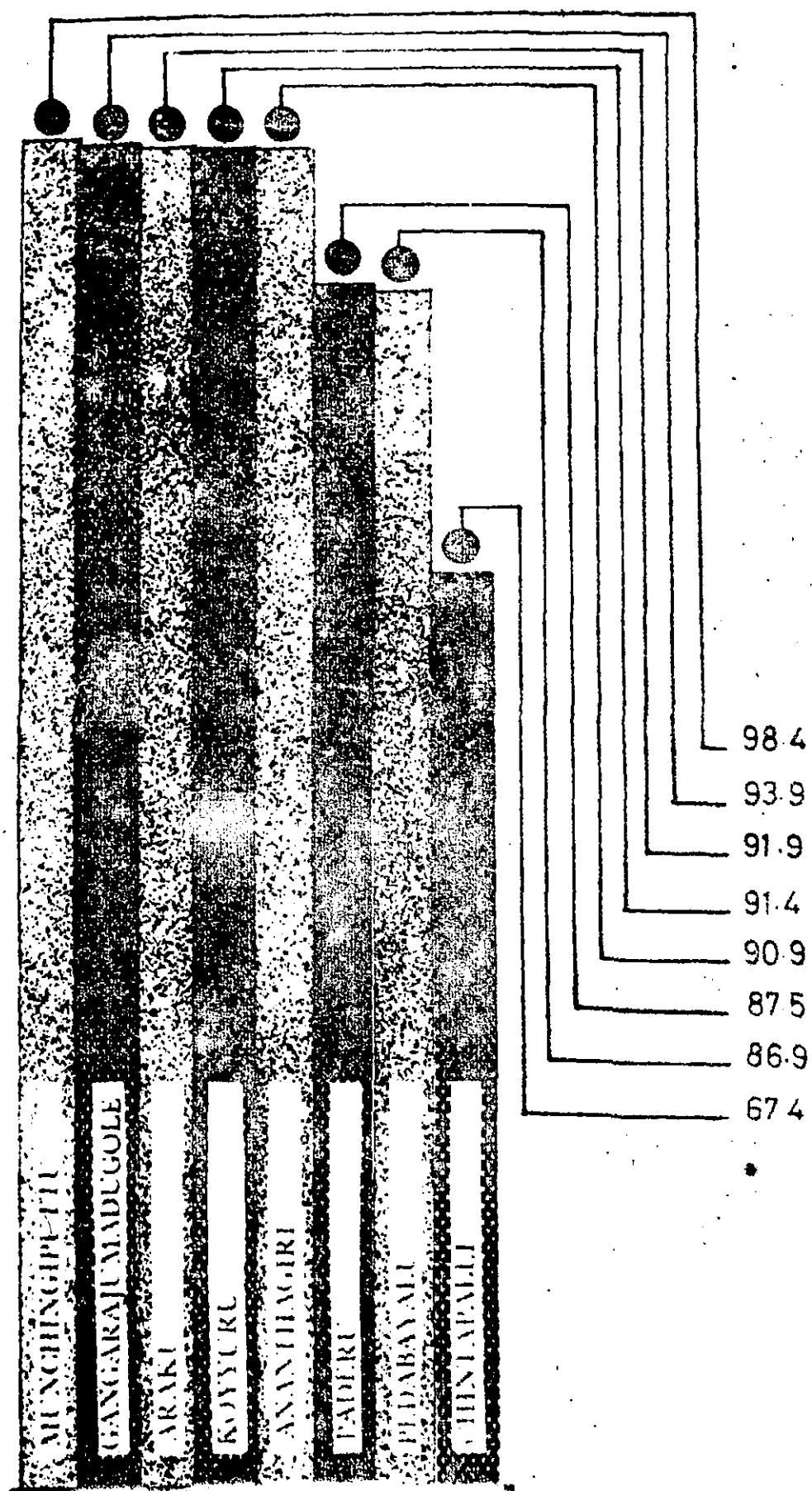
Three types of soil erosions are found in the hill areas viz., Sheet erosion, Gully erosion and land slides and stream bank cutting. High hill tops without forest areas are exposed to sheet erosion, while the low lying cultivated fields suffer from severe type of gully erosion. The torrential rains give scope to excessive run of water which leads to gully formation. Due to the exposed nature of the soil, -these gullies thus formed get expanded and give raise to new gullies. Some gullies become streams and soil erosion takes place through bank cutting. Gully erosion is spectacular while sheet erosion is dangerous and insidious. Stream bank cutting erosion is found almost along the perennial rivers flowing through the hilly tracts.

Out of 2,677 Sq.K.Ms of scheduled areas of Visakhapatnam district, 1,597.95 Sq.K.Ms of area is exposed to soil erosion. Large portion of area lying in Machkund basin is exposed to severe type of soil erosion. To prevent soil erosion, especially in Machkund basin, soil conservation scheme was taken up in the tribal areas. So far an amount of Rs.153.02 lakhs was spent on soil conservation works like bunding, bench terracing, spill ways, rock fill dams, stone checks, earthen checks and stone terracing etc. Besides a Pilot demonstration scheme is also taken up for preventing soil erosion and also to wean away the tribals from 'Podu' cultivation.

IRRIGATION:

Inadequate irrigation is one of the major constraints for remunerative crop pattern and for achieving higher yields. There is a heavy dependance on rainfed crops both in lower and upper agency areas. The crops suffer from inadequate irrigation facilities. This is due to absence of assured and properly harnessed water resources.

RAIN FED AREA (1972-73)



T.D. BLOCKS

Another important factor is that though many major rivers of the District raise and flow through these tribal areas, none of them irrigate the tribal fields. This is due to natural disadvantage in the hilly areas as most of them could be tapped for irrigation purposes in their reaches only.

Tanks and hill streams are the main sources of irrigation in the tribal areas as 75.9% of the irrigated area gets water from hill streams while 24.1% is from tanks. As indicated earlier, the scheduled areas have no major and medium irrigation projects. The low percentage of irrigated area is due to the fact that major portion of the scheduled areas is situated at higher altitudes with no scope for getting water either from rivers or from canal system Map No.14

TRANSPORT AND MARKETING:





Scheduled areas suffer from highly inadequate transport and marketing facilities as they have no good net-work of roads and marketing centres. This is evident from the fact that the surfaced roads per 100 Sq.K.Ms. works out to 3.5 K.Ms. The agricultural produce and minor forest produce are marketed in traditional weekly marketing centres which are inadequate in number. Even Block is having 4 to 5 shandy centres. Due to poor transport and communication facilities, tribals are forced to dispose the agricultural produce even at low prices. Even the Headquarters of certain Blocks are not connected by all weather roads. The transport and marketing infrastructure is very inadequate in the hilly areas.

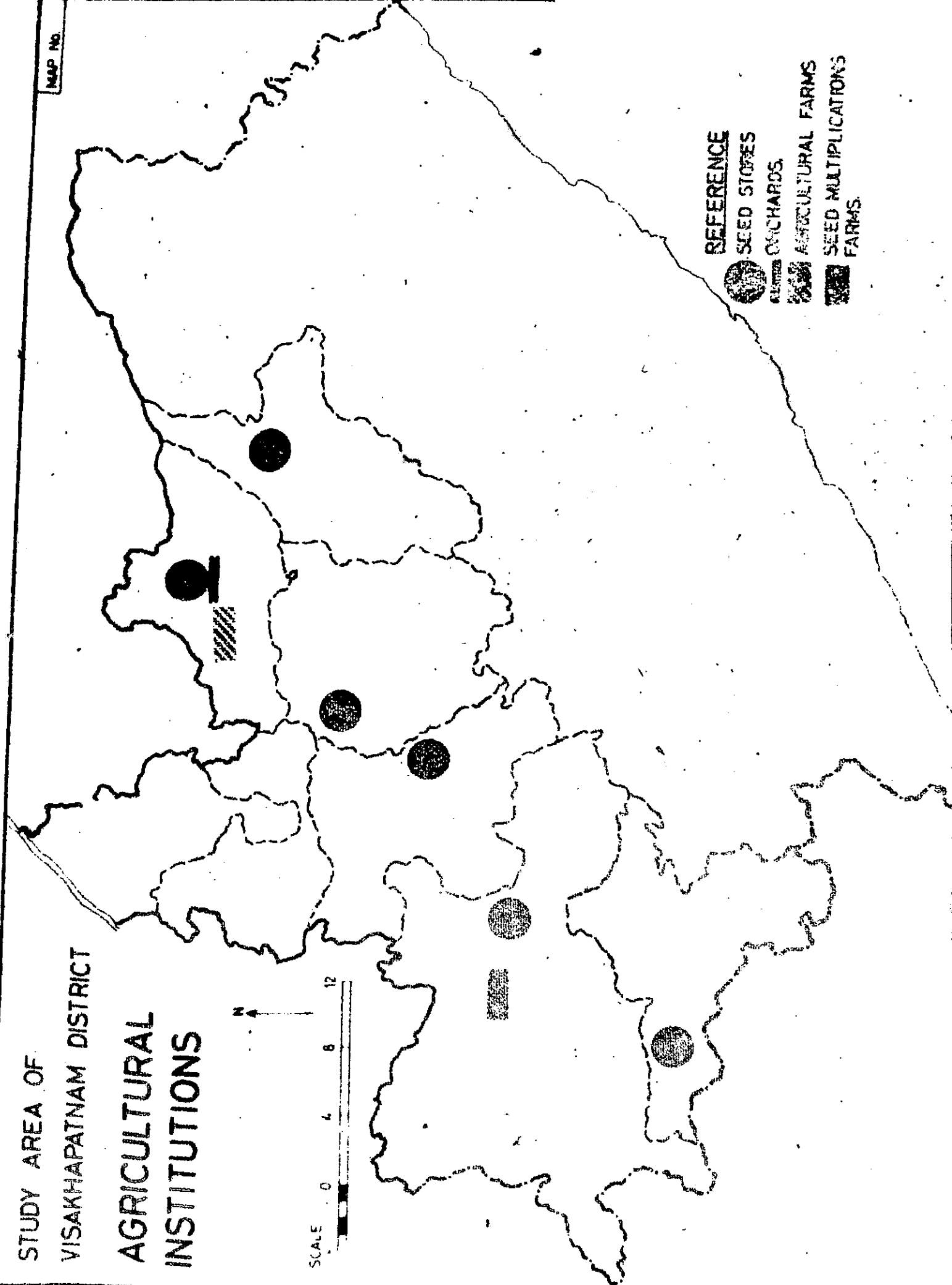
PRODUCTION:

The percentage of total population of Chintanalli and Paderu Taluks constitute 0.60% to the total population of the State. This population produced 0.12% of rice; 0.81% of Jowar; 1.5% of Ragi; 0.62% of Blackgram and 0.32% of Redgram of State total output of each crop.

STUDY AREA OF VISAKHAPATNAM DISTRICT AGRICULTURAL INSTITUTIONS



- REFERENCE**
-  SEED STORES
 -  ORCHARDS
 -  AGRICULTURAL FARMS
 -  SEED MULTIPLICATION FARMS



Agricultural produce like Paddy, Maize, Pulses, Oil seeds like Niger, Mustard, Ginger and Turmeric is sold in considerable quantities to the merchants and as well as to the Garigan Co-operative Corporation. Though the Paddy is not in a surplus production, it is sold in the harvesting season to defray their day to day monetary needs and in lieu of debts incurred to the merchants. Map No.15

STRATEGY FOR AGRICULTURAL DEVELOPMENT:

The formulation of the plan to the project area envisages a radical change in the content, form and approach from the present pattern. Various measures and schemes contained in the plan should flow from the understanding of the geographical and cultural setting so that their implementation can ensure optimum results. How best the available land can be made to generate maximum income in the light of the physiography, land use and cropping pattern should be the logical sequence in which the plan formulation exercise should be

carried out. The various steps involved in such a plan procedure are outlined below:

Step - I

Salient features of the economy of the Project area are highlighted. Population density, working force and its occupational distribution, climate, rainfall, drainage, gradient, altitude, soil characteristics, transport network, irrigation potentialities etc., are detailed. The salient geographical features of the project area are depicted in maps.

Step - II

The existing land use pattern is studied to know the extent of land under forests, pastures, culturable waste and fallows and various categories of cropped area. As regards the forest not only the area but also the flora of the forest and their types are taken into consideration.

In case of culturable waste, it is necessary to find out the extent of waste lands and their

location. In order to fix up provision for reclamation of cultivable waste land the cost of reclamation is to be worked out. If the cost is prohibitive for some land and the heavy machinery is required for reclamation, low priority should be given to such lands. However, the other waste lands which can be reclaimed with relative ease and at low cost with the help of less sophisticated machinery will receive priority. Therefore it is proposed to establish one full fledged Land Development Unit exclusively for the project period to bring as much cultivable waste land as possible under cultivation in a phased programme. As the land is state owned, the reclamation of land is proposed to be undertaken at Government cost. The fully developed land will be distributed among the landless tribals. The lands under old and current fallows may also be brought under cultivation. After estimating the total extent of culturable land, fallows, and pastures, cropping pattern in these reclaimed lands must be planned taking into consideration the soil, gradient and climate of the area.

Thus after bringing this land under cultivation, the increase in the net sown area to the total cropped area must be estimated. Another important step is to collect information on the extent of land subjected to soil erosion hazards. After estimating the magnitude of erosion and the extent of the area needing soil conservation, programme should be chalked out for effective soil conservation measures.

Step - III

Detailed information about the available irrigation potential from various sources for different crop seasons should be marshalled. Most of the irrigation potential may be available for only one season while from other sources the water may be available through out the year but not in the same quantity. It is therefore necessary to have as accurate an inventory of irrigation potential as possible and compare it with existing level of utilisation. Similarly account should be taken of the likely additions to the irrigation potential arising out of the recently completed spill over schemes and

of those likely to be completed during the plan period. Having done this, it is necessary to estimate the quantum of under-utilised irrigation potential, to ascertain the precise reason for its under-utilization and to give high priority for reduction in the gap between created potential and its utilization. This will increase the productivity with minimum additional cost in a relative sense. Another step in this irrigation planning is to estimate the irrigation potential from minor Irrigation sources i.e., Wells, small tanks, springs etc. This involves survey of both surface and underground water resources. However the data on underground water resources are not readily available for the project area as ground water survey is underway.

Step - IV:

This step involves the consideration of selection of crops in each crop season and their scientific rotation. The changes in cropping pattern must be effected keeping in view the technical feasibility and the economic profitability of various

crops, and the preference of the tribal farmers as far as possible. The farmer could be determined by knowing the soil and the climatic conditions and the latter by the demand for the various farm products as reflected in the relative values of various crops over a comparative period of time. This must be preceded by scientific soil survey in order to indicate the suitability of various soils for different crops and also to enable the planners to estimate the fertiliser and manurial requirements to cater to soil nutrition. Since the cropping pattern largely depends upon the irrigation facilities, the pattern will have to be separately formulated. From economic profitability point of view the selection of crops should mainly be governed by the object of maximising the farm income. For determining the profitability of different crops the comparison should be made not merely for individual crops but for combination of crops over a period of time. The index of the relative profitability of crops could best be the net value per hectare and that should be the only guiding principle in choosing

the remunerative crops. However, since data on the cost of cultivation of different crops is not easily available, the gross value may be used to judge the profitability of different crops in a mean time. Once the value of the crops is known the low value crops could be substituted by high value crops in the project period. The cropping pattern should be examined for each season rather than the year as a whole; while for each crop season it should be seen as to what proportion of the net sown area is utilised. It is found that considerable part of the cultivated land is not used for various reasons. Hence for each crop season the extent of under utilisation should be determined and the methods devised to reduce it. Some methods may range from early sowing to introduction of high yielding varieties.

Step - V

The next step is to examine the need for various improved inputs. The improved inputs, viz.,

fertilisers, seeds, pesticides and improved farm implements, are essential to achieve higher agricultural yields of various crops. In view of the overall shortage for many of these inputs especially fertilisers, proper utilisation of these inputs must be ensured. The tribal farmers with irrigated fields are becoming aware of the use of chemical fertilisers and high yielding variety of seeds and plant protection measures. The demand for these improved inputs is at present confined to the progressive farmers with irrigated fields. It is therefore necessary to propagate the use of these improved inputs among the tribal farmers. The extension agents have to play a very effective role in convincing the tribal farmers of the utility of these inputs. Steps must also be taken to ensure the timely supply of various inputs.

Following the methods enunciated above under the strategy for agricultural development, a perspective plan for a period of 20 years is formulated in the following pages:

CROPPING PATTERN:

The existing cropping pattern in the project area is the cumulative result of various factors like agro-climatic conditions, dietary habits of the people, irrigation facilities, relative prices of crop yields etc. The prevailing cropping pattern of the project area reflects the level of attainment of the agricultural technology of the project population. The low agricultural output marked by pronounced shortages of food grains in the project area is a sure symptom of unprofitability of the existing cropping pattern. A radical change in cropping pattern is therefore sine-que-non for stepping up agricultural production.

Significant increase in agricultural production is now possible with the adoption of recent advances in agricultural technology. Agricultural production is proposed to be stepped up in the project area by introducing qualitative and quantitative shifts in the cropping pattern.

Quantitative Shift:

Through quantitative shift additional area can be brought under cultivation by (1) increasing not cropped area; and (2) total cropped area.

A look at the land use pattern reveals that there is fairly large area under cultivable waste and various types of fallows and pastures. The following table (No.14) indicates the extent of area available for cultivation in various Tribal Development Blocks of the Project area:

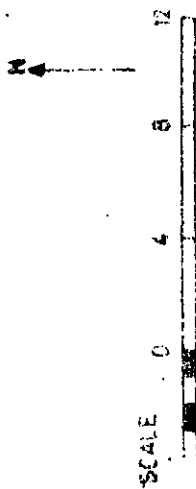
T A B L E -- 14

AREA AVAILABLE FOR CULTIVATION

Block	Cultivable waste	(in Hectares)		
		Area under Pastures	Old Fallows	Current Fallows
1. Anantagiri	392	..	489	492
2. Araku	249	..	460	264
3. Chintapalli	5,363	4,636	1,835	1,304
4. G. Madugula	11,151	6,893	4,664	5,745
5. Koyyuru	2,937	11,596	1,624	1,719
6. Munchinemat	891	..	729	859
7. Paderu	7,057	10,916	2,001	2,256
8. Pedabayalu	615	1,115	471	424
Total	28,655	32,156	12,273	13,064

VISAKHAPATNAM DISTRICT

AGRICULTURAL INSTITUTIONS



REFERENCE



SEED STORES



ORCHARDS



AGRICULTURAL FARMS



SEED MULTIPLICATIONS FARMS

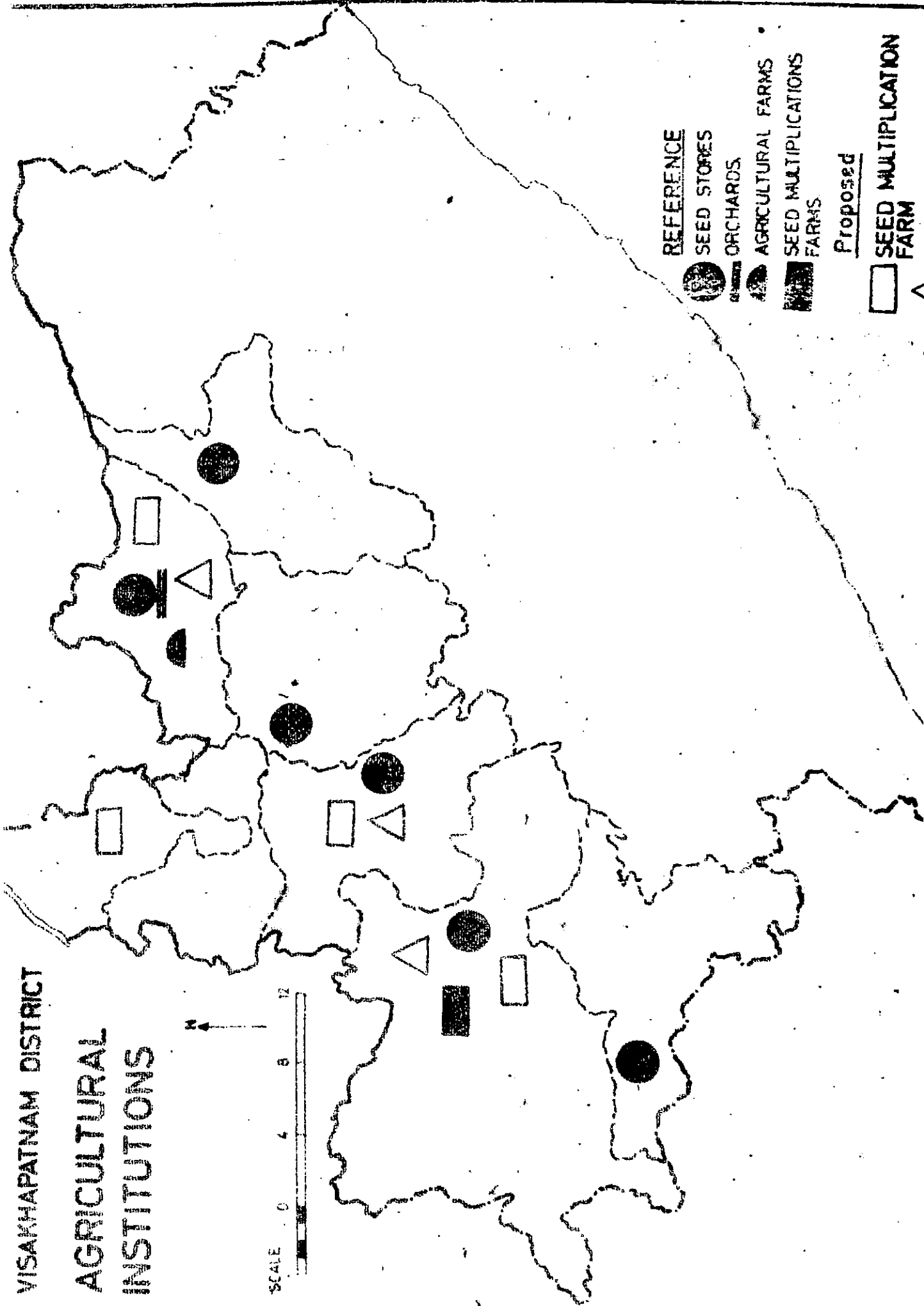
Proposed



SEED MULTIPLICATION FARM



LAND DEVELOPMENT



Half of cultivable wasteland is proposed to be brought under plough in a phased programme after fully reclaiming the land. Land under various types of fallows could be gradually reduced with the adoption of proper crop rotation. With these two measures it is proposed to bring another 39,550 hectares of land under cultivation. This would increase the net cropped area by 51.1%. It is proposed to reclaim 39,550 hectares on a priority basis during the project period by establishing 3 Land development units at Paderu, Araku and Chintapalli. Map No.15(a)

Further there is scope for increasing the total cropped area. The total cropped area is 69,612 hectares in the project area. A study of the land use and cropping pattern uncovers a high percentage of under utilisation of the land due to very low intensity of cropping. In 1972-73, the utilisation of the area is as follows;

Not sown area	..	60,825 hectares
Area sown more than once	..	8,785 hectares
Total cropped area	..	69,612 hectares

The above area is utilised in the following manner:

Area under Annual Crops:

Sugar Cane	129 hectares
Area under single seasonal crop(Kharif)	60,696 hectares
Area under double crop (Kharif and Rabi)	8,785 hectares

If we deduct the area under sugarcane (Annual crop) and the area sown more than once from the net area sown, the area available for cultivation in any one season is 60,696 hectares. Hence the extent of under utilisation (of net area sown) is summarised in Table No.15

T A B L E - 15

AREA UNDER CULTIVATION(1972-73)

	Hectares	
	Kharif	Rabi
1.Total area available for cultivation	60,825	60,825
2.Area under Annual Crops	129	129
3.Area available for seasonal crops	60,696	60,696
4.Area actually under seasonal crops	60,696	8,785
5.Area not utilized
6.Percentage of gap	85.4%	

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4.Area actually under seasonal crops	60,696	8,785
5.Area not utilized
6.Percentage of gap	85.4%	

It is clear from the tables that as a result of low intensity of cropping the gap between land available and land utilised in the project area is very large (85.4%). It is possible to bridge the gap with full harnessing of the surface and underground water resources and introduction of early ripening varieties of species and dissemination of improved agronomic practices. With provision of aforementioned variables, it is anticipated that the total cropped area would increase from 69,612 hectares to 1,09,162 hectares as a result of quantitative shift described in Table No.16.

T A B L E -- 16

B l o c k		LAND DEVELOPMENT -- AGRICULTURAL PLAN				TOTAL
		V PLAN	VI PLAN	VII PLAN	VIII PLAN	
1. Ananta-	Hers.	365	365	365	365	1460
Giri	Rs.	5.47	5.47	5.47	5.47	21.28
2. Araku	Hers.	300	300	300	300	1200
	Rs.	4.50	4.50	4.50	4.50	18.00
3. Chinta-	Hers.	2125	2125	2125	2125	8500
palli	Rs.	31.87	31.87	31.87	31.87	127.48
4. G. Madu-	Hers.	2125	2125	2125	2125	8500
Golu	Rs.	31.87	31.87	31.87	31.87	127.48
5. Koyyuru	Hers.	1325	1325	1325	1325	5300
	Rs.	19.87	19.87	19.87	19.87	79.48
6. Munchin-	Hers.	625	625	625	625	2500
Giput	Rs.	9.37	9.37	9.37	9.37	37.48
7. Paderu	Hers.	2625	2625	2625	2625	10500
	Rs.	39.37	39.37	39.37	39.37	157.48
8. Peda-	Hers.	400	400	400	400	1600
bayalu	Rs.	6.00	6.00	6.00	6.00	24.00

Qualitative Shift:

The qualitative shift in cropping pattern aims at maximum production for a unit area per unit time, per unit of water consumed. For this purpose the concept of economic-cum-ecological cafeteria is employed. In the Tribal societies, social, economic and institutional factors also determine the cropping pattern. Besides the change in cropping pattern in the project area should also take into consideration the nutritional requirements of the population.

The cropping pattern should first be adapted to the physical conditions. A land complex approach for evolving suitable cropping pattern employs factors related to surface and soil. The existing cropping pattern which is the cumulative result of the agro climatic condition and dietary habits of the people. Before envisaging qualitative shift in the cropping pattern, the existing cropping should necessarily be taken into consideration. The block-wise cropping pattern of the project area is vivid from the following table No.17

T A B L E -- 17
CROPPING PATTERN - EXISTING

CROP	ANANTHAGIRI				ARAKU				CHINTAPALLI				G.MADUGUTU			
	1968	1972	Incr- eased or decrea-	sed(4)	1968	1972	Increa- ased or decrea-	sed(7)	1968	1972	Increa- sed or decrea-	sed(10)	1968	1972	Increa- sed or decrea-	sed(13)
(1)	(2)	(3)		(4)	(5)	(6)		(7)	(8)	(9)		(10)	(11)	(12)		(13)
1. Paddy	21.27	21.07	-0.30		22.04	23.66	+0.68		34.08	34.78	+0.70		41.43	41.40	-0.30	
2. Jowar	9.59	5.83	-3.76		6.02	6.13	+0.11		3.07	2.60	-0.47		4.49	1.70	-2.79	
3. Ragi	12.28	15.21	+2.93		20.33	22.01	+1.68		20.27	18.07	-2.20		9.17	8.04	-1.13	
4. Bajra	0.52	0.87	+0.35		--	--	--		0.80	0.70	-0.10		--	--	--	
5. Maize	18.25	10.18	-8.07		--	--	--		--	--	--		10.60	9.46	-1.14	
6. Sama	2.11	2.28	-0.17		18.17	11.06	-7.11		--	--	--		--	--	--	
7. Blackgram	1.59	1.98	+0.39		--	--	--		--	--	--		--	--	--	
8. Redgram	--	--	--		0.90	0.97	+0.07		3.29	2.28	-1.01		--	--	--	
9. Other Pulses	4.68	5.94	+1.08		0.88	1.72	+0.84		2.68	4.06	+1.38		2.83	2.06	-0.77	
10. Niger	18.00	15.31	-3.31		15.70	16.22	+0.52		--	--	--		4.40	5.21	+0.81	
11. Ground Nut	0.43	0.72	-0.29		0.16	0.26	+0.10		0.53	0.47	-0.06		--	--	--	
12. Castor	0.35	--	-0.35		--	--	--		1.08	0.48	-0.60		9.92	13.34	+3.42	
13. Other Oil Seeds	--	--	--		3.75	2.88	+0.87		4.89	6.47	+2.42		8.87	10.11	+1.24	
14. Sugar Cane	0.17	0.38	+0.21		--	--	--		0.11	0.23	+0.12		--	--	--	
15. Fruits & Vegetables	4.09	9.67	+5.58		2.18	2.46	+0.28		7.78	7.29	-0.49		2.67	2.81	+0.14	

(contd....)

(Table-17 Contd...)

CROP	KOYYURU				MUNCHINGITUR				PADERU				PEDABAYALU			
	1968	1972	Increa-	sed or	1968	1972	Increa-	sed or	1968	1972	Increa-	sed or	1968	1972	Increa-	sed or
(1)	(14)	(15)	(16)	(15)	(17)	(18)	(19)	(19)	(20)	(21)	(22)	(22)	(23)	(24)	(25)	(25)
1. Paddy	15.20	12.19	-3.01		23.33	23.27	-0.06		30.93	20.55	-9.98		68.22	61.72	-3.50	
2. Jowar	12.09	20.08	+7.99		0.04	0.11	+0.07		-	-	-		4.93	6.12	+1.12	
3. Ragi	1.09	2.53	+1.49		24.61	24.60	-0.01		33.85	33.02	-0.83		-	-	-	
4. Bajra	16.03	14.95	-1.08		-	0.01	+0.01		-	-	-		-	-	-	
5. Maize	2.96	1.44	-1.52		3.31	4.80	+1.49		-	-	-		8.07	12.62	+4.55	
6. Sana	-	-	-		17.85	15.87	-1.97		-	-	-		-	-	-	
7. Blackgram	24.56	24.10	-0.46		0.15	0.17	+0.02		0.11	0.09	-0.02		-	-	-	
8. Redgram	0.56	1.00	+0.44		0.12	0.17	+0.05		1.54	0.88	-0.66		3.70	2.34	-1.36	
9. Other pulses	1.26	1.03	-0.23		-	-	-		1.85	1.20	-0.65		2.41	2.20	-0.21	
10. Niger	-	-	-		-	-	-		15.85	13.64	-2.21		3.14	2.64	-0.50	
11. Ground Nut	13.44	8.33	-5.11		0.01	0.36	+0.35		0.17	0.19	+0.92		0.71	0.35	-0.36	
12. Castor	-	-	-		0.03	0.54	+0.51		0.36	0.39	+0.03		1.88	1.22	-0.66	
13. Other Oil Seeds	0.19	0.11	-0.08		-	-	-		-	-	-		-	-	-	
14. Sugar Cane	0.23	0.19	-0.04		0.14	0.13	-0.01		0.11	0.12	+0.01		-	-	-	
15. Fruits & Vegetables	0.88	1.26	+0.38		2.39	3.30	+0.91		2.59	2.68	+0.09		1.88	2.29	+0.41	

It is evident from the above table that the Paddy is the principal crop in all the 8 Blocks. Pedabayalu and Gangarajumadugulu have recorded largest area under paddy cultivation. Ragi is another important food crop cultivated all over the project area and it occupies second place among food crops. Jowar, Bajra, Maize and Sama are the other millet crops grown in the Project area.

There have been modest fluctuations in the areas under various crops which may be attributed to climatic factors rather than any other considerations. Even though various attempts have been made in the past to effect change in the cropping pattern by introducing various profitable crops like Potato, Coffee etc., there has not been perceptible change in the cropping pattern. However the high yielding varieties are being introduced in the irrigated areas in the recent past. Apart from this there has not been perceptible horizontal or vertical shift in the cropping pattern.

The cropping pattern determines the dietary habits of the people and vice versa. The diet

of the people is reflected in the nutrition status of the people. Nutrition is sine-quo-non for the physical well being of the people, without which development has no meaning. Qualitative shift should not therefore lose sight of nutritional requirements of the population. Nutritional aspect assumes importance in the project area where the agriculture is mainly subsistence oriented and transport and marketing are not developed to facilitate import of food items and where the monetary sector has not very well developed to facilitate trade. Low purchasing power of the tribals and heavy over head costs on imports will restrict the quantum of imports to the minimal level. Due weightage is therefore given for the nutritional aspects of crops while introducing qualitative shift in the cropping pattern.

A survey was conducted in the project area to determine the nutrition status of the tribal groups. The following Table (No.18) brings into sharp focus the deficiencies under various food items consumed by the project population.

T A B L E - 18

NUTRITION STATUS

Food	R.D.A	Mean intake	Deficit or surplus	% of deficit or surplus
Cereals (g)	475+100	513+5.17	56.83	9.9
Pulses (g)	65	23.09	-41.91	-64.47
Leafy Vegetables (g)	125	0.27	-124.73	-99.78
Vegetables (g)	75	44.80	- 30.20	-40.26
Fruits (g)	30	18.20	- 11.80	-39.33
Milk and Milk Products (ml)	100	4.56	- 95.44	-95.44
Fats & Oils (g)	40	0.53	- 39.47	-98.67
Sugar & Jaggery (g)	40	9.40	- 30.60	-76.50
Meat & fish (g)	30	7.66	- 22.34	-74.46
Spices (g)	-	23.23	-	-

It is revealing that the mean intake of the tribals even in a surplus season (Tamarind season) is far below the recommended Dosage. The deficiencies are more pronounced in the intake of pulses, milk and milk products, fats and oils. They are also deficient

in protein rich foods like meat and fish and other nutrients like leafy vegetables and vegetables, sugar and jaggery and fruits. The deficiencies in vegetable and leafy vegetable consumption is seasonal as these items are not locally grown during summer. The following table (No.19) reveals the nutrient intake of the tribal population.

T A B L E - 19
NUTRIENT INTAKE - VISAKHAPATNAM AGENCY

Nutrients		Mean intake	R.D.A	Deficit or surplus	% deficit or surplus
Protein	(g)	52.00	55.00	- 3.00	- 5.45
Fat	(g)	9.00	40.00	- 31.00	- 77.50
Calories	(c)	1988.00	2800.00	-812.00	- 29.00
Calcium	(mg)	1726	500	+1226	+245.20
Iron	(mg)	33.00	20.00	+ 13.00	+ 65.00
Vitamin-A	(IU)	547	3000	-2453	- 81.76
Thiamine	(mg)	1.80	1.40	+ 0.40	+ 28.57
Riboflavin	(mg)	0.69	1.50	- 0.81	- 54.00
Nicotinic Acid	(mg)	9.60	19.00	- 9.40	- 49.47
Vitamin-C	(mg)	42.00	50.00	- 8.00	- 16.00

The tribals of the project area are deficient in essential nutrients like fats, protein, all vitamins except Thiamine. However, the Calcium and Iron intake of the tribals is adequate which is mainly attributed to the consumption of Ragi and other millets. But on the whole, there is a general deficiency for hardworking tribal leads to pronounced undernutrition in the long run. The protein deficiency will have to be made good to a large extent by increasing the intake of pulses. The calorie deficiency is mainly attributed to overall shortage of food production. The present production of food grains in the project area could only meet 52% of the requirement. The deficit has to be met by sustained efforts to increase production by introducing the high yielding varieties of food crops besides increasing net sown area.

The diets require improvement in the intake of pulses, milk and milk products and oils. The consumption as well as production of the pulses in the project area are far short of the requirements.

Hence immediate attention should be given for introducing several high yielding varieties of pulses. Soya Bean cultivation in the project area can prove to be a boon as it can not only solve the deficiencies in pulse production, but also supply the nutrients like Proteins, Fats, Vitamin A and D which tribals very badly need. It is successfully cultivated in the project area in a limited scale. Production of vegetables is now seasonal in the project area, leaving long spells of vegetable deficiencies in the diet of the project population. This could be rectified by introducing perennial sources of vegetables and also cultivation of vegetables in all seasons on commercial lines. The traditional skill of tribes like Mali in the development of horticulture can be profitably utilized in the project area. The progressive Mali horticulturists in Munchingput area have achieved very good yield in the cultivation of various vegetables including exotic vegetables. This could attract other tribals also to adopt cultivation of various vegetable crops. The climate as well as the soils are conducive for development of horticulture.

The fruit intake of tribals will also have to be improved by encouraging plantations of various fruit plants like Papaya, Guava, and other perennial fruit crops besides the seasonal fruits like citrus, pine apple, jack and mango etc. The most conspicuous deficiency in the tribal food is fat. The edible oil production is far below the requirements in the project area. Niger and castor are at present the main sources of fat in the project area. But Niger is being sold out for non-edible purposes. Hence the area under High Yielding Oil seed crops has to be increased to meet the demand for oil seeds. Sun flower cultivation can be taken up on a large scale to meet the oil seed deficiency in the project area.

Quantitative and qualitative shift in cropping pattern for the project area indicated in the following pages is the end product of the integration of the following factors viz.,

1. Agro-climatic factors, (factors relating to surface and soil of the project area)
2. Technological factors (evolving of high yielding varieties and short duration varieties)

3. Irrigational potential
4. Nutritional requirements
5. State Policy; and
6. Human factors (Dietary habits, tastes etc.)

The new cropping pattern that would emerge in the project area in the wake of quantitative and qualitative shifts is given in the following Table.

T A B L E - 20
SUGGESTED CROPPING PATTERN

	1972-75 Area in Hectares	1994-95 Area in Hectares
Paddy	20,506	30,243
Ragi	12,459	21,191
Jowar	3,684	7,309
Bajra	1,571	5,196
Maize	2,387	6,012
Samei	3,294	5,107
	<u>43,501</u>	<u>69,951</u>
Pulses	5,153	12,591
Oil seeds	10,529	16,154
Fruits & Vegetables	2,485	5,000
Other Crops	6,544	5,466

It is obvious from the table that the area under paddy and Ragi is proposed to be increased sharply. Even though paddy is nutritionally not so rich as millets, the area under Paddy is proposed to be increased for two reasons (1) there have been various high yielding varieties of Paddy which have been successfully grown in the project area. There will therefore be little difficulty in increasing area under short duration and high yielding varieties, (2) The tribals attach prestige value to the consumption of rice and rice consumption has increased greatly in the recent past. Increase in the area under Paddy is however linked with increase in irrigated area. It is envisaged to bring the entire irrigated area under short duration and high yielding varieties of Paddy in a phased manner by the end of V Five Year Plan, Paddy, Jaya, IR.8, IR.29 and Coarse varieties are recommended for the project area as these are believed to withstand dry spells. However, in Munchingput, Pedabayalu, G.Madugula and Paderu where the paddies are subject to flood during mid monsoon, semi-tall high

yielding varieties like Jaganadh, Pankaj and Mashur in Kharif season. Ratna is recommended for late planting in rabi season in areas prone to dwindling of irrigation water in the latter half of crop so that it can overcome the severe fog and cold spell as well as the inadequate water supply.

Ragi is grown both under irrigated and rainfed conditions in the project area. Area under Ragi is also proposed to be increased in the project area. The preference for Ragi to other millets is due to the following considerations. (1) Ragi is extensively grown all over the project area and Ragi consumption is common to all ethnic groups, (2) Ragi is nutritionally very rich in high Calcium and iron status of the tribal food in the project area is mainly contributed by Ragi; and (3) There are many high yielding varieties of Ragi which can help step up output. The following varieties of high yielding Ragi are recommended for the project areas: AKP-2; VZM-1; Sarada (AKP-7) and VZM-2.

The first two varieties can be grown as Kharif crop. The short duration of AKP-2 can be successfully grown in the Paddy field before Paddy. While the VZM-1 is suitable for growing as main crop in the Kharif season, VZM-1 and Sarada are suitable in the project area for Rabi season. P-202 Ragi is a new improved variety which is suitable for the project area. VR.250-6 variety of Ragi which is known to have high nutritive value may also ^{be} experimented. All these varieties are high yielding varieties and average yield in the project area is expected to be about 10 quintals per hectare.

The area under other millets will also increase appreciably. The following high yielding varieties of Jowar, Maize, Bajra and Korra are recommended:

CROP	VARIETY	CROP SEASON	WATER SOURCE
1. Jowar	1. C.S.H-2	Kharif	Rainfed
	2. Swarna	Kharif Rabi	Rainfed Rainfed
2. Bajra	1. H.B-4	Kharif	Rainfed
		Rabi	Rainfed
3. Maize	1. Ganga Hybrid-3	Kharif	Rainfed
	2. Ganga Hybrid-3	Kharif	Rainfed
	3. Deccan Hybrid	Kharif	Rainfed
4. Kanna	1. Arjuna	Rabi	Irrigated
		Kharif	Rainfed.

There is also appreciable increases in the area under oil seeds and pulses which are vital for the physical well being of the project population whose diet is deficient in these essential nutrients. Under oil seeds sun flower can be grown in the project area. Sun flower has already been experimented successfully in the Visakhapatnam District. Niger cultivation will also receive adequate attention as it is not merely a source of oil for the project population but also a foreign exchange earner. Further it is grown in poor soils as well as in good fields in Rabi season. Ground nut and

sesamum can also be cultivated in the lower agency of Koyyuru Block.

Under pulses, Soya bean cultivation is recommended. Protein and fat rich Soya bean cultivation can prove to be a boon for the project population as it is an excellent source of protein fat and 'A' and 'D' Vitamins. Further Soya bean can be grown in the rice fallows without addition of fertilisers if the rice crop had received high dose of fertiliser. The following varieties of Soya bean are recommended:

1. Improved pelican
2. SO 14437
3. SO 7034
4. SO 39824

In the paddy fallows high yielding variety of greengram and blackgram can also be grown to boost up pulse production in the project area. The following high yielding varieties are recommended:

CROP	VARIETY
1. Greengram	1. Hybrid -45
	2. Pusa Baisakhi
	3. Kopergan
	4. Telisagan 781
2. Blackgram	1. T. 44 of W.P
	2. T. 9 of W.P

Redgram is at present cultivated as a mixed crop in 'podu' fields. Redgram variety grown in the project area is a local low yielding variety. This will be replaced with improved variety. Redgram can be successfully grown on the paddy field bunds in the valleys.

Introduction of legumes like improved velvet beans and adzuki bean in the 'Podu' field will not only reduce soil erosion but also supply nutritious pulses for the growers, excellent silage to their cattle and nourish the soil with green manuring. Further both these crops have high nutritive value and palatability and are especially suitable for hilly areas.

Area under horticulture and pomiculture is also proposed to be increased to meet the requirements of the project population. Under horticulture, high yielding varieties of vegetable crops like Brinjal, Bheedi, French beans, Tomato, bottle gourd, bitter gourd, Raddish, turnip, potato, carrot, knool, kol, cabbage and cawliflower are proposed to be cultivated both in the backyards and in the fields. By a well balanced crop rotation, it is proposed to cater to the local demand of vegetables throughout the year and also sell the marketable surplus at Visakhapatnam and other vegetable markets.

It is envisaged to raise fruit orchards on hill slopes. The pomicultural schemes are furnished separately under plantations.

The area under miscellaneous crops is proposed to be reduced from 6544 to 5236 hectares. Out of this, 500 hectares are earmarked for 'Pippallu' (Piper Langun). Pippallu is a medicinal herb and commands good market. It is also a

foreign exchange earner. Its cultivation is at present confined to Murchingsput and Reddabayalu Blocks. This can also be grown in Araku, G.Madugula and Paderu.

There is vast potential for Tapioca cultivation in the project area. The low gradient hill slopes with top soils of one foot depth can also be utilised for tapioca cultivation. Local variety of Tapioca is at present cultivated on a very limited scale in the project area. A few high yielding varieties of Tapioca are now available from central Tuber Crop Research Station, Trivandrum. It is envisaged to introduce these varieties on a fairly large scale in the project area and cover the remaining area (about 5,000 hectares) earmarked for miscellaneous crops in two years. Priority is given for Tapioca cultivation as it can not only be a cheap staple food for project population but also a raw material for tapioca based industries proposed to be set up at Araku, Paderu and Ghintapalli. If the yields are encouraging, this can even gradually replace the low yielding millets like Sama and Korra.

FERTILISERS AND OTHER IMPROVED INPUTS:

Increase in the consumption of fertilisers is one of the most effective means of increasing Agricultural production. In the recent past there has been perceptible increase in consumption of fertiliser which essentially resulted from adoption of fertiliser responsive seeds and a policy of supply of fertilizer at subsidised rates. However, it must be noted that the overall consumption rate is far below the state average. This slow rate of consumption is mainly attributed to lack of assured water supply and general poverty. It is proposed to increase the fertiliser consumption to 1,09,162 by the end of 1994-95. It is expected that there would be a gap between actual demand and supply. It is envisaged to diversify the efforts to raise various other Nitrogenous manures such as Farm Yard Manure and Green Manure to bridge the gap to some extent. The hill fields and the soil conservation plots can be profitably used for raising green manure crops while the cattle dung would be

used entirely for manurial purposes to meet the nutrition deficiencies of agricultural lands. Even-though the details of soil analysis are not available, it is known that the soils in the project area are deficient in Nitrogen and Phosphorus. The requirements of fertilisers during project period are given hereunder.

TABLE -- 21

BLOCK		AGRICULTURAL PLAN - FERTILIZERS (Rs. in lakhs)			
		V PLAN	VI PLAN	VII PLAN	VIII PLAN
1. Anantagiri	Hecs. Rs.	1510.75 2.26	3021.50 4.52	4532.25 6.78	6043 9.04
2. Araku	Hecs. Rs.	3566.25 5.34	7132.50 10.63	10691.75 16.02	14265 21.36
3. Chintapalli	Hecs. Rs.	4251.50 6.8	8511.00 12.76	11131.50 16.14	17022 25.52
4. G. Madugota	Hecs. Rs.	3991.75 6.98	7983.50 17.96	11975.25 26.94	15967 35.92
5. Koyyuru	Hecs. Rs.	3735.25 8.69	7590.50 17.38	11385.70 26.07	15181 34.76
6. Manchilingut	Hecs. Rs.	3349 8.02	6698 16.04	10047 24.06	13369 32.26
7. Paderu	Hecs. Rs.	5332 7.99	10664 15.98	15996 29.97	21328 31.96
8. Pedabayalu	Hecs. Rs.	1490 2.23	2980 4.46	4470 6.69	5960 8.92

The afore mentioned projections in regard to the consumption of the chemical fertilizers have been worked out taking the following two factors into consideration (1) Progressive increase in area under assured means of irrigation; and (2) The cropping pattern in general and the progressive increase under high yielding variety in particular. It would be however not possible to reach the projected level of consumption without the following infrastructural support.

1. Timely and adequate supply of fertilizers.
2. Availability of adequate credit.
3. Efficient distribution system with a net work of sale points and good storage facilities.
4. Vigorous extension agency constituted to propagation of fertilizers and improved inputs.
5. Adequate soil testing facilities along with an efficient fertiliser advisory service.

Since soil is the base on which different crops grow and draw nutrition for their development, it is essential to study them and determine their important characteristics. It is also very essential to classify the soils into defined types and

other classification units for establishing their exact nutritional capacity as well as their inter-relationship to management practices. Widest application of soil responsiveness should, therefore, be made to its management including fertilization, crop rotation, drainage, irrigation and in other improved practices. Soil types cause difference in the crop yields they will produce and crop varieties differ in their adaptability for different soil types. Similarly the fertilizer requirement will not be the same for all soil types. For instance, a crop may respond to 27.5 K.Gs of $P_2 O_5$ per hectare on particular soil type, while it does not respond till it is given 55 K.Gs of $P_2 O_5$ per hectare on another soil type. Further, application of certain fertilisers on certain soils does more harm than good. For instance, application of Ammonium Sulphate on acidic soils will do more harm than good to the soil than the application of Calcium Amonium Nitrate at similar dose. These illustrations drive home the need for a systematic soil survey in the project area on a priority basis as it is the pre-requisite for obtaining optimum

results from the use of improved inputs for stepping up agricultural productivity. A soil survey unit with a soil testing laboratory is proposed to be established at Paderu. The Unit is exclusively intended for conducting surveys in the various Tribal Development Blocks of the Project Area. The work of the soil survey would involve collection of soil samples as well as profile samples from each block and their analysis to identify soil types, their texture, and other characteristics which would help in determining their deficiencies and suitability for different crops.

S E E D S:

Quality Seed, especially the high yielding variety in accordance with the projected cropping pattern, will have to be procured, multiplied and distributed by the project authority in the project area.

In order to cater to the demand, the seeds are at present procured from various Governmental and Private sources. Owing to some administrative bottlenecks and transport problems, there has been considerable difficulty in ensuring timely supply of improved seeds in the project area. As the places are devoid of proper transport facilities and most of the land is rainfed, the farmers need the seeds well in advance. Timeliness can be ensured through the following methods.

- 1) Procurement of Foundation seed well in advance from the National Seeds Corporation and various Agricultural Research Stations in the State.
- 2) The foundation Seed of all major crops obtained from outside would have to be multiplied within the project area so as to ensure adequate supply of seed well in time. Seed can be multiplied partly at the Seed Multiplication Farms established within the Project area.

The requirement for supply of High Yielding variety seeds is determined in relation to the quantitative and qualitative shifts proposed in the agriculture sector of the project area. It is proposed to undertake the following seed distribution programme during the project period as described in table no.22.

T A B L E - 22
AGRICULTURAL PLAN -- SEED REQUIREMENTS
(Rs. in lakhs)

Block		V PLAN	VI PLAN	VII PLAN	VIII PLAN
1. Ananthagiri	Hecs.	1510.75	5021.50	3021.50	6043
	Rs.	1.51	3.02	4.53	6.04
2. Areru	Hecs.	3566.25	7132.50	10698.75	14269
	Rs.	4.25	8.51	12.76	17.02
3. Chintapalli	Hecs.	4255.50	8511.00	12766.50	17022
	Rs.	4.25	8.51	12.76	17.02
4. G. Madugolu	Hecs.	3991.75	7983.50	11975.25	15967
	Rs.	3.99	7.98	11.97	15.96
5. Koyyuru	Hecs.	3795.25	7590.50	11385.75	15131
	Rs.	3.79	7.59	11.38	15.18
6. Munchingiput	Hecs.	3349.00	6698.00	10047.00	13396
	Rs.	3.34	6.69	10.04	13.59
7. Paderu	Hecs.	5332.00	10664.00	15996.00	21.328
	Rs.	5.33	10.66	15.99	21.32
8. Pedabayalu	Hecs.	1490.00	2980.00	4470.00	5960
	Rs.	1.49	2.98	4.47	5.96

PLANT PROTECTION:

Plant protection has not received adequate attention in the project area. With increased investment per hectare and adoption of high yielding varieties which are more prone to pest and bacterial attack, plant protection measures are indispensable to ensure the successful implementation of new strategy. Plant protection measures must be taken both on prophylactic and curative basis. This requires effective dissemination of information and education of the tribal farmers on a very extensive basis. The plant protection programme in the project area should not only envisage supply of pesticides but also plant protective equipment to enable the tribals to undertake crop protection measures at subsidised rates.

The programme for plant protection in the project area during project period is given in table No.23.

TABLE - 23

PLANT PROTECTION PROGRAMMES

(Rs. in lakhs)

Scheme	V PLAN	VI PLAN	VII PLAN	VII PLAN
1) Plant Protection Measures (Hecs)	16,250	32,500	54,531	109.062
2) Purchase of Equipment.				
i) Hand dusters	2,200	2,200	2,200	2,200
Rupees	8.80	8.80	8.80	8.80
ii) Hand sprayers	1,000	2,000	3,000	4,000
Rupees.	2.75	5.50	8.25	11.00
3) Pesticides	16.25	32.50	54.53	109.06
4) Improved implements.	5.00	5.00	5.00	5.00

POMI CULTURE AND HORTICULTURE:

The climate, terrain and soil of the tribal areas of Visakhapatnam District are conducive for Pomiculture and Horticulture development. There is considerable area under citrus plantations especially of loose jacket orange and baterialan oranges in higher altitudes of Araku, Paderu and Chintapalli Blocks of the Project Area. The abundant yield of the citrus fruits in these Blocks fetch a sizeable income during the harvesting period of the tribals. There is excellent scope for further development of pomiculture especially the citrus fruits, pineapple and pomegranite, guava, mango etc. in the project area.

The high gradient and low gradient slopes are conducive for raising the fruit orchards which will not only fetch income to the tribals but also help arrest soil erosion. This programme can be taken up on the farms or even in the backyards to

the tribal homesteads. By encouraging pomiculture near the tribal homesteads, it will be possible to make maximum use of family labour and incidentally improve the income of the tribal family.

The project area also offers good scope for extensive cultivation of exotic vegetables like Cabbage, Cauli flower, Raddish, Potato, Tomato etc. There is a tribal community by name Mali who are adept in growing these vegetables. The past experience in Potato cultivation is also encouraging. If horticulture is taken up seriously in the project area, it is bound to provide a sizeable income to the tribals besides improving their vegetable consumption.

At present the fruits and vegetables produced in the project area are being sold at shandies at throw away prices due to lack of competitive markets within the project area and lack of institutional arrangements for sale of marketable surplus at better prices.

It is therefore essential to organise horticultural Cooperative Societies in all the Blocks with cold storage facilities for preserving marketable surplus in vegetables and fruits, at a centrally located place in the project area, besides supplying seeds and saplings of the hybrid and high yielding varieties of vegetables and fruit trees. As the pomiculture is proposed to be developed on the hill slopes, it is proposed to be linked with programmes for shifting cultivation. Hence the details of the scheme are discussed separately under table no.24.

TABLE - 24

HORTICULTURE AND VEGETABLE DEVELOPMENT

(Rs. in lakhs)

Programme	V PLAN	VI PLAN	VII PLAN	VIII PLAN
1) Backyard Vegetable & Fruit Garden				
No. of families to be covered	12,500	25,000	37,500	50,000
2) Development of Vegetable Crops:				
Field Crops (Hectares)	1,250	2,500	3,750	5,000
3) Supply of Inputs:				
@Rs. 300/- per Hectare	3.75	7.50	11.25	15.00

OUT PUT ESTIMATES:

Increase in the agricultural production as a result of deployment of the aforesaid variables in the Project area is projected hereunder. Yardsticks of average yield per hectare for irrigated and unirrigated lands for various crops are evolved. As it is proposed to cover entire cropped area with high yielding varieties by the end of VI Five Year Plan, the production estimate has been made for the projected total cropped area.

The yields of all the crops at present are proverbially low. The low productivity as discussed already is the cumulative result of low yielding local seed, lack of assured water supply, lack of improved inputs like fertilizers, plant protection measures and lack of knowledge of improved agronomic practices. There has been remarkable break through in evolving high yielding varieties of almost all crops. With provision of fertilisers and effective plant protection

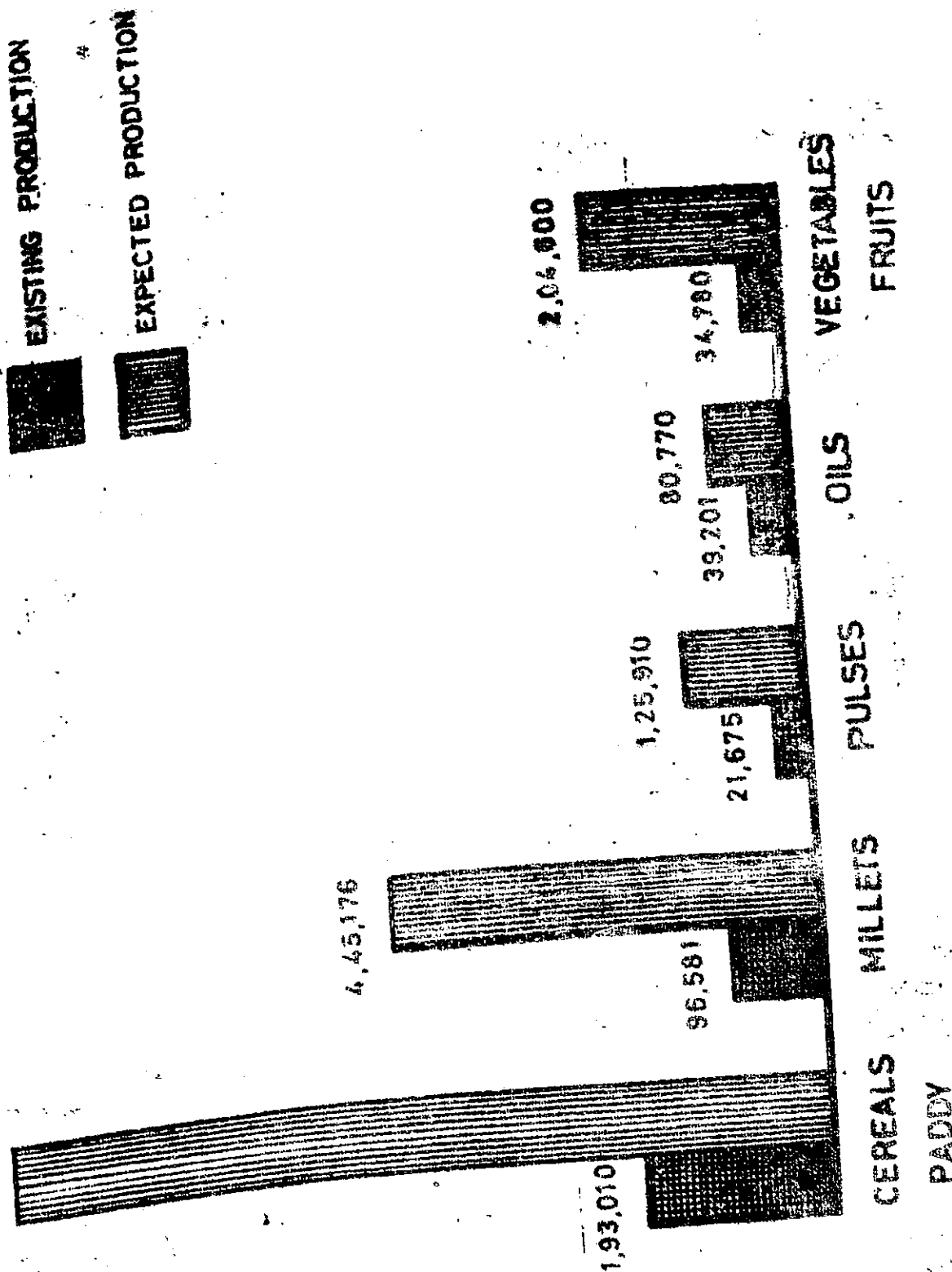
measures, these new varieties can certainly yield far better than the traditional varieties. However, due to lack of knowledge of tribals in plant protection measures and effective application of fertilisers, poor soils and rain fed conditions in the project area, the per hectare yield of various crops are expected to be of the order of 50% of the average yield expected under optimum conditions in the plains areas.

The projected increase in agricultural production has been computed on the basis of the yardsticks evolved and the projected coverage of high yielding varieties of crops by the end of VI Five year plan in the following table No.25.

PRODUCTION OF FOOD & NON-FOOD CROPS 1974-75 TO 1994-95

7,56,075

FIGURES IN QUINTALS



T A B L E - 25

OUTPUT ESTIMATES

Sl. No.	Crop	Existing area	Yield Qtls.	Production	Project Area	Yield Qtls.	Production
1.	Paddy	19,301	10	1,93,010	30,243	25	756,075
2.	Ragi	12,459	5	62,295	21,191	10	211,910
3.	Jowar	3,684	5	18,420	7,309	10	73,090
4.	Bajra	1,571	5	7,855	5,195	10	51,960
5.	Maize	2,337	3	8,011	6,012	18	108,216
6.	Pulses	4,335	5	21,675	12,591	10	125,910
7.	Oil Seeds	13,067	3	39,201	16,154	5	80,770
8.	Fruits and Vegetables	2,485	14	34,790	5,000	20	100,00
9.	Other Crops	5,662	20	1,12,440	5,466	25	136,650

With the coverage of entire cropped area with high yielding varieties, the output is expected to register remarkable increase under cereals, pulses and oils whose production at present is far short of the local requirements. The existing production of cereals and millets could meet only 52% of the local

Map No. 15(b)

requirements. And production of pulses and oils and vegetables is also far below the local requirements. With the implementation of this plan, the project area can not only meet the recommended requirements for the projected population by the end of VIII Five Year Plan, but also can emerge as the surplus zone in all the major food crops except vegetables and fruits which is clear from the table given below.

The projected population of the project area is expected to increase to 4,53,908 by the end of 1994-95. The quantum of various food items required as per the recommended dosages for balanced diet of hill population is worked out. The following table indicates the surplus position of the projected area under cereals, pulses and oil production. The only deficit in production is under fruit and vegetables. It is proposed to makeout this deficiency by encouraging the plantations in the higher altitudes and encouragement of backyard vegetable cultivation.

REQUIREMENTS

	Quintals	Expected	Surplus or deficit
a) Cereals	9,39,780	12,01,251	+2,61,471
b) Pulses	1,04,420	1,25,910	+ 21,490
c) Fruits& Vegetables	1,71,512	1,00,000	- 71,512
d) Oils	64,376	80,770	+ 26,394

F O R E S T E R Y:

Nature has been bountiful in giving project area an extensive and luxuriant forests with an extent of 2,63,746 hectares. Forests are the very fountain of life for the tribal and have shaped both his habitat and economy. In other words it occupies a central position in the life of tribal communities. Unlike other natural resources forests are perpetually renewable asset. Well preserved forest of adequate extent, properly dispersed with cultivation and managed scientifically confer many direct and indirect benefits on the people. Forests also yield a variety of products of industrial importance such as timber, gums, tanins etc. the collection and processing of which can bring substantial income and also provide employment to a number of tribal men. Forests also preserve the physical features, regulate the flow of sub-soil water, mitigate floods and prevent soil-erosion.

Further the forests in the project area are rich in minor forest produce like Adda-leaf, Tangedu bark, Rella Bark, Myrabolams, Mohawa, Rawulfia Serpentina, Nux-vomica, Wood apple, Cashew, Pine-apple, Citrus varieties, Jack fruit, Soapnuts, Marking nuts, Broom grass etc. The collection and sale of Minor Forest Produce constitute major subsidiary source of livelihood. Besides supplementing the income, the Forests are also a source of food for tribals as they collect edible roots, fruits tubers to supplement their diet. The various herbs and roots and medicinal leaves come to the rescue of tribals during the crisis of ailments in curing the diseases.

The strategy for forestry development aims at (1) Identification and removal of causes of deforestation; and (2) Regeneration of major and minor forest produce yielding species. For realisation of the first objective, schemes for rehabilitation of shifting cultivators who have

been the main cause for deforestation and the concomitant soil erosion are envisaged, while it is proposed to raise plantations of quick growing species of commercial value along with minor forest produce yielding species to replenish depleting size of increase from forests to the tribal inhabitants while affording adequate protection to the hilly area against soil erosion.

A working plan for Forests covering the project area is under preparation. The new working plan will have to accommodate the schemes envisaged for rehabilitation of shifting cultivators, development of coffee and other plantations and soil conservation. The percentage of area under forests (74.49% in the project area is far in excess of the required percentage (60%). The excess area will be made available for the project authorities for raising plantations under rehabilitation schemes for shifting cultivators. This would enable the beneficiaries of the plantation schemes to enjoy the usufructory rights without let or hinderance from the forest

department. It is also envisaged to plant minor forest produce yielding species like Tamarind, Soapnut, Shikai etc., in the unreserve forests situated near the tribal settlements. This has two fold advantages (1) The Minor Forest Produce yielding species will augment the income of tribals; and (2) It will help conserve forest as the tribals are not known to fell the minor forest produce yielding trees.

A techno-economic feasibility survey will be conducted in the project area for cultivation of Cocoa, Camphor, Pepper, ~~Cinnamon~~ etc. A team of experts from the Andhra Pradesh Agricultural University and specialists from Kerala will identify suitable locations for cultivation of plantation crops after making a study of topography, micro-climate, natural vegetation, altitude, gradient, water source etc., of various places in the project area.

Plantation schemes under rehabilitation programme for the shifting cultivators, development of coffee plantation under public and private sector; and soil conservation programme which is essential for promoting plantations and forest regulation are furnished in the following pages.

REHABILITATION SCHEMES FOR SHIFTING CULTIVATORS:

Shifting cultivation has been an important source of livelihood for several hundreds of tribal households in the project area. Even though all the tribes practise 'Podu' cultivation, there are tribes like Khond (Samantha), Gadaba and Khonda Dora who mostly depend upon shifting cultivation. Due to hilly terrain and forests, the flat land for settled cultivation is limited. With increase in population many tribals have taken to shifting cultivation on the hill slopes either to earn their

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livelihood or to supplement their meagre income from settled lands. As a consequence, the shifting cultivation is still practised in the project area on an extensive scale. The deleterious effects of shifting cultivation are too well known to warrant detail discussion here. The barren hills and dwindling forests in the project area stand as mute examples of the disastrous consequences of this wasteful practice. The alarming magnitude of soil erosion and decreasing rainfall in the project area dictate a strategy to discourage the tribals from this wasteful practice and provide them with alternative but assured means of income.

A two pronged programme is chalked out as a part of the strategy for Agricultural development in the project area. Under this programme, it is envisaged to gradually wean away the tribals from practising the wasteful 'Podu' and rehabilitate them in the orchards raised in the hill slopes as a part of over all soil conservation and afforestation programme.

The climate, soil, altitude and topography of the project area are favourable for raising various types of citrus fruits like loose jacket, orange, batevian orange, and lime, pine apple, pome granate, cashew nut, mango, guava litchies, peaches, paraya etc. Techno-feasibility survey conducted in the project area also has recommended for growing plantations of these fruit trees in the high gradient slopes. All these fruit crops have been successfully grown at the Padmapuram orchards near Araku. There is a vast scope for cultivation of Topoica in the low gradient hill slopes with sufficient soil. With the availability of high yielding Topoica varieties, extensive cultivation of tapoica would promise a boost in the production of tuber crops which can be used as staple food as well as raw material for topoica based sago and vermicelli industries. Fibre yielding Agave Sisalana can be grown as hedge plants which not only check soil erosion but also provide a source of subsidiary income for the tribals.

If the excess forest land is earmarked for taking up plantations, about 67,000 hectares will be available. This area is proposed to be utilised in the following manner:

CROP	AREA(In Hectares)
Coffee, Cocoa etc.	10,000
Citrus	15,000
Mango	5,000
Guava	5,000
Cashew	12,000
Pineapple	7,000
Litches, Papaya etc.	3,000
Tapoica	12,000

	67,000

It is proposed to organise Co-operative Horticultural Farms with landless and shifting cultivators as members.

Suitable hill slopes will first be identified and be given necessary soil conservation treatment. Suitable fruit crops species and variety will be selected after survey of micro-climate, soil conditions, altitude, gradient etc. Each orchard

will cover an area of about 100 acres in one or two plots with in a distance of two miles. Each Cooperative fruit growers society consists of 50--100 members depending upon the size of the farm. Each member will enjoy the status of owner-labourer. Each farm will be under the direct supervision of an Horticulturist. The members will contribute labour for various operations in the farm. All other expenditure in shape of inputs, implements etc., will be provided by the project authority. The members of the Farm will be paid a subsistence allowance of Rs.2 per member per day of work till the Farm comes to bearing. The members will be granted usufructory right to gather the fruits and sell them and share the profits among themselves.

It is proposed to organise 470 Co-operative Horticultural Farms with landless and shifting cultivators as members in the project period in a phased programme. This programme will benefit about 47,000 landless and shifting cultivators. The

detailed programme is mentioned in table no.26.
Marketing and storage facilities for marketable
produce from these Farms are provided under
marketing and meso level programmes of the project.

TABLE -- 26

SCHEMES FOR SHIFTING CULTIVATORS & LANDLESS

Scheme	(Rs. in lakhs)			
	V PLAN	VI PLAN	VII PLAN	VIII PLAN TOTAL
a) No. of Horticultural Farms proposed	120	120	110	100 450
b) Families covered	12,000	12,000	11,000	10,000 45,000
c) Extent covered by Plantation (Hectares)	12,000	12,000	11,000	10,000 45,000
d) Supply of Inputs @Rs.500/- per Hectare	60.00	60.00	55.00	50.00 225.00
e) Subsistence allowance @Rs.500/-	60.00	60.00	55.00	50.00 225.00
f) Extent covered under Tapoica (Hectares)	2,400	2,400	2,400	2,400 12,000
g) Supply of Inputs @ Rs.200/-	4.80	4.80	4.80	4.80 19.20

COFFEE PLANTATION:

The existence of moderate to thick jungles, deep well drained soils, cheap labour optimum annual rainfall, humidity and temperature in the project area provide ample scope for raising coffee plantation on an extensive scale. The area under coffee plantation gradually increased to about 2,500 acres. Coffee cultivation in the project area is quite encouraging both in terms of yield and quality of coffee beans produced. The coffee plantations are at present confined to the three centres viz., Chintapalli, Minumuluru and Ananthagiri. An area of 10,000 hectares is earmarked for coffee, Cocoa and Pepper plantations in the project area. Out of this, an area of 1,000 hectares is already under coffee plantation. The success achieved so far prompts to think in terms of promoting coffee cultivation amongst the tribals. Coffee offers great scope to be developed in the small tribal holdings on a single crop or as mixed crop with mulberry, castor, oranges, banana, turmeric, vegetables, pepper etc. Coffee could

be a paying crop particularly in the small holdings as the tribal can provide the labour. The cost of inputs such as nursery stock, fertilisers etc., are nominal. There are no pests and diseases, and therefore there is no expenditure on plant protection.

A scheme for bringing about 1,000 hectares under coffee by the tribals is proposed. Under this scheme, it is proposed to colonise 1,500 tribal families on coffee cultivations allotting one hectare per family.

The cost of raising one hectare of coffee plantation works out to about Rs.2,500/- per acre during the first year and the maintenance costs during the next 7 years comes to about Rs.5,500. This excludes the cost of harvesting and processing the crop. The cost of picking and processing the crop worked out to Rs.500/- per tonne and the curing charges Rs.130/- per tonne. Most of the expenditure is incurred on labour. Hence the actual expenditure is

to be incurred by tribals is negligible.

It is envisaged to cover the remaining 8,000 hectares in a phased programme under coffee plantation over the next 20 years. This area will be under the management of Forest Department of Andhra Pradesh or under the Coffee Board.

TABLE - 27

COFFEE PLANTATION

Scheme	(Rs. in lakhs)			
	V PLAN VI PLAN	VII PLAN	VIII PLAN	TOTAL
a) Coffee Plantations under Private holdings (Hectares)	250	250	250	1,000
b) Cost of the programme @ Rs. 3,000/- per hectare.	7.50	7.50	7.50	30.00
c) Coffee under Public sector.	2,000	2,000	2,000	8,000
d) Cost @ Rs. 5,500/- per hectare.	110.00	110.00	110.00	440.00

SOIL CONSERVATION PROGRAMME:

The project area is the water shed of various rivers. The soil erosion has assumed serious proportions due to the heavy rainfall, undulating terrain, deforested hills and the practice of 'Podu' cultivation in the project area. The soil erosion continues unchecked at the present rate, it poses a serious threat to the hydro-electric projects on Machkhund and Sileru and Tatipudi Reservoirs. In order to avert this grave situation and prevent erosion of valuable soil and promote forest regeneration and develop plantation crops, soil conservation programme in the project area is given priority and treated as an integral and indispensable part of Agriculture and forestry development programme in the project area.

To check soil erosion in the catchment areas of Machkund river, soil conservation works of engineering nature were executed by the State Electricity Department from 1947 to 1960. Pilot

Demonstration Scheme was implemented by the State Agriculture Department from 1956 to 1960. A centrally sponsored soil conservation scheme was sanctioned in 1962. From April 1963 the State scheme under Agriculture Department was merged with the centrally sponsored soil conservation scheme. As a result the soil conservation work is being executed as an integrated scheme under the control of the State Forest Department.

Under forestry sector in an area of 7,148 hectares (7,103 hectares under plots and 49 hectares under stream bank) protection works have been covered under soil conservation programmes. Further 33,380 hectares 'Podu' affected area was covered with eucalyptus, bamboo, silver oak etc., after raising contour bunds. Under agriculture sector bunding, terracing and bench terracing works completed in an area of 42,308 hectares, benefiting a gross area of 66,368 hectares. During the

year 1973-74, an area of 320 hectares was covered under soil conservation programme. Under agriculture sector an area of 1,620 hectares was covered under various types of soil conservation works while a lengthy 10 K.Ms was covered under stream bank protection works till the end of February, 1974. There is still a vast area which requires protection in this Soil erosion. It is envisaged to cover 20,000 hectares under forest sector and another 20,000 hectares under Agriculture sector during the project period. The programme is furnished in Table no.28.

T A B L E - 28

SOIL CONSERVATION PROGRAMME

Scheme	(Rs. in lakhs)				
	V PLAN	VI PLAN	VII PLAN	VIII PLAN	TOTAL
1. Forest Sector	Hees. 5,000	5,000	5,000	5,000	20,000
Cost	Rs. 50.00	50.00	50.00	50.00	200.00
2. Agriculture Sector	Hees. 5,000	5,000	5,000	5,000	20,000
(Formation of graded bunding, gullie control, Vegetative protection works, stone terracing etc)					
Cost	Rs. 50.00	50.00	50.00	50.00	200.00

FINANCIAL OUTLAY -- AGRICULTURAL PLAN

A B S T R A C T

S.No.	Scheme	(Rs. in lakhs)			
		Subsidy	Loan	Grant	T o t a l
1.	Land Development	--	--	593.28	593.28
2.	Supply of Seed	56.045	56.045	--	112.09
3.	Supply of Fertilizers	98.800	98.800	--	197.60
4.	Plant Protection Equipments and improved implements	87.630	87.630	--	175.26
5.	Vegetable development	--	--	15.00	15.00
6.	Schemes for Shifting Cultivators and Landless	225.00	225.00	--	450.00
	Scheme for Tapioco	9.60	9.60	--	19.20
7.	Coffee Plantations:-				
	a) Private holdings	15.00	15.00	--	30.00
	b) Public Sector	--	--	440.00	440.00
8.	Soil Conservation Programmes	--	--	400.00	400.00
br					2,431.89

2. I R R I G A T I O N

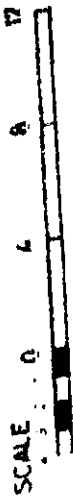
Provision of assured means of water supply is sine-qua-non for increasing production in the wake of high yielding Agrarian inputs. Agricultural development plan which aims at achieving boost in Agricultural production must envisage optimum exploitation of surface and under-ground water. The main sources of irrigation in the project area consist of hill streams and ponds. Well and lift irrigation is almost negligible. The most common practice of irrigation in the hilly areas is construction of crude bunds across the hill streams and divert water to the agricultural fields. Many of these sources are not perennial. There has been no significant increase in the net area irrigated over the years in the project area. However, the numerous streams meandering through

the project area offer more surface water irrigation potential. The perspective plan should envisage harnessing of all the surface water irrigation sources. Eventhough two major rivers originate and traverse the tribal areas, the water from these rivers is not available for irrigation purposes. The use of water from these rivers is prohibited for irrigation purposes as it is feared that it will interfere with the inflow of water into the Machkund Reservoir and Tatipudi Reservoir. There is scope for lift irrigation schemes which can increase the intensity of the crop by installing pumpsets for lift irrigation schemes. Detailed investigations are to be conducted to identify the places for starting lift irrigation schemes. Lack of power supply is major bottleneck. Electrification is sine-quanon for optimum utilisation of irrigation potential of both surface and underground water. Shortage of diesel oil and transport difficulties make the use of diesel for running pump sets undependable.

In the project area, the net area irrigated works out to 7,755 hectares constituting 11% to the net sown area. 75.9% of the net irrigated area receives water from hill streams. Irrigation is available for Kharif crops only. Crops are affected by delayed or failure of monsoon. The net irrigated area increased from 5,254 hectares in 1970-71 to 7,755 hectares in 1973-74. The percentage of irrigated area to the net sown area has registered a steady increase from 8% in 1970-71 to 11% in 1973-74. Harnessing of the surface water sources already investigated can bring 5,563 hectares more under irrigation adding another 8% to the existing irrigated area. The ground water survey is under way in the scheduled areas of the district.

The percentage of irrigated area to the sown area has registered a steady increase from 8% in 1970-71 to 11% in 1973-74. Distribution of irrigated land under different sources in 8 Blocks of the project due is furnished in the following table No.29.

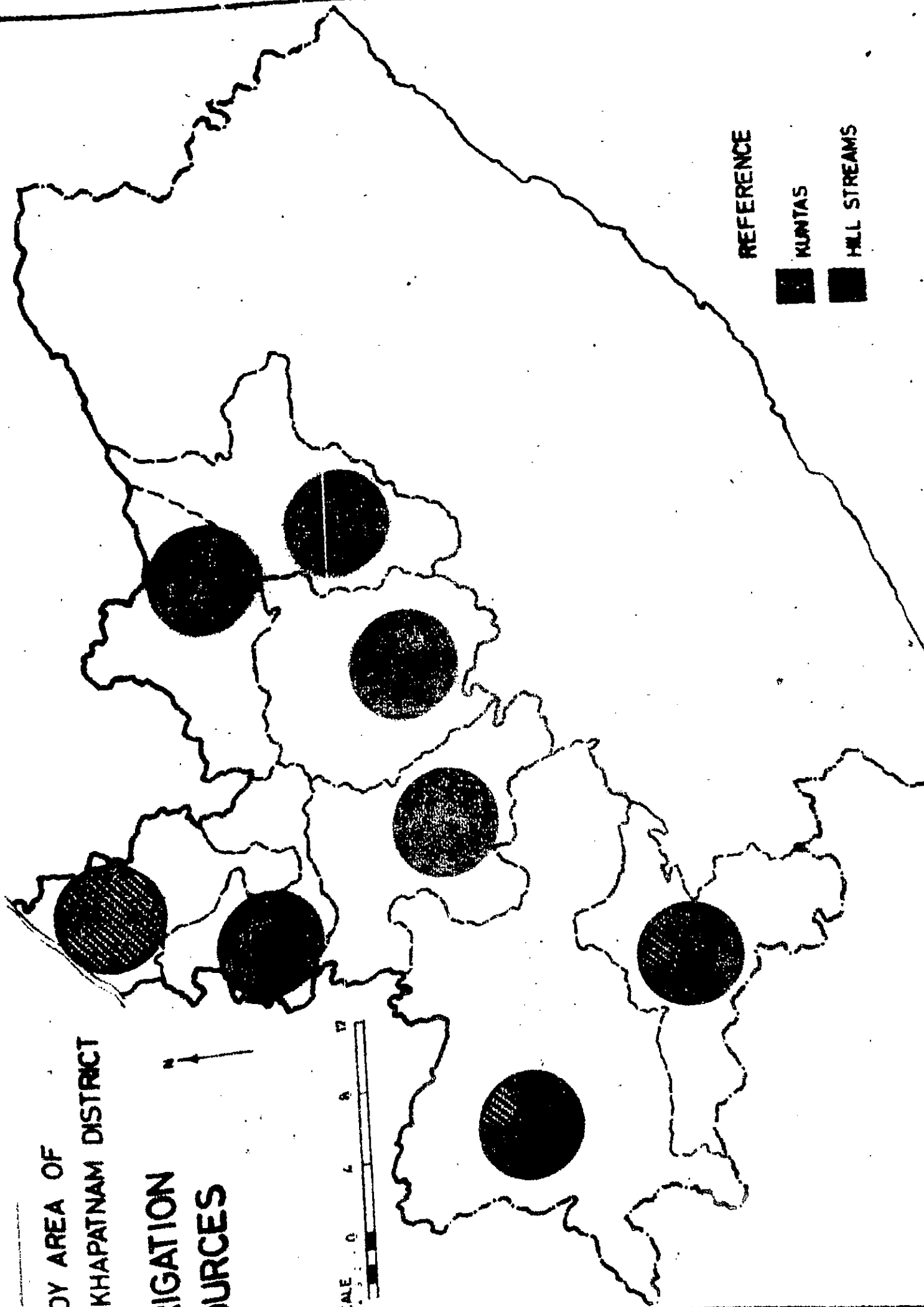
STUDY AREA OF
VISAKHAPATNAM DISTRICT
IRRIGATION
SOURCES



REFERENCE

KUNTAS

HILL STREAMS



T A B L E - 29

Sl No.	B l o c k	Sources of irrigation			Total
		Kuntas	Ayacut (Hec)	Hill streams	
1.	Anartagiri	..	..	70	448
2	Araku	30	240	94	826
3.	Chintapalli	40	480	148	2300
4.	G.Medugulu	10	114	32	348
5.	Koyyuru.	63	384	69	486
6.	Munchingput	20	178	..	..
7.	Paderu	87	336	46	1028
8.	Tedapayalu	4	17	32	590
Total:		237	1749	571	6006

Map No.16

It is clear from the above table that the hill streams constitute the major portion of irrigation source (75.9%) followed by Kuntas/Tanks. Chintapalli has recorded the maximum extent followed by Paderu while Munchingiput has recorded the lowest

extent. Ground water survey is under-way in the project area. Eventhough, the project area is covered with hill ranges, there are numerous valleys where the underground water strata may be available over a fairly large area. However, in the absence of survey results it is not possible to prepare the plan for exploitation of underground water for irrigation purposes. A plan may be chalked to exploit the underground water only after the survey results are made available. However, a sum of Rs.10.00 lakhs is provided for exploitation of underground water and another Rs.10.00 lakhs for lift irrigation schemes in VI and VII Plans.

It is proposed to harness all the investigated surface water (Minor Irrigation Sources) during the project period. The Minor Irrigation works proposed during the project period are given in Table No.30.

TABLE - 30

FUTURE PROGRAMME - PERSPECTIVE PLAN

Sl. No.	Block	Scheme	To be restored in V Plan		New works to be taken in V Plan.		Lift irrigation by power to be taken in V Plan		Irrigation wells to be taken in V Plan	
			Ayacut (Hers)	Estimated cost (Rs. in lakhs)	Ayacut (Hers)	Estimated cost (Rs. in lakhs)	Ayacut (Hers)	Estimated cost (Rs. in lakhs)	Ayacut (Hers)	Estimated cost (Rs. in lakhs)
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Pederu	M.I. Tanks Nos. 20	404	3.22	116	1.14	264	5.70	192	2.70
2.	Araku	..	..	..	360	3.74	..	..	..	..
3.	Chintapalli	..	..	..	288	4.69	..	..	..	..
4.	Koyyuru	M.I. Tanks Nos. 30	520	3.64	200	3.55	..	..	..	..
5.	Munchingput.	Nos. 20	202	1.92	50	1.43	..	..	..	..
6.	Ananthagiri	..	..	..	80	1.54	..	..	..	..
7.	G. Madugula	..	..	0.43	130	2.00	..	..	..	..
8.	Redabayala	..	..	..	520	2.39	..	..	..	..
			1196	9.21	1744	21.88	264	5.70	192	2.70

Contd.....

Contd....

Sl. No.	Block	New works to be taken in VI Plan		Works to be taken in VII Plan		Irrigation wells to be taken VI Plan		Irrigation Wells to be taken in VII Plan	
		Ayacut (Hrs)	Estimated cost (Rs.in lakhs)	Ayacut (Hrs)	Estimated cost (Rs.in lakhs)	Ayacut (Hrs)	Estimated cost (Rs.in lakhs)	Ayacut (Hrs)	Estimated cost (Rs.in lakhs)
		12.	13.	14.	15.	16.	17.	18.	19.
1.	Paderu	120	1.10	102	1.13	282	8.25	280	9.35
2.	Araku	120	1.50	80	1.10	..	..	..	..
3.	Chintapalli	118	2.94	400	15.00	..	..	..	..
4.	Koyyuru	100	1.95	100	2.10	..	..	..	..
5.	Munchingput	60	2.15	80	3.15	..	..	..	..
6.	Ananthagiri	50	2.13	35	2.14	..	..	..	..
7.	G. Madugulu	70	1.54	50	1.43	..	..	..	..
8.	Pedabayalu	80	1.00	40	0.92	..	..	..	..
Total:		718	14.31	887	26.97	282	3.25	280	9.35

A B S T R A C T

Sl. No.	Scheme	To be restored in V Plan		Works to be taken in V Plan		Works to be taken in VI Plan		Works to be taken in VII Plan	
		Ayacut (Hors)	Cost (Rs. in lakhs)	Ayacut (Hors)	Cost (Rs. in lakhs)	Ayacut (Hors)	Cost (Rs. in lakhs)	Ayacut (Hors)	Cost (Rs. in lakhs)
1.	Minor irrigation Tanks.	1196	10.21	2200	30.28	1000	33.56	1167	46.32

The Block-wise proposed Minor Irrigation works are furnished in the Annexure No.7.

64 Minor Irrigation Tanks with an ayacut of 1196 hectares is under progress and the estimated cost of these schemes amounts to Rs.10.21 lakhs. Further Minor Irrigation works benefitting an area of 2200 hectares have been proposed to be taken up at an estimated cost of Rs.30.28 lakhs during Fifth Plan period. In addition to this another 1000 hectares and 1167 hectares are proposed to be taken up at an estimated cost of Rs.25.56 lakhs and Rs.36.32 lakhs during VI and VII Plans respectively. Another Rs.20.00 lakhs is provided for underground water and lift irrigation schemes. With the completion of these works another, 5,563 hectares will be added to the existing irrigated area by 71.7% with exploitation of ground water.

P O W D R:

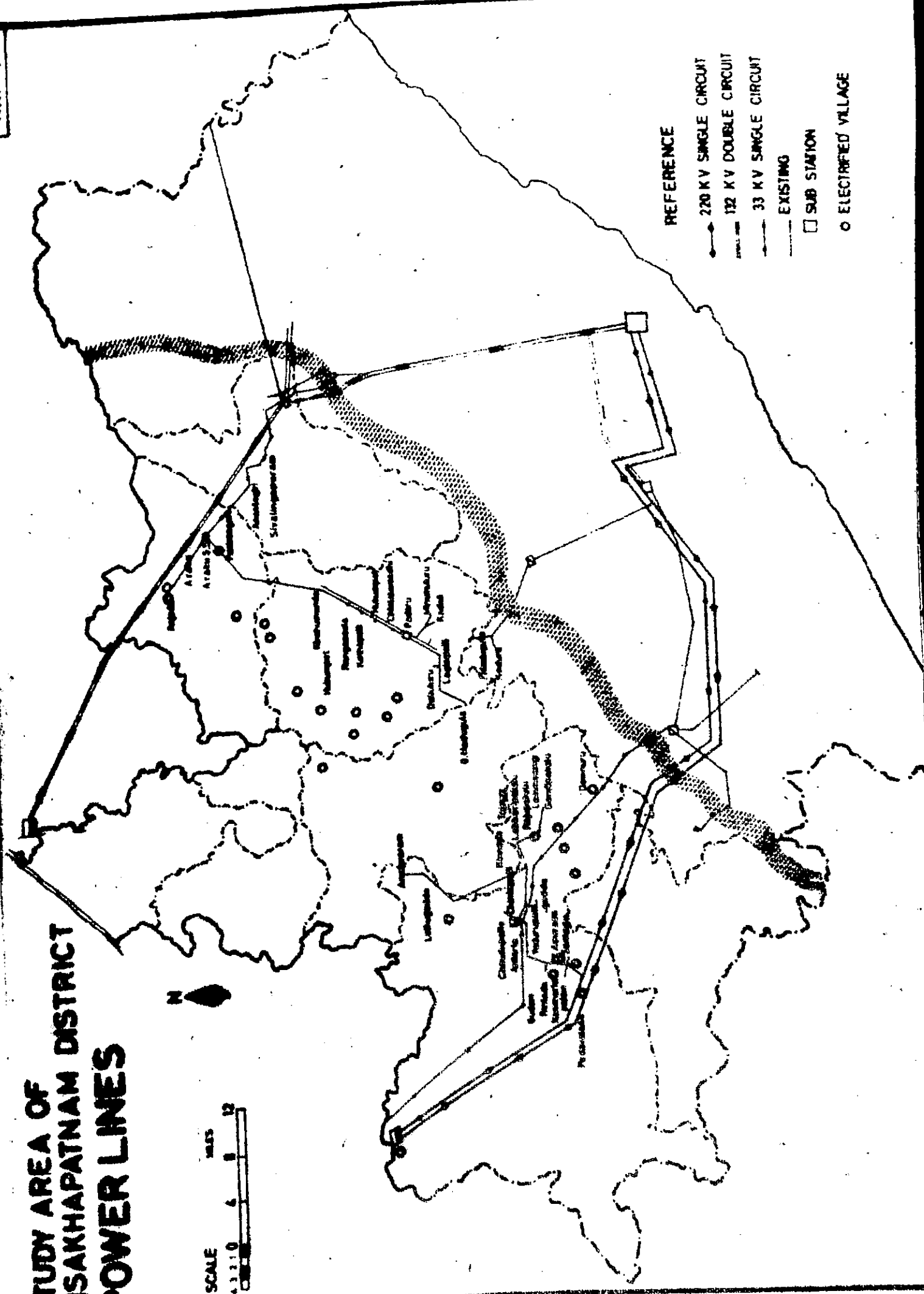
The main power lines are passing through the project area. But only a few villages have so far been ~~electrified~~. Electricity is indispensable to

harness the subsoil water and implement lift irrigation schemes as substitute sources for energisation of pump sets are not dependable in the project area due to lack of transport facilities. Further electricity is a prerequisite for establishment of industries. In view of proposed industrialisation and setting up of pumpsets, it is proposed to establish a substation to cater to the power requirements of the project area.

It is proposed to establish two substations (33 K.V. line) at Raderu, and Chintapalli at a cost of Rs. 50.00 lakhs during the Fifth Five Year Plan period to cater to the needs of the area. It is also essential to execute the above scheme in the scheduled areas of the district to cover 30 - 40% of the tribal population in the project area under minimum needs programme.

The distribution of power from the substations will be closely coordinated so as to cover

STUDY AREA OF VISAKHAPATNAM DISTRICT POWER LINES



all the proposed central villages and service centres in the project area and also facilitate energisation of tube wells and lift irrigation schemes. Map No.17

S c h e m e	Amount required Rs. in lakhs
1. Installation of 2 sub-stations at Iaderu and Chintapalli.	30.00

3. ANIMAL HUSBANDRY

A healthy and productive livestock is pre-requisite for the development of agricultural economy in tribal areas. In addition to this, livestock provides the basic needs of the tribals, Milk, Meat and Eggs. Cattle are the main source of motive power in agricultural operations and for transporting the produce to the market. Moreover cattle, buffaloes, sheep and goat replenish the lost fertility of fields by supplying manure. The livestock resources consist of draught, to some extent milch animals and other animals. Most of the tribal groups rear livestock but not much attention is paid in rearing them on proper lines, as a result, the animals are generally stunted in growth and their work performance is also poor. Tribals of this district in

general do not milk their cows; as they think, that it is sin to milk the cow. Now Goudus who are the traditional cattle breeders and also some of the tribal groups like Bagetas, Konda Doras, Valnikia, Konds etc., have started milking their cows. Due to centuries of inbreeding, bad management and poor feeding, the condition of the livestock has deteriorated as a result, the cows of the area yield about $\frac{1}{4}$ th to $\frac{1}{2}$ litre of milk daily that is for every short period in a year.

The livestock population of the tribal areas of the district is as follows:

Cattle	..	1,51,372
Buffaloes	..	44,505
Sheep	..	23,987
Goat	..	39,397
Poultry	..	1,31,976
Pigs.	..	7,293

Total livestock: 7,36,452

The livestock population of the tribal areas is 7.36 lakhs as compared to 14.44 lakhs of the whole District. The density of livestock is 2.10 in the tribal areas as compared to 2.29 of the District.

Attempts were made from the beginning of the Second Five Year Plan to improve the livestock population of the area by supplying improved progeny and by opening of Veterinary Institutions. There are 16 Veterinary Dispensaries functioning in the tribal areas of the District. There is one Primary Veterinary Dispensary at each block headquarters. Twelve Veterinary Assistant Surgeons are incharge of Veterinary services and Animal Husbandry Programmes in the 8 Tribal Development Blocks. While the Technical control is exercised by the District Veterinary Officer at Visakhapatnam, the administrative control vests with the respective Panchayat Samithis. One of the important land marks of Veterinary activity in tribal areas of the district is the establishment of

livestock farm at Chintapalli. It is supplying the improved progeny needed for upgrading the livestock of the tribal areas of the State.

Veterinary Assistant Surgeons are carrying out treatment, vaccination and castration work in addition to the work of development of livestock, distribution of bulls, poultry, pigs, rams etc.

The work turned out and the financial investments till now are furnished in Table No.4.

The gap existing between the tribal areas and the district as a whole in Animal Husbandry are furnished below:

Indicators 1.	District as a whole 2.	Tribal areas 3.
1. Total livestock population.	14,43,864	7,36,452
2. Cattle population ✓	4,80,024	1,51,372
3. Total Bovine population	8,54,610	1,95,877

1.	2.	3.
4. Total poultry population	11,28,278	1,31,976
5. Total number of Veterinary Institutions.	69	16
6. Veterinary Institutions per lakh of Bovine population	8	3
7. Bovine population covered by each institution.	12,386	12,242
8. Milk production	1,80,000Ltrs.	15,000 Ltrs.
9. Egg production	1,72,65,000	1,50,000
10. Livestock Farm	10	1
11. Milk Chilling & Cooling Centres.	1	Nil

Taking into consideration the livestock rearing practices of the different tribal groups and the undulating terrain, thick ^{forests} and climatic conditions the following schemes are suggested. These schemes besides supplementing their meagre income, will also help ^{to} meet the food requirements.

I. (1) Veterinary First Aid Centres:

As the terrain of the tribal area is very rugged and most of the tribals reside in the interior villages and also the tribals are not in the habit of getting their sick animals for treatment of the Veterinary Institutions, it is proposed to establish 38 Veterinary First Aid Centres at Second order and other service centres identified in the project. Tribal boys will be posted at these Centres after imparting training. The idea of posting tribal compounders is to have local man for the job and for better cooperation from the tribals. The first aid centres will cover villages laying with a radius of 5 miles, covering around 5,000 -- 10,000 head of cattle population. These centres will be useful in building up other Animal Husbandry activities. For every 5 such Centres there would be one Veterinary Assistant Surgeon of a Dispensary.

The financial implications of the scheme are furnished in Annexure No.8.

(2) Veterinary Dispensaries: Six more Veterinary dispensaries are proposed, at higher order service Centres in the project area. Veterinary Assistant Surgeon of dispensary will supervise prophylactic and development works at first aid centres. Provision is also made for strengthening the existing Veterinary Dispensaries for providing rooms for dispensaries and quarters for the staff. At present none of the dispensaries and the staff have quarters. It is difficult even to get huts for accommodation in the tribal villages. Due to lack of accommodation, most of the staff are finding it difficult to carry out the work. The Veterinary Institutions will supply regularly the Medicines, Vaccines to the First Aid Centres and will serve as depots for vaccine and other drugs.

The financial implications of the scheme are furnished in Annexure No.8.

II. CATTLE DEVELOPMENT

The cattle population of the selected area is non-descriptive in type with predominant Tan body color. Most of the tribal groups rear cattle, but on very primitive lines and they do not milk their cows, buffaloes except Goudus and also some of the tribal groups residing near Block Headquarters. The tribal groups residing near block areas, where there is potentiality for milk have started milking their cows but the milk yield is very poor due to poor condition of the cows. The main object of cattle development is to bring about improvement in draught efficiency and milk capacity of cattle taking into consideration the prevailing conditions. Measures such as controlled breeding, effective disease control, proper management and adequate feeding have to be introduced. It is proposed to upgrade the local cattle by the introduction of cross bred bulls (Jersey x Sindhi Crosses). These breeding bulls will be stationed at Veterinary Institutions so that they can be maintained under the direct

control of the Technical personnel. It is observed that the tribals are not able to maintain the bulls properly. These bulls will be released for natural service into the herds. Provision is made for the castration of the Scrub bulls, which is a prerequisite for the successful implementation of breeding programme. Provision is also made for deworming and disease control measures. For a breedable cow population of 80,000 about 170 breeding bulls are proposed to upgrade the local cattle population of the project area.

The financial implications are furnished in Annexure No.8.

ii) DISTRIBUTION OF MILCH CATTLE:

Some of the tribal groups residing near the urban areas have started milking their cows which hitherto was not practiced. This is due to tribals coming in contact with plains people and also their realization about the economic value of milk. But

still majority of the tribals are not milking their cows except the Goudus who are traditional cattle breeders. It is therefore proposed to distribute milch cattle to the Goudu families and also to the other tribal groups like Bhagatas, Konda Doras, Kondha etc., in Munchingiput, Araku, Paderu, Koyyuru areas. These areas are selected because there is potentiality for dairy development and livestock, if exploited. The distribution of milch animals are proposed in two forms viz., (1) graded buffaloes; (2) Cross bred heifers. This programme will be taken up from 3rd year of the Fifth Plan, as it is felt necessary that atleast for the 2 years of the plan should be devoted to grading up of cattle, buffaloes; providing improved progeny and managerial practices. This will ensure the distribution of milch animals programme to be successful with the tribals well prepared to face the situation after certain experience.

The upgrading programme has a long incubation period to produce sufficient number of milch cows,

ence distribution of milch animals are proposed, which will enable the tribal farmers to produce more milk early and benefit from it economically. The milk production at the end of 5th Five Year Plan will be about 30,000 litres. This will facilitate opening of a milk cooling centre in the VI Plan to help in marketing the milk. The financial implications are furnished in Annexure No.8.

SHEEP DEVELOPMENT:

The Sheep population of Visakhapatnam District is of non-descript, mutton type with medium compact body. The sheep population can be improved for increased mutton production by introduction of improved germ plasm through Nellore sheep. Rain fall in this district is almost distributed throughout the year, as a result of which green grass is available for grazing to the sheep. As the sheep population is not concentrated in a area, and scattered all along the tribal belt, it is proposed to upgrade the local sheep by the distribution of cross bred Rams and Ewes to the

tribal families. The improved sheep will be supervised by the First Aid Centres for effective implementation of upgrading programme. Provision is made for dehorning and other disease control measures.

The financial implications are furnished in Annexure No.8.

GOAT POPULATION:

The Goat population of the project area is about 1.00 lakh. There is lot of scope for upgrading the local goat population, as till now no effort was made to develop it. The tribals are more interested in goat rearing and most of the tribals have one or two goats with them along with other livestock. It is proposed to distribute 1,000 Jamnapari goats for upgrading the local stock. It is proposed to rear goats on stall feeding for which provision is also made. The goats if reared on free range, will destroy the vegetation.

The financial implications are furnished in Annexure No.8.

PASTURE AND FODDER DEVELOPMENT:

The area available under pastures per unit of livestock in tribal areas is 0.28 hectares. There are no cultivated lands under fodder crops. Rocky terrain, extension of Reserve Forest boundaries and restrictions on grazing of cattle in forest areas further set limits to the extent of grazing and pasture lands available for livestock grazing. Moreover the tribals are not in the habit of feeding green fodder to the working and the other animals. It is obvious that they do not grow fodder grasses. The grazing areas are denuded of good grasses as a result of continuous grazing by over populated animals. The present insufficient tilling of land and consequent low yield of crops in tribal areas is due to the poor working capacity of draught animals and inturn this is due to improper livestock rearing that too carried out, under variety of adverse climatic and environmental

conditions. Therefore for the better performance of livestock, improvement of pasture lands are proposed. Pasture development will be taken up by adopting trenching and bunding as practiced by forest department supported by fencing which will ensure good quality grasses. From 3rd year onwards, reseed-ing programme with improved varieties of grasses will be taken up in a phased manner for laying a large tract of permanent pastures. A system of rotational and deferred grazing is also proposed for effective utilisation of pastures. Removal of all kinds of bushes and other vegetations from the area, followed by reseed-ing with perennial grasses will also be taken up for increased fodder production. Intensive develop-ments of pastures and fodder cultivation will be taken up in the milk belt areas identified for the distribu-tion of milch animals. Provision of 6 lakhs is made for the development of pastures and grasses, as this will ensure good development of cattle, sheep and goat. The financial implications are furnished in Annexure No. C.

PIGGERY DEVELOPMENT:

Tribal groups like Khonds, Porjas, Valmikijs and Konda Dora of this district rear pigs, but the quality of local pigs is very poor. Pigs are prolific breeders and if properly reared are a good source of income to the tribals. It is therefore proposed to upgrade the local variety with cross bred pigs (Yorkshire - local crosses). Upgraded Boars will be supplied to the tribals having 2 to 4 local sows. The upgraded pigs need better management techniques which will be imparted to the tribal groups. The better quality pigs produced will fetch good market in Visakhapatnam Town. The financial implications are furnished in Annexure No.8.

POULTRY DEVELOPMENT:

Poultry population of the area is non-descriptive in type and less remunerative. The birds are mostly of fighting type with coloured plumage. Almost all the tribal groups rear poultry and most of the houses have 3 to 4 birds with them. Efforts

were made to develop the poultry of the area by supply of exotic birds. Poultry rearing can be taken up as a subsidiary occupation by agricultural as well as non-agricultural families, which will give them subsidiary occupation.

The following poultry schemes are suggested for rapid development of poultry with selected tribal groups as it is the only enterprise which yields quick results.

(i) For selective breeding with local hens, it is proposed to distribute cross bred cockerels with coloured plumage. For this programme, cockerels will be exchanged with local cocks, in the selected villages of the project area. The entire poultry population of the selected villages will be covered with upgraded cockerels.

The financial implications are furnished in Annexure No.2.

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The financial implications are furnished in Annexure No.2.

(ii Poultry units:- After taking up upgrading programme in selected villages, poultry units are proposed in these selected villages during the 4th and 5th years of the V Plan onwards. Each poultry Unit will comprise of 50 cross bred hens and 5 cocks under deep litter and cafeteria system of feeding. The poultry houses are proposed to be constructed with local materials like mud walls, Thatch roofing and bamboo mesh. This system of rearing poultry will provide supplementary income to the tribals. In addition it will provide a proteinous food to them. Besides, this system of Poultry Rearing will also provide manure of about 1 Ton of manure from each Unit. The establishment of these poultry units will be taken up in such a manner that they will be clubbed together for marketing of eggs which can be taken up by existing Girijan Development Corporation. The expected egg production at the end of ^{Fifth} Five Year Plan will be about 3.75 lakhs.

The financial implications are furnished in Annexure No. C.

DUCK REARING:

Duck rearing is practised by tribal groups like Pagothas, Birjas, Valmikis, Kolla Kaps and others. Manchinagut Block has got potentialities in the form of Tanks and other sources. During the year 1971-72 and 1972-73, 95 male and 459 female ducklings were distributed. Tribals are very much interested in rearing ducks in the area, since they found economical to maintain them. They feed 'Oodalu' and paddy which are abundantly available in the season. Eggs are being sold in Shandies and most of the tribals eat duck eggs and mutton. It is therefore proposed to supply 10,000 ducklings in the villages identified for duck rearing, where facilities are available. Indian runner breed is recommended, because of its suitability and liking for it by the tribals. The ducklings can swim in the water and can fetch flora and fauna as feed. The villages selected are having perennial sources of water and Tanks, where water is available throughout the year. For the implementation of this scheme one Veterinary Assistant Surgeon, 3

Attendants are proposed. The estimated cost of the scheme will be 2.54 lakhs for 5 years.

TRAINING PROGRAMMES:

I. Training of Tribals: The tribals are backward and are ignorant of better livestock rearing and their economic importance. In order to keep abreast with the developments in their areas, it is essential to train certain number of tribal youths from the area, in all aspects of livestock rearing, their feeding, breeding, and management practices. This training will enable the tribals to learn the livestock rearing practices and adopt them when they go back home. This will facilitate in the implementation of proposed schemes in the project area. The training will be conducted at Government Livestock Farm, Chintapalli where facilities are available for imparting training in Animal Husbandry. The period of training will be one month. During the training period the tribal will be paid stipend of Rs.150/-5 tribal youths per each

Village Development Officer circle will be selected for training. In all 400 tribals will be trained.

The financial implications are furnished in Annexure No.8.

II. Training of Veterinary Compounders:- It is proposed to train tribal boys from the Tribal Development Blocks for compounders course at Chintapalli farm. These tribal compounders will be posted at First Aid Centres. This scheme will facilitate in effective implementation of Animal Husbandry programmes in the project area. Tribal boys studied upto 10th class will be selected for training for a period of 6 months. 40 candidates will be imparted training at the farm.

The financial implications are furnished in Annexure No.8.

Strengthening of Livestock Farm, Chintapalli:

The Livestock Farm Chintapalli, which has got facilities for rearing of different types of livestock can be made the hub of all livestock development by producing:

1. Crossbred breeding bulls needed for opening of breeding bull Centres in the area. It is therefore proposed to maintain a herd of 50 Sindhi cows with 2 Jersey bulls. This can supply breeding bulls and heifers needed for tribal areas of Coastal Districts.

The following other activities are also proposed at the farm:

2. 1,000 ewes of Nellore breed crossed with Corriedale or Kashmiri Merino Rams for the production of cross bred rams required for sheep development in the tribal areas.

3. 1,000 birds flock will also be maintained to produce cross bred birds of coloured plumage for distribution in the tribal areas of the Coastal districts.

To produce birds required for poultry units and cockerels for distribution, hatchery is also suggested as a part of Poultry Development programme.

4. Feed mixing plant with 6 ton production capacity will be installed to supply cheap feed to dairy units and other livestock in the tribal areas making use of the local ingredients and the forest produce.

5. Pasture and seed multiplication units are also suggested on a large scale to produce improved variety of seed for pasture development.

6. It is also suggested that 3 to 6 months old calves to be purchased from tribals born

from the improved bulls and reared at the Farm upto 2 years. About 200 can be maintained at the farm. These will be distributed to the tribals after acclimatization and good rearing at the farm.

7. Investigation of diseases prevalent in tribal areas and peculiar to this tract will also be taken up by establishing diagnostic laboratory.

To take up all these activities following staff are proposed for efficient working of the Farm.

Assistant Director.	..	1
Veterinary Officers	..	2
Veterinary Asst. Surgeons	..	4
and other ancillary staff..		

Rs.23.15 lakhs are provided for strengthening of the Livestock Farm to meet the demands of different livestock for programmes under Animal Husbandry.

The scheme wise and Plan-wise Physical and Financial targets are furnished in Annexure No.8. It is estimated that an amount of Rs.492.33 lakhs would be required during the Project Period.

4. INDUSTRIES

Due to high pressure on land and the limited extent of cultivable land, it becomes imperative to explore new avenues of income in backward areas. It is more so with the tribal economy which is agro-forest based with spells of seasonal unemployment. In this context, raw material and agro-forest resource based industries would be more helpful, as they provide gainful employment to tribals during long spells of unemployment and finally reduce mounting pressure on land. Girijan Cooperative Corporation has already taken steps in this direction in collaboration with the State Industries Department and Khadi Board to promote ancilliary industries like processing and other industries.

STUDY AREA OF VISAKHAPATNAM DISTRICT INDUSTRIAL INSTITUTIONS

SCALE
0 4 8 12

REFERENCE

RAJASABAI SALK

FRUIT CANNING CENTRE

CANE INDUSTRY

FLOUR & RICE MILL

ADDA LEAF PLATE MAKING CENTRE

ENGINEERING WORK SHOP

T.C.F.C

CARPENTRY

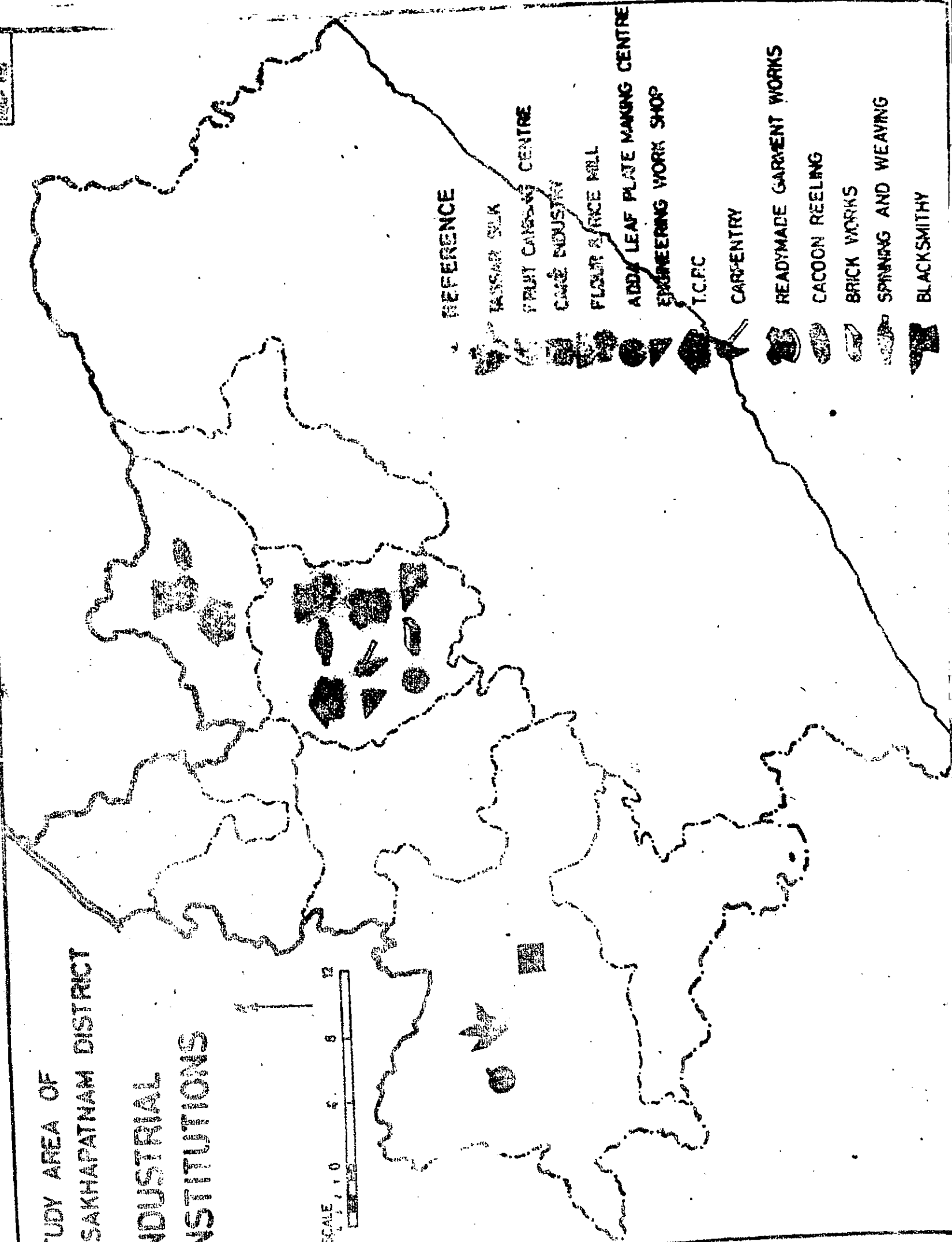
READYMADE GARMENT WORKS

CACCOON REELING

BRICK WORKS

SPINNING AND WEAVING

BLACKSMITHY



In the Scheduled area, the Small Scale Industries units like fruit canning centre, saw mill, Myrobelan crushing unit and Niger seed oil mill are functioning besides village industries and Training-cum-production Centres. Map No. 18

The following new industries are proposed to be established in the project area.

1. KOPERI AND OTHER GRASS ROPE MAKING UNITS:

'Koperi' grass, 'Addanara', Pedanara and other varieties of fibre are abundantly available in the agency areas of this district. Several household articles can be manufactured with this raw material. The tribals sell the 'Koperi' grass in shandies either in raw form fibre or after processing into ropes. If the present system of rope making by hand is replaced by introducing simple machinery, the productivity will increase and there by add to the income of the tribals. As several industries are located at District Headquarters there is a good market for these products. The Khadi and Village

Industries Commission has designed and developed various tools and techniques for the extraction of fibre and manufacture of variety of articles.

Setting up of these units will enable the tribals to use local raw material which is not properly utilised at present. One unit of this type is at present functioning in Srungavarapukota (outside the Scheduled area of this District) with the financial assistance from Khadi and village Industries Commission.

Considering the availability of raw material, two units of Rope making from sisal fibre at Araku and Chintapalli and one unit of Rope making from Koperi and other grasses at Rajendrapalem in Koyyuru Block may be established during the project period.

The financial implications for starting these three units are as follows:

a) Land and building	5,000
b) Machinery and equipment.	5,000
c) Working capital	15,000
	<hr/>
	25,000
	<hr/>

The amount required for establishing 3 units is estimated at Rs.0.75 lakhs.

A standard unit provides employment for 15 persons.

2. NIGER SEED OIL EXTRACTION UNIT:

Niger is grown in the Agency tracts of this District in considerable quantities. The Niger Oil is used both for edible and non-edible purposes. Niger seed cake is used as cattle feed. There is a good demand for this oil commercially as this can be used in the production of paints and soaps. At present one Niger seed mill is under construction at Paderu and it will start functioning

from May 1974. In order to cater to the needs of tribal people of other regions, it is proposed to start two oil extracting units at Lemmasingi and Araku colony. The financial implications for starting these units are as follows:

	Rs.
a) Land and building	50,000
b) Machinery and equipment	50,000
c) Working capital	1,05,000
	<hr/>
	2,05,000

Cost for two units is $2,05,000 \times 2 = 4,10,000$ one unit can provide employment for 5 persons.

3. STARCH FROM TAMARIND SEED:

Tamarind - *Tamarindus Indica* (the Indian date) is a major item of Minor Forest Produce and it is available abundantly in the scheduled areas of this district. Tamarind seed contains 60 to 64%

of starch. The tamarind kernel powder - the end product is useful for sizing textiles and jute products. In view of the availability of tamarind seed at a very cheaper rate in the project area this industry will enjoy good returns. The financial implications for the proposed unit at Kajendrasalem in Koyyuru Tribal Development Block are as follows:

	Rs.
a) Land and building	40,000
b) Machinery and equipment	52,000
c) Working capital	64,000
Total:	<u>1,56,000</u>

This industry on the proposed scale will provide employment to 40 tribals.

4. FRUIT PROCESSING AND PRESERVING UNIT:

Fruits such as loose jacket oranges, mango, pine apple and banana are grown abundantly in these

tribal areas. The tribals could not get reasonable rates as they cannot preserve them or export to distant places due to their perishable nature. There is need for locating a fruit preserving and processing unit at Chintapalli. Surplus produce can be properly processed and preserved in this unit and the tribals in this region will be benefitted much by getting reasonable rate to their produce. The financial implications for locating one unit at Chintapalli are as follows:

	Rs.
a) Land and building	50,000
b) Machinery	90,000
c) Working capital	60,000
Total:	<u>2,00,000</u>

This unit will provide employment to 15 persons.

5. MANUFACTURE OF SPLINTS AND VENEERS:

Splints (Match-sticks) and Veneers

(sheet of timber used in the manufacture of match boxes) are the principal raw materials required for the safety matches. In view of the availability of suitable wood, one unit may be located at Paderu.

The financial implications are as follows:

	Rs.
a) Land and building	26,000
b) Machinery and equipment	34,000
c) Working capital	58,000

Total: 1,18,000

This unit will provide employment for 30 persons.

6. EXTRACTION OF ALKALOIDS FROM NUXVOMICA SEEDS:

Nuxvomica trees grow wild abundantly in the agency areas of this district and their concentration is in Areka area. Nuxvomica seed contains

'Stryehinine alkaloids' and 'Brucine sulphate' which are used in pharmaceutical industry. There is good market for Nuxvomica and its extracts in U.K. and America. The estimated amount required for locating one unit at Araku colony is as follows:

	Rs.
a) Land and buildings.	37,000
b) Machinery and equipment.	1,80,000
c) Working capital	1,08,000
Total:	<u>2,25,000</u>

This industry will provide employment for about 25 persons.

7. GINGER PROCESSING UNIT:

Ginger is used in the preparation of medicines, beverages and food products. It is grown in large quantities in these tribal areas. Ginger can be dried up under controlled heat conditions or under the sun. Oil extracted from ginger

is having good market in rural and urban areas of this district. One Ginger processing unit may be located at Lammasingi in Chintapalli Block. The financial implications for locating the unit are as follows:

	Rs.
a) Land and buildings	36,000
b) Machinery and equipment.	66,000
c) Working capital:	<u>1,04,000</u>
Total:	<u>2,06,000</u>

This industry will provide employment to 25 persons.

8. EXTRACTION OF BUTTER COLOUR AND DYE STUFF:

In the project period it is proposed a unit for the extraction of Butter Colour and Dye stuff from annatto seed to be located at Araku. The financial implications are as follows:

	Rs.
a) Land and Buildings	50,000
b) Machinery and equipment,	3,00,000
c) Working capital	65,000
Total:	<u>4,15,000</u>

It can provide employment for 30 persons.

9. SCHEME FOR MANUFACTURE OF SAGO FROM TAPIOCA TUBERS:

The present acreage of Tapioca in this area is reported to be of the order of 1100 acres and the estimated yield is 3,300 tons. This would be able to feed one unit for manufacture of Sago Pellets. There is good demand for this product. Hence three units are proposed at Chirta--palli, Paderu and Aradu. This industry can provide employment to nearly 90 persons. The financial implications are as follows:

	Rs. in lakhs
a) Land and building	0.62
b) Machinery and equipment.	0.45
c) Working capital	1.27
Total:	<u>2.54</u> x 3 = 7.62

10. STITCHING OF ADDA-LEAF:

Adda leaf is abundantly available in the project area. The tribals are normally accustomed to bring loose adda leaf for sale. If the tribals are encouraged to stitch leaf plates and cups with these leaves, they can earn supplementary income. The Girijan Cooperative Corporation has already organised adda leaf stitching centres in some villages for providing supplementary occupation to tribal women. Hence Adda leaf stitching centres may be located at Munchingput, Araku, Anantagiri, Taderu, Pedabayalu, Gangarajumadugole and Chintapalli to provide subsidiary occupation to tribals. The financial implications are as follows:

	Rs.
a) Land and building	2,000
b) Working capital	10,000
Total cost per unit:	<u>12,000</u>
For 7 units	12,000 x 7 = 84,000

COTTAGE INDUSTRIES CLUSTER:

Three Cottage Industries Clusters are proposed mainly to generate employment potential and to provide gainful employment to tribal youth who dropped out at secondary education level. The clusters can be organised on a Cooperative basis. Each cluster will contain the following Cottage Industries:

1. Manufacturing agricultural implements and bullock carts.
2. Manufacture of furniture and wooden household articles like doors, windows ventilators.
3. Brick Making, Masonary and Calcination of Limestone.
4. General workshop practice and undertaking small jobs infitting turning and machinist trades.
5. Tailoring and Dress making manufacturing.

The members of the industrial cooperative society will be imparted training in various trades. An instructor will also be made available for supervision of the operation of various units in each cluster. To organise these clusters, an amount of Rs.3,00,000 is required during V Plan period.

The financial implications are as follows:

	V Plan period Rs.	VI Plan period Rs.	VII Plan period Rs.
Recurring @ Rs.10,000 per cluster per year.	1,50,000	1,50,000	1,50,000
Working capital @ Rs. 25,000 per cluster.	75,000	..	..
Non-recurring @ Rs. 25,000 per cluster	75,000	..	..
Total:	3,00,000	1,50,000	1,50,000

SERICULTURE:

Sericulture as a subsidiary occupation is already taken up by some of the tribals in the agency areas of Paderu and Chintapalli Taluks. As Agro-based labour intensive industry, requiring very little initial investment, will help in improving the economic conditions of the tribals. Unlike other agricultural crops, there will be more than 3 annual season crops which will enable the tribal to earn money at frequent intervals by the sale of cocoons. This is a unique advantage of this industry, which deserves encouragement for the economic uplift of the tribals. The following schemes are proposed to be taken up for the development of Seri-culture in the project area.

The climate is conducive for rearing the silk worms. Mulberry plants are also available for feeding the silk worms. The existing sericulture units at Chintapalli and Araku have to be strengthened

with a view to increase the production and thereby to help to supplement the income of the tribals. The programme during the project period comprises of provision of a well to Graft Nursery at Chintapalli, provision of irrigation facilities to the Government farm at Anjola (Araku Valley) additional accommodation to Government grainage, Araku Valley; establishment of propaganda station at Raderu, Ghawkie rearing units, Cottage Basin unit etc.

ADDITIONAL FACILITIES TO GRAFT NURSERY, CHINTAPALLI:

The present Graft nursery at Chintapalli is provided with a well. The provision of a well will increase the leaf yield and the graft production. About 1,000 tribals will be benefitted by this scheme.

The estimated cost of the scheme is

Rs.27,000.

IRRIGATION FACILITIES TO THE GOVERNMENT SILK FARM, ANJOLA, ARAKU VALLEY:

Irrigation facilities are to be provided to the existing Government Silk Farm at Anjola in

Araku Tribal Development Block. This will increase the leaf yield in the garden and consequently cocoon production and provide employment to about 1,000 tribal sericulturists in the tribal areas. The estimated cost of this scheme is Rs.75,000.

ADDITIONAL ACCOMMODATION TO THE GOVERNMENT GRAINAGE, ARAKU VALLEY:

Additional accommodation is to be provided to the Government Grainage for proper implementation of the scheme and for supply of the layings required by all sericulturists. At present the number of ryots benefitted is only 100. This provision will increase the number of beneficiaries to 1,000 by the end of the plan period. It is estimated that an amount of Rs.0.71 lakhs would be required.

ESTABLISHMENT OF PROPAGANDA STATION AT PADERU:

A propaganda Station is proposed to be established at Paderu to extent and develop sericulture on intensive scale among tribals in the

Agency areas of this district. This will help in improving the economic conditions of the tribals. An amount of Rs.2.07 lakhs would be required towards this scheme. About 600 tribals will be benefitted by this scheme.

ESTABLISHMENT OF CHAWKIE REARING UNITS:

It is proposed to establish two Chawkie rearing units at Tazangi in Chintapalli Block and Paleru. The aim of this scheme is to rear the Chawkie silkworms and distribute them to the tribals ryots for further rearing. This step will further reduce the mortality rate in the young silk worms and thus help to stabilise the industry by ensuring harvest of successful crops. The estimated cost of this scheme is Rs.2.24 lakhs.

ESTABLISHMENT OF A COTTAGE BASIN UNIT AT ARAKU VALLEY:

To convert the cocoon production into yarn, one Cottage Basin Unit may be located at Araku Valley in the third year of the V Plan period. This will

increase the reeling capacity of the existing Unit which comprises of only 2 twin basins. About 1500 tribal sericulturists would be benefitted by the end of the plan period. Rs.3.69 lakhs would be required towards this scheme.

LATEST EQUIPMENT FOR BASIC SEED FARM, CHINTAPALLI:

Latest equipment is essential to the Basic seed farm, Chintapalli to improve the quality of the layings produced in the Farms for distribution to Seed multiplication farms. Under this scheme all the seed multiplication farms in the State will be benefitted. An amount of Rs.0.08 lakhs would be required towards this scheme.

CHAWKIE REARING UNITS FOR TASSAR CULTURE:

To distribute young Tassar Silk worms to the rearers, two Chawkie Rearing Units may be started at Chintapalli and Darakonda. It will help popularise the industry among the Tribals. About 300 tribals will be benefitted by this scheme. Estimated cost of the scheme is Rs-1.80 lakhs.

MAP OF

VELUPPILAI DISTRICT

INDUSTRIAL INSTITUTIONS

REFERENCE

- TASSAR SILK
- FRUIT CANNING CENTRE
- CANE INDUSTRY
- FLOUR & RICE MILL
- ADDA LEAF PLATE MAKING CENTRE
- ENGINEERING WORK SHOP

CARPENTRY

PESS-MADE GARMENT WORKS

LACON REELING

BRICK WORKS

SPINNING AND WEAVING

BLACKSMITHY

OTHER ROPE MAKING UNIT

SEED OF EXTRACTION UNIT

STARCH FROM TAVARIND SEED

FRUIT PROCESSING & PRESERVATION

MANUFACTURE OF SPUNTS & PERS

EXTRACTION OF ESSENCES FROM NUX. NUTS

MANUFACTURE OF STEEL FROM THER

SEMI-CONDUCTOR UNIT

CHOKRE REPAIRING UNIT

COTTAGE BASIN UNIT

CHOKRE REPAIRING UNIT FOR TASSAR CULTURE

GINGER PROCESSING UNIT

PROPOSED

TRAINING PROGRAMME IN REELING AND SPINNING OF TASSAR COCOONS:

It is proposed to impart training to the tribals in the art of reeling and spinning of Tassar cocoons at Chintapalli. This will help popularising the industry in places where food plants for Tassar rearing are available in plenty and thus improve the economic condition of the tribals. The estimated cost of the scheme is Rs.1,30,000. The details of industries programmes are mentioned in Annexure No.9. /Map No.19/

5. COMMUNICATIONS

The adequacy of the existing Road and Transport facilities in the Project area has been examined with reference to production and marketing needs. The command area of each shandy centre in the Scheduled area has also been considered while suggesting the road construction programme. The difficult terrain and peculiar topography of the project area has necessitated deviations from the usual norms, but the proposed programme is suited to the local conditions and it meets the requirements by and large.

EXISTING POSITION OF ROAD LENGTH IN DIFFERENT
BLOCKS AS ON 31-3-1974.

Sl. No.	Block	Area in Sq.K.M.	Popula- tion.	Road Length (K.Ms)			Roads per 100 Sq.K.Ms.
				Fair wea- ther	All wea- ther	Total	
1.	Ananthagiri	741.00	23,194	40.00	36.00	76.00	4.8
2.	Araku	533.76	42,951	155.50	36.00	191.50	6.2
3.	Chintalalli	2173.00	52,553	168.50	102.00	270.50	4.7
4.	G.Madugula	568.32	33,942	61.00	..	61.00	..
5.	Koyyuru	469.07	27,730	86.00	10.00	96.00	2.1
6.	Munchingiput	440.32	25,719	116.50	5.00	121.50	0.7
7.	Paderu	704.00	51,820	105.00	32.00	137.00	4.6
8.	Pedabayalu	563.00	25,726	36.00	..	36.00	..
Total:		6192.47	263,635	768.50	219.00	987.50	5.5

The total length of fair weather roads in 8 Tribal Development Blocks comes to 768.50 K.Ms., while the surfaced all weather roads works out to 219.00 K.Ms. The surfaced road length of all weather

roads per 100 Sq.K.Ms., varies from 0.7 K.Ms. to 6.2 K.Ms., in these blocks. Araku Tribal Development Block has recorded the highest road length of 6.2 K.Ms., per 100 Sq.K.Ms., whereas the Munchingiput Block recorded the lowest road length i.e., 0.7 K.M. G.Madugula and Pedabayalu Blocks have no all weather roads. The road length per lakh of population works out to 77 K.Ms., in the project area while it is 101.8 K.Ms., in the State showing a gap of 24 K.Ms., per lakh of population.

There are certain pockets of isolation in the project area like the villages in the valley of Paderu Taluk measuring about 1633.26 Sq.K.Ms. During the rainy season the whole area remains isolated. Pedabayalu Tribal Development Block covering an area of 563 Sq.K.Ms., with a population of 25,726 is not connected by an all weather road. G.Madugula to Killamkota and Gu-thulaputtu, Gudem to Cheedipalem, Dhara-konda to Gummirevula, Chintalapudi to Chennamachinta, Paderu to Sujanakota via Bangarametta, Bakkuru to Rangaseela, the roads are not traffic worthy.

There are 467 villages in the project area with a population of 150 and above. The settlements were classified into 3 categories with reference to their location from metalled road point. These three categories are (1) Accessible within 2 miles; (2) Moderately accessible within 2 to 4 miles; (3) Inaccessible beyond 4 miles. The accessibility pattern map indicates that out of 360 located settlements, 31.60% of settlements are inaccessible. These inaccessible villages are mostly found in Ananthagiri, Paderu, Pedabayalu, Munchingiput and G. Madugula, 32.78% (118) of villages are moderately accessible while 35.62% of villages are accessible. In view of the difficult terrain of the project area only 35.12% of villages are accessible. The population dispersal in Scheduled areas is analysed in the following statement.

(Distribution of villages)

Sl. No.	Block	Below 100	100-200	201-300	301-400	500 and above	Total
1.	Ananthagiri	247	39	14	6	1	307
2.	Araku	267	104	24	12	4	411
3.	Chintanalli	226	107	41	16	7	397
4.	G. Madugula	248	102	10	13	1	374
5.	Koyyuru	23	24	15	8	13	83
6.	Munehingiput	282	29	4	1	1	317
7.	Paderu	341	103	29	13	8	494
8.	Pedaboyalu	229	64	12	4	2	311
Total:		1863	572	149	73	37	2694

It shows that only 1.4% of villages have population more than 500 while 69.1% have population less than 100. At present there are 37 Shandy centres in the Scheduled areas of the District. These centres handled 15,000 quintals of produce on an average during the year 1972-73. Each Shandy centre has its own distinct hinterland* which is mentioned in Annexure No.10.

* The operational area of each shandy centre is worked out, based on the given data by local knowledgeable persons.

The average radius of hinterland of a shandy works out to 10 KMs. The maximum radius of a shandy is 24 KMs., in Koyyuru Block. While the minimum radius works out to 8 KMs., in Pedabayalu and Chintapalli Blocks. All Shandies located at Block Headquarters except Koyyuru received maximum radiation effect in comparison with shandies located at other places. The road requirements of each Tribal Development Block are given Table No.31

T A B L E - 31

DETAILS OF ROADS PROPOSED DURING THE PROJECT PERIOD

Sl. No.	Block	Total length of road in KMs.	Details of roads		New works required to be formed	Amount required (in lakhs)
			Surfaced KMs.	Unsurfaced KMs.		
1.	Ananthagiri	61.00	..	40.00	21.0	26.20
2.	Pedabayalu	74.00	..	36.0	38.0	27.00
3.	Manchingiput	144.5	3	116.5	25.0	55.25
4.	Koyyuru	172.0	10	86.0	76.0	62.55
5.	G.Madugula	111.0	..	61.0	50.0	41.55
6.	Laderu	165.0	..	105.0	60.0	57.00
7.	Chintapalli	..	..	..	..	95.55
8.	Araku	177.5	1.0	155.5	21.0	66.05
Total:		905.0			285.0	431.15

During the project period, it is proposed to construct roads in Tribal Development Blocks by Panchayat Raj Department measuring 905 KMs., at a cost of Rs.431.15 lakhs. In addition to this, the Roads and Buildings Department proposes to complete the major five roads measuring 171.10 KMs., at a cost of Rs.100.00 lakhs.

According to National approach to road development all weather roads are to be provided to all the villages having minimum population size of 1,500 or above by the end of Fifth Five Year Plan. However as tribal population are relatively more dispersed only a handful of villages satisfy this term. It is therefore proposed to cluster a number of villages having a population of 1,500 or more for the purpose of all weather link roads. The exercise is being done in the implementation of this road programme to following priorities may be fixed keeping in view the growth centre approach.

1. All existing roads connecting the higher order growth centres are to be up graded.
2. New roads are to be laid to connect such of those higher order growth centres which are not having road connection.
3. All middle order growth centres are to be connected by all weather roads by end of Fifth Plan.
4. All lower order centres have to be provided with some link road or the other.

The programme given in Annexure 11 will have to be taken according to the priorities given above.

The list of works proposed is given in Annexure No.11. It is estimated that an amount of Rs.531.15 lakhs would be required towards the development of existing and proposed roads. •

6. MARKETING

Traditionally marketing activity in the tribal areas centres around three important agencies namely (1) Weekly markets called 'Santha' (2) Petty grocers from plains who settled there in the recent past; and (3) Itinerant traders from plains who sell salt, dry fish, clothes etc. to tribals in exchange for their produce. Shandies (weekly markets) are generally located on roadside and the villages in its hinterland are connected to them through roads, tracks and foot paths. The mode of transport is mainly human and pack animals. Tribals come from different parts of the agency areas to these shandies to sell agricultural and minor forest produce collected by them and buy

their daily requirements like salt, tobacco, chillies, household utensils, agricultural implements etc. Barter system is being replaced by money economy.

The petty grocers are generally settled in big tribal villages. They also sell daily requirements on cash and credit and most of them are also money lenders. The itinerant traders sell certain items like salt, dry fish, clothes etc. on credit and they are repaid in kind during the harvest season. The marketing activities in tribal areas involve movement of tribals and their produce towards shandies for sale of hill produce and purchase of daily requirements and movement of non-tribal merchants and their merchandise to tribal settlements for sale of the commodities and purchase of hill produce on the other. Besides being an economic institution, shandy is a place of social interaction also. Tribals hailing from different settlements exchange views on marital alliances,

discuss intervillage disputes and other matters and the tribal youth meet their paramour and even elope with the paramour of their choice. Thus the market plays a prominent role in the social and economic life of the tribals. With the establishment of the Girijan Cooperative Corporation in the tribal areas of Visakhapatnam District, efforts were made to institutionalise the marketing activity and credit distribution by starting a net work of Primary Co-Operative Marketing Societies and Daily Requirement Depots in order to eliminate exploitation of tribals by petty traders and money lenders.

The agricultural produce like Niger, Pigeon pea, fruits and vegetables etc., have both commercial and export value. Similarly the minor forest produce like Adda leaves, tamarind, nuxvomica Rauwalfia serpentina, honey, wax, hill brooms, Myrobalams, soap nuts, marking nuts etc., are of commercial and export importance. Though this minor

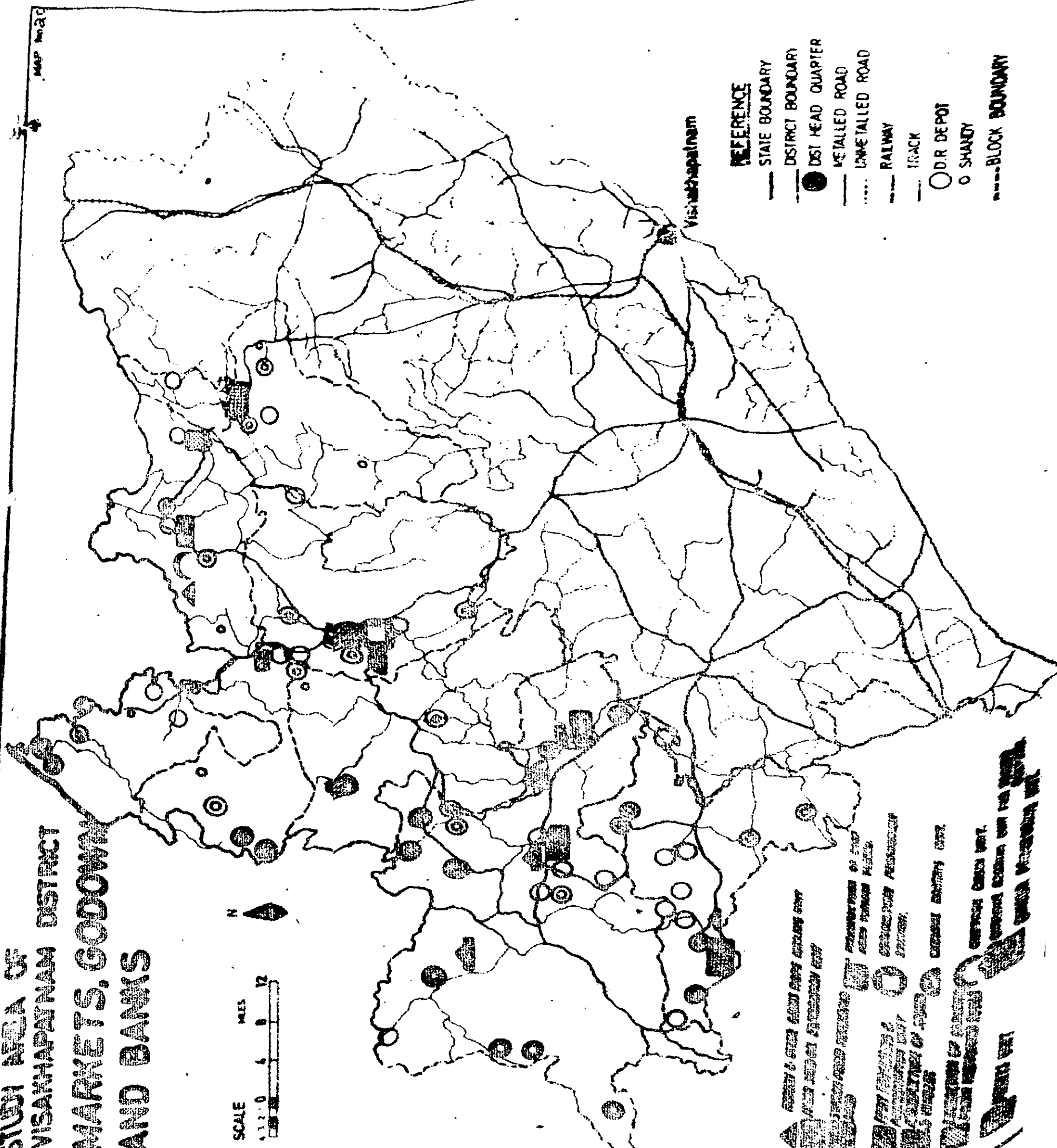
forest produce items are available in large quantities, most of them are seasonal products. A survey of minor forest produce potential conducted by Forest Department in the area during 1960 gives an idea about the potential of the produce available for both consumption and marketing purposes. The Kakinada circle consists of not only Visakhapatnam Agency, but also West and East Godavari and Srikakulam Districts. So the table gives a general idea of minor forest produce potential of the area.

MINOR FOREST PRODUCE POTENTIALITY IN KAKINADA CIRCLE
(COASTAL ANDHRA)

	(In tons)
1. Adda leaf	1,18,000
2. Broomgrass	4,310
3. Jack fruit	90
4. Koperi fibre	350
5. Tamarind	16,620
6. Ippa Flower	275
7. Ippa seed	940
8. Rella Bark	1,300
9. Honey	24.76
10. Wax (Honey and Wax)	3,400 Lbs
11. Gantubarangi	70
12. Marking Nut	80
13. Soap nut	1,635
14. Sheekai	468
15. Bamboo	1,16,020
16. Tunki leaf	4,824
17. Tangedu Bark	3,150
18. Myrobolans	1,800

STUDY AREA OF VISAKHAPATNAM DISTRICT MARKETS, GODOWNS AND BANKS

SCALE
0 4 8 12
MILES



Visakhapatnam

REFERENCE

- STATE BOUNDARY
- DISTRICT BOUNDARY
- DIST HEAD QUARTER
- METALLED ROAD
- UNMETALLED ROAD
- RAILWAY
- TRACK
- D.R. DEPOT
- SHANDY
- BLOCK BOUNDARY

1. AREA & DISTRICT BOUNDARIES
2. DISTRICT BOUNDARIES
3. DISTRICT HEADQUARTERS
4. DISTRICT BOUNDARIES
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The Visakhapatnam Tribal Areas have good potential of minor forest produce if exploited fully, it will benefit the tribal by way of supplementing his meagre income from agriculture. The food grains produced in the area are not sufficient to meet the demand of its inhabitants (as discussed in Agriculture Programme) They are to be imported from outside the project area to meet the demand of the population. The Girijan Co-operative Corporation with its primaries and D.R.Depots besides the traditional shandies are the main channels for importing food grains into project area.

There are 37 shandy centres situated mostly in road side villages*. Consequently most of the villages remain outside their effective service radius. Tribals living in interior villages have to spend long hours to attend the shandy

* Annexure No. 10

The centripetal pull of these shandies varies from 15 to 20 miles. The tribals living in the periphery walk long distances on hilly terrain to buy essential commodities like salt, kerosene and chillies. In view of these problems it is necessary to reduce the consumer distance and time by way of opening Daily Requirements Depots and primary marketing societies to facilitate smooth flow of material into the market and help the tribal to dispose his Minor Forest Produce, agricultural produce and to purchase the daily requirements.

There are 9 service centres, 27 central villages, 224 focal points and 13 other centres identified in the project area. All these centres (273) are to be provided with Daily Requirements Depots so that the whole project area will be covered with this activity.

The project area is covered by 5 marketing societies which have a net work of

Daily Requirement Depots and Shandy centres. As stated earlier there are 9 higher order centres, out of these 8 centres are having Shandies where purchase and sales operations take place - Besides these Shandies all the 9 centres have Daily Requirement Depots. In order to further supplement marketing activity in the higher functional order it is proposed to have godowns in all these 9 central places. These higher order centres with godown facilities and purchasing and sales activities would act as supplying and storage centres for Daily Requirements and minor forest produce and Agricultural produce. Out of 27 middle order centres 6 have shandy centres and 13 Daily Requirements Depots. These 21 and 14 Middle order centres do not have purchase centres and Daily Requirement Depots respectively. In order to fillup the functional gap it is proposed to have 21 purchase centres and 14 Daily Requirement Depots. In the lower order comprising 224 Focal points and

13 other centres only 13 are having D.R.Depots. In order to fillup this gap 224 D.R. Depots have been proposed in the lower order villages bringing the total number of D.R.Depots to 237. This works out to opening up of one Domestic Requirement Depot per 1,000 persons. However in practice the number of D.R.Depots to be opened can be further reduced by way of avoiding opening of D.R.Depots in lower order centres which are in close proximity to each other. Further their economic viability may have to be studied and those depots which are not showing a minimum of Rs.3,000/- monthly turnover may have to be wound up. Consequently the actual number of D.R.Depots to be opened may be reduced.

Improvement of existing roads and provision of link roads to the market centres have also been proposed in this plan as they constitute components of Transport infrastructure.

Social amenities like rest sheds, Drinking Water Wells and godowns for storing the produce of the tribal farmers are to be provided in the shandy centres. It is estimated that an amount of Rs.1.35 lakhs is necessary for the purpose.

A B S T R A C T

	(Rs.in lakhs)
Establishment of D.R.Depots	4.00
Rest sheds-cum-Godowns and Drinking Water Wells	2.00
Total Rs.....	<u>6.00</u>

7. C R E D I T

As a result of subsistence economy and the consequent lack of capital accumulation the tribal is incapable of affording heavy investment on costly inputs envisaged in the various economic development programmes, especially agricultural and allied programmes, whose successful implementation is mainly conditioned by the extent to which institutional credit is mobilised to provide the credit component envisaged in the programmes. Experience showed that the productive credit offered through government institutions has been diverted to meet the expenditure on Social ceremonies and to other unproductive purposes due to demand of custom and tradition which the tribal considers inescapable. Further, the anti-tribal activities of moneylenders and Sahukars also weaken the impact of institutionalised productive credit as the money is diverted to get rid of the heavy indebtedness to

these private agencies. Consequently, there is need for providing credit for unproductive purposes though the stress should continue to be on productive credit.

So far the existing credit institutions, which mainly belong to co-operative sector are providing only credit for productive purposes along with the other governmental sources like Revenue and Block Offices. While the Revenue and Block offices mainly issue long term loans for land development and digging of irrigation wells etc., the Girijan Cooperative Corporation and the normal Cooperative Credit Societies have been providing short term and some-times medium term loans. The Government have created a Revolving Fund with Girijan Cooperative Corporation to meet the short term seasonal agricultural credit needs of the tribal, the maximum amount issued per agriculturist being Rs.250/-. The normal Cooperative Sector with the help of a Reserve Bank Credit accommodation has been disbursing both medium term and short term

loans mainly for agricultural purposes. The Reserve Bank of India has recognized the Vizianagaram Cooperative Central Bank as the Apex body for releasing credit through its affiliated Cooperative Credit Societies in the Project area.

The Block-wise details of the 39 agricultural Cooperative Credit Societies are given below:-

<u>Name of the Block.</u>	<u>No. of Societies.</u>	<u>Membership.</u>
Ananthagiri	3	597
Araku	3	470
Munchingiput	7	689
Chintapalli	9	626
Koyyuru	10	1046
Paderu	5	1193
Pedabayalu	-	--
G.Madugula	2	433

There is no Cooperative Credit Society in Pedabayalu T.D. Block. There are 5054 tribal members in total, the total share capital being Rs.52,228 for the 59 Credit Societies. These institutions have advanced an amount of Rs.4.93 upto 30-6-73 out of which an amount of Rs.1.19 loans was recovered. Besides these Cooperative Institutions, the State Bank of India, through its branch at Araku and the Nationalized Union Bank of India through its branches at Chintapalli and Paderu have been extending long term agricultural credit to the tribal farmers. No Land Mortgage Bank is operating in tribal areas as most of the tribals are not having patta rights over their land they cultivate. However with the early completion of survey and settlement and conferment of patta rights provides scope for starting Land Mortgage Banks also in the project area.

In the meanwhile long term loans may have to be issued to tribal cultivators even without patta with the help of Government

guaranteed by the Nationalised Banks and the Cooperative Land Mortgage Banks existing in neighbouring plains towns like S.Kota, V.Madugula, Chodavaram and Narasipatnam. Government in their order No.586(Revenue) dated 1-6-1972 have given a guarantee for the long term loans to be advanced by the Land Mortgage Banks in Scheduled areas.

There is a suggestion for streamlining the institutionalized credit structure in the tribal areas by channelizing through Girijan Cooperative Corporation but the Reserve Bank of India is unwilling to give credit accommodation to Girijan Cooperative Corporation in areas where the normal Cooperative Credit Institutions are functioning on sound lines. It is also reluctant to link credit with marketing as it is fraught with many pit-falls. Moreover it may be the beyond capacity of Girijan Cooperative Corporation to disburse and recover huge amounts involved in the credit transactions especially medium term and long term loans. Due to inadequate administrative

structure which is mainly designed to provide alternative and organized marketing facilities in tribal areas. However the Girijan Cooperative Corporation can continue to issue short term loans both for productive and unproductive purposes which can be recovered in the shape of both cash and kind so as to avoid the procedural delays and afford quick relief to the tribal by way of providing credit to meet the immediate needs. It is therefore imperative to strengthen and energise the following credit institutions to meet the increasing credit demands of tribals as envisaged in the project formulation besides introducing Cooperative Land Mortgage Banks with the issue of pattas to a majority of tribals.

Long term and Medium term Credit:-

Nationalized Bank.

Cooperative Credit Societies.

Land Mortgage Bank in the neighbouring towns (Until necessary conditions are created

for starting Tribal Land Mortgage Banks); Taluk Office and Block Office.

Short term loans:

Cooperative Credit Societies --

Girijan Cooperative Society.

The financial implications of the programme in the plan works out to Rs.54.86crores of which Rs.5.05 crores has been proposed as subsidy and Rs.5.05 crores as loan component. The remaining Rs.43.75 crores has been proposed as Grant-in-Aid.

The quantum of credit required for various economic activities is as follows:-

<u>Programme.</u>	<u>Quantum of Loan requirement (Rs. in lakhs)</u>
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1. Agriculture:

a) Supply of seed	56.05
b) Supply of fertilizers	98.80
c) Supply of pesticides, fungicides and improved implements	87.63
d) Schemes for shifting cultivators	225.00
e) Scheme for Tapioca	9.60
f) Coffee plantations	15.00

2. Irrigation:

Supply of Electric Motors and Amount for Irrigation wells.	13.50
--	-------

Total:	<u>505.58</u>
--------	---------------

In total an amount of Rs.5.05 crores is the credit component with an equal amount being the subsidy portion of the assistance. The programme envisage both subsidy and credit to shifting and settled cultivators, coffee plantation cultivation etc. and the financial assistance thus received by each tribal family is expected to help generate

credit, thus enabling the tribal to borrow sufficient credit without bearing the burden of interest. In the programme it is taken for granted that credit facilities will be availed on a large scale by the tribal and funds towards share capital are to be sanctioned to tribals to avail credit facilities from cooperative institutions. For obtaining loan from these institutions a loanee has to pay a preliminary share capital of Rs.10/- entrance fee of Rs.0.50/-, valuation fee of Rs.30/-, encumbrance certificate fee of Rs.10/-, and Village Officers fee of Rs.5/-, and 1/6th of the loan to be borrowed as share capital contribution. As the entire scheme is based on the assumption that credit facilities will be availed on a large scale, 1/10th of total outlay on these schemes has been provided as share capital component.

The Cooperative Credit Societies are to be located in every higher order and middle order settlements. The following 17 higher and

middle order settlements are already having
Cooperative Credit Societies:-

1. Tajangi
2. Pedavalasa
3. Chintapalli
4. Lammasingi
5. Sarabhannapalem
6. Koyyuru
7. Balaram
8. Paderu
9. Hukumpeta
10. G. Madugula
11. Araku Colony
12. Guntaseema
13. Ananthagiri
14. Kasipatnam
15. Munchingiput
16. Pedaguda
17. Sujankota

The remaining 22 Cooperative Credit Societies existing in the project area are located mostly in lower order settlements, it is therefore proposed to shift 19 out of 22 Societies located in lower order settlements to the nearest higher or middle order settlement which is not having the Cooperative Credit Society. The remaining 3 Societies said to be superfluous. It is therefore proposed to merge these 3 Societies in the nearby Cooperative Credit Societies in the higher and middle order centres.

E. E D U C A T I O N

The main objective of providing education to the tribal people ^{is} to bring them on par with the general population by filling the gap between tribal and non-tribal literary levels. The education programme comprises of opening of primary and upper primary (residential and non-residential) schools, High Schools, Hostels, award of scholarships, educational materials and clothing etc.. As education is instrumental for progressive transformation of society in general, 35% of the Tribal Welfare Budget is allotted for this programme.

In the field of education, National norms are prescribed by Planning Commission. According to the norm, there should be a primary school

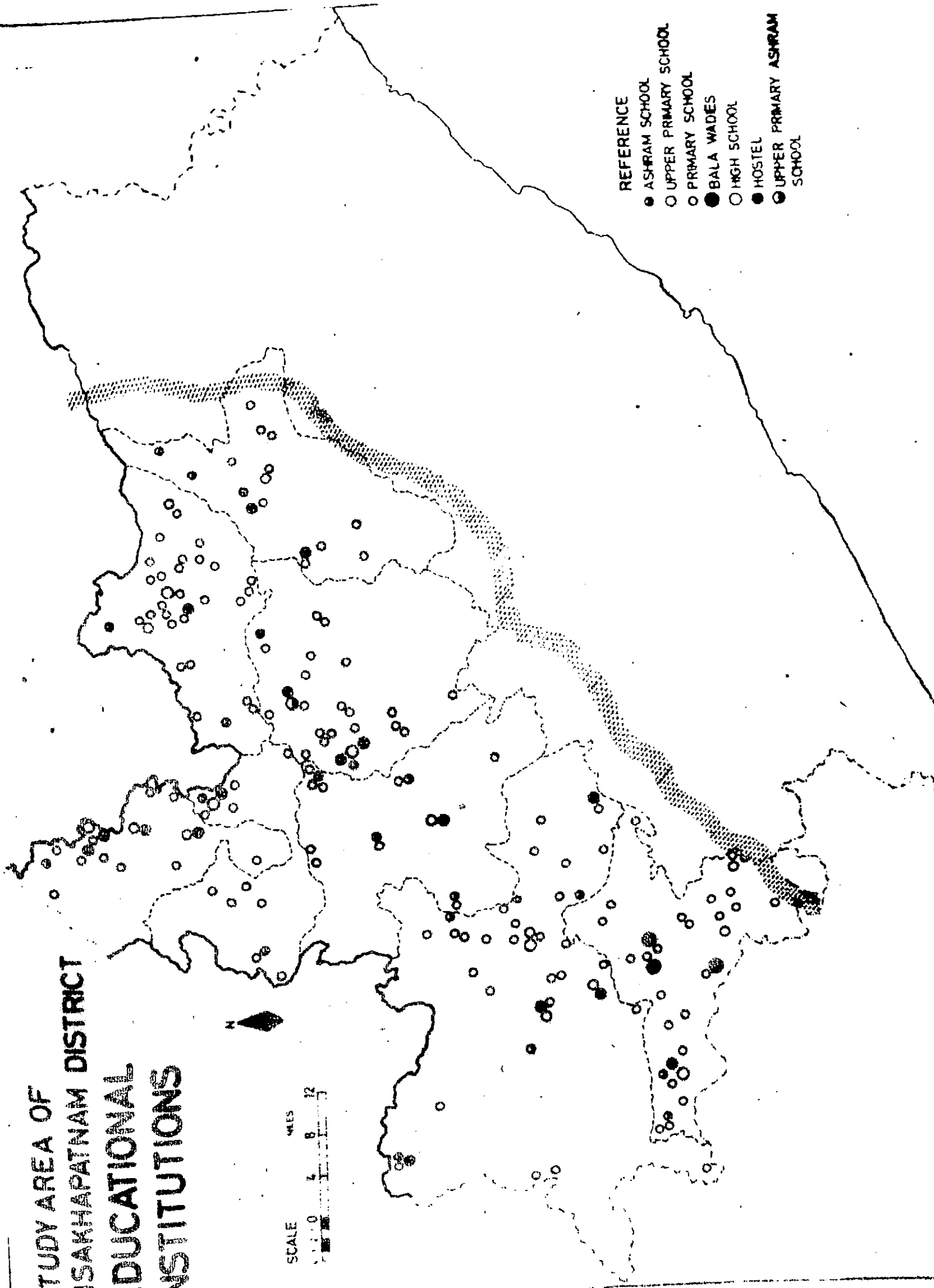
within 2.5 K.M. or less of a village and a middle school within 5 K.m. of a village. No criteria was prescribed for starting of high school. The norms prescribed by Planning Commission for location of schools is not applicable here in view of the peculiar situation obtaining in tribal areas. In the project area, the physiography is entirely different when compared to plains areas. The density of population is less and villages are scattered and their size is very small.

However, the norm regarding enrolment of 100% and 80% of school age boys and girls can be fulfilled by resorting to Ashram Schools, especially to serve small and scattered tribal settlements whose population will be usually below 200. Hence clustering of existing primary schools and converting them into central Ashram Schools with enhanced strength is proposed for serving school age children of villages with less than 200 population in view of the small size and scattered nature of settlements.

STUDY AREA OF VISAKHAPATNAM DISTRICT EDUCATIONAL INSTITUTIONS



- REFERENCE
- ASHRAM SCHOOL
 - UPPER PRIMARY SCHOOL
 - PRIMARY SCHOOL
 - BALA WADES
 - HIGH SCHOOL
 - HOSTEL
 - UPPER PRIMARY ASHRAM SCHOOL



At present 286 Primary Schools, 28 Ashram Schools, 10 Upper Primary Schools, 8 High Schools and 32 Hostels are functioning in the project area of the district. The enrolment of the students in various educational institutions is given in Table No.32.

Map No.21

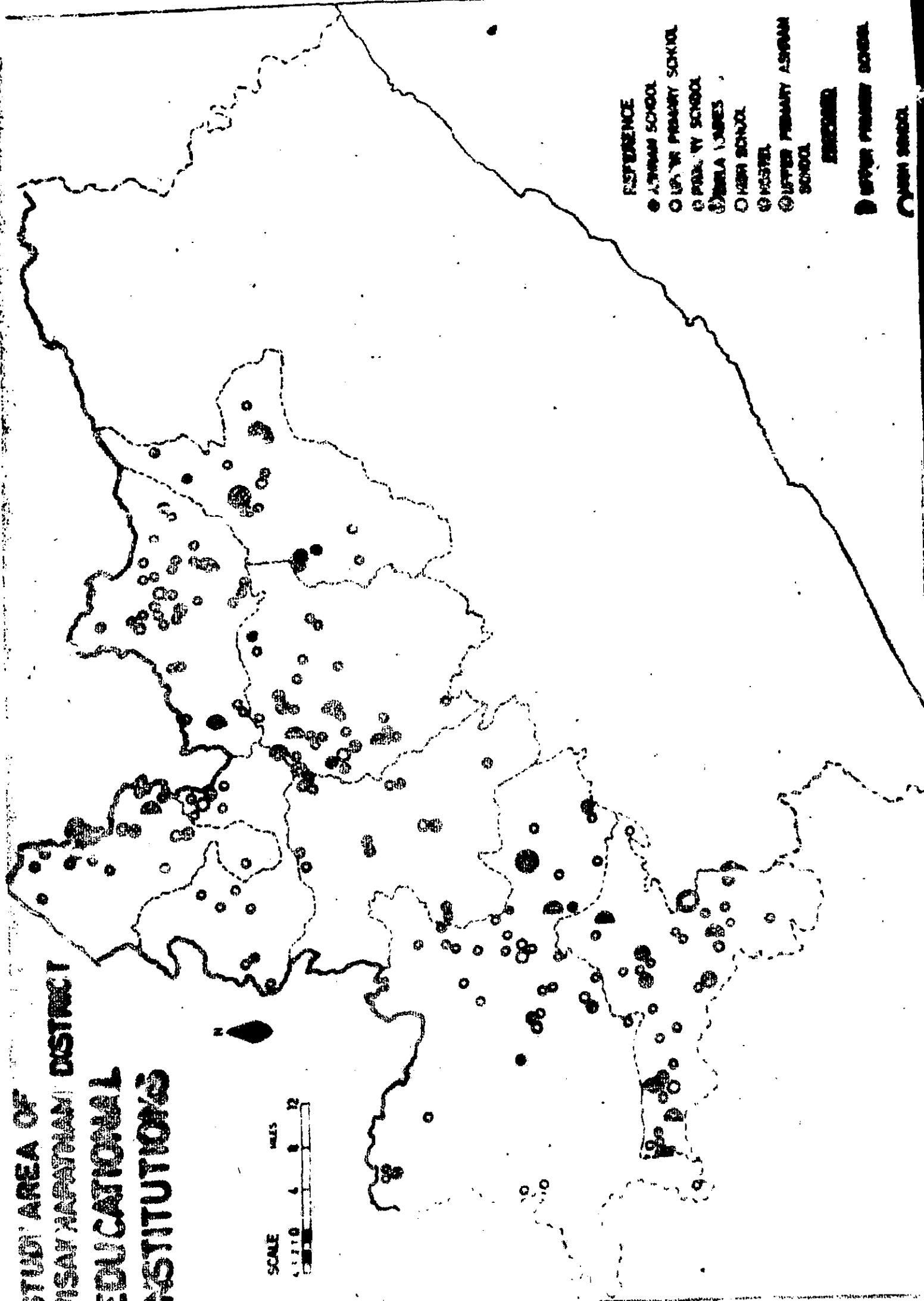
T A B L E - 32

ENROLMENT

Sl. No.	Type of Institution	Enrolment			Total
		Sch. Tribes	Sch. Castes	Other Castes	
1.	Primary Schools	11,559	701	1,429	13,289
2.	Upper Primary Schools	970	60	62	1,100
3.	High Schools	703	76	1,173	1,954
Total:		13,242	837	2,664	16,343

The Block-wise educational institutions together with enrolment is furnished in Annexure No.12.

STUDY AREA OF
VISAYANAPATNAM DISTRICT
EDUCATIONAL
INSTITUTIONS



DISPOSABLE

- J. W. HAMM SCHOOL
- LUTHER PRIMARY SCHOOL
- PINEVIEW SCHOOL
- MARLA LARSEN
- HIGH SCHOOL
- HOSPITAL
- LUTHER PRIMARY ASSEMBLY SCHOOL
- HERRING
- LUTHER PRIMARY SCHOOL
- HIGH SCHOOL

There are 481 teachers working in primary educational institutions, and 85% of them are trained. The teacher-student ratio at primary level works out to 1:28. The number of schools per lakh of population accounts for 61 in scheduled areas of the district as against 55 in the district and 111 in the State. The gap in number of schools is 51 per lakh of population between the project area and the State.

The poor rate of progress of education among tribals is attributed to triple problems namely, wastage, stagnation and absenteeism. According to a study* the incidence of triple factors in Visakhapatnam district is as follows:

Absenteeism	..	35.5%
Wastage	..	71.54%
Stagnation (Index)		40.2

* The Wastage, Stagnation and Absenteeism - Published by Tribal Cultural Research and Training Institute, Hyderabad.

Various socio-economic, cultural and psychological factors are responsible for this phenomena. The facilities like free boarding, lodging and free supply of books, writing material, dress etc., are some of the incentives provided by Government to motivate both tribal parents and children towards education; besides creating conducive atmosphere for better progress. As remedial measure, residential schools have been suggested to reduce the incidence of the problem. Necessary steps have already been taken in this direction by the tribal welfare Department by way of opening more number of Ashram Schools.

There are still villages to be covered in scheduled areas under Primary Education. During the Fifth Plan, under Minimum Needs Programme, it is proposed to cover 100 percent of Boys and 80% of girls in the age group of 6--11.

FUTURE PROGRAMME:

It is proposed to open High Schools, Upper-Primary Schools and Primary Schools at Higher order,

Middle order and Lower order settlements respectively. However, the actual location of some of the proposed institutions at each order results in location of 2 institutions side by side due to the geographical proximity of the settlements. Consequently only one institution is suggested for location when they happen to be in neighbouring settlements, but the other settlements may also have these institutions as and when the sustaining capacity of the settlements increases.

1. High Schools:- 9 Higher order centres have been identified for location of High Schools. The Block-wise proposed high schools are given below:

Sl. No.	Block	Location of proposed high schools
1.	Tadervu	*1. Gudivada
2.	Chintapalli	2. Tajangi
		*3. Chintapalli
3.	Araku	*4. Araku colony
4.	Ananthagiri	5. Ananthagiri
5.	Munchingput	*6. Munchingput
6.	Tedabayalu	*7. Tedabayalu
7.	G. Madugulu	8. G. Madugulu
8.	Koyyuru	9. Rajendrapalem.

* Existing High Schools

There are already 6 High Schools in 6 Tribal Development Blocks, while two Blocks viz., Ananthagiri and G.Madugulu are not having high schools. Hence two high schools are proposed at Ananthagiri and G.Madugulu. A Junior College will be a necessity at the commencement of VII Plan period at Paderu which is centrally located place in the project area. The existing and proposed high schools will be able to sustain the Junior College at the beginning of VII Plan period.

In Chintapalli Block, two high schools are already functioning at Chintapalli and Sileru. Hence there is no need of starting high schools at Chintapalli and Sileru. High School may be started at Tajangi. In Araku Block there is already one high school at Araku colony.

There is one higher order centre identified in Koyyuru Block i.e., Rajendrapalem. Rajendrapalem is the Block headquarters of Koyyuru which is

already having a high school.

Out of the 9 identified higher order centres, only 3 high schools at Anantagiri, G.Madugulu, Tajanri, have been proposed during the project period.

2. UPPER PRIMARY SCHOOLS:

Twenty seven second order centres for the location of Upper Primary Schools have been identified. The Block-wise proposed Upper Primary Schools are given below:

Sl. No.	Block	Location of proposed Upper Primary School.
1.	Chintapalli	1. Kommangi 2. Pedavalasa *3. Lammasingi *4. Sileru 5. Lagisipalli
2.	Paderu	*6. Hukumpeta 7. Addumanda 8. Daligummadi 9. Konthili 10. Guntaseema
3.	Araku	*11. Gannela 12. Madagada 13. Kasipatnam
4.	Anantagiri	14. Peda-Gangavaram

* Existing Upper Primary Schools.

5. Nedabayalu	15. Gampurai
6. Munchingiput	16. Seekari
7. Koyyuru	17. Pedaguda
	*18. Sujana Kota
	*19. Kilagada
	20. Mampas
	*21. Koyyuru
	22. Balaram
	*23. Kuruwada
	24. Revellu
	25. Kantarom
	26. Sarabhanpalem
	27. Manjulu

The Upper Primary Schools are located in all the Blocks except Ananthagiri. Out of which only 6 are situated in the second order settlements given above and the remaining four are in lowest settlements.

In Ananthagiri Block, as Kasipatnam and Pedagangavaram villages are adjacent to each other; one Upper Primary School is proposed at Kasipatnam. Seekari village is very nearer to Nedabayalu which

* Existing Upper Primary Schools.

is already having high school. Hence Upper Primary School at Seekari need not be opened. In Koyyuru Block, Kantaram and Balaram are situated in close proximity, therefore only one Upper Primary School is proposed i.e., at Balaram. In view of the above reasons only 17 new Upper Primary Schools have been proposed during the project period. Sileru has been assigned the second order settlement status as the high school functioning in this centre, Upper Primary School has not been proposed.

5. PRIMARY SCHOOLS:

Of the total population of 2.83 lakhs in 8 Blocks, 49,000 are school age children between 5-11 years of age. As the statistics show, 14,389 children in this age group are already attending primary Schools. Of the remaining 34,611 children, 17,542 are boys and 17,069 are Girls. To achieve 100% enrolment of boys and 80% of girls in this age group under Minimum Needs Programme, a total of 31,197 children (17,542 boys plus 13,655 girls) are to be covered. At a rate of

is due to lack of adequate alternate source of cheap and readily available credit for borrowers. Further the existing institutionalized credit facility is intended to cater the productive purposes. Even this is restricted to Patta holders and the quantum of money provided for this purpose is not adequate enough to meet the credit requirements of eligible tribals. With the result the tribal is once again at the mercy of these moneylenders. Though the protective measures have created a sort of scare among the money lenders it resulted in increase of benami transactions at exorbitant rates of interest and more penal provisions in the agreement between the tribal and money lender which are detrimental to the interests of the tribal. The protective legislations is in the best interest of tribals but in the practice tribal is finding it more difficult to get credit as it is not followed by adequate alternate credit arrangements. This position continues to prevail inspite of the credit facilities available from Reserve Bank of India Revolving Fund through Girijan Cooperative

Corporation. Therefore, there is every need for providing adequate credit to tribals not only for economic purposes but also for Social purposes. This calls for strengthening of credit facility of the Girijan Cooperative Corporation and suitable revitalising the Cooperative Credit structure.

It was found necessary to create special machinery to look after the implementation of the protective legislation. Accordingly the Government have appointed four Special Deputy Collectors in the areas of tribal concentration viz., Bhadrakiri, Khammam, Warangal and Adilabad. They are also provided with Special Deputy Tahsildars specially to look after the implementation of Debt Relief Regulations and to detect violation of this Regulation. The project area has 8 Tribal Development Blocks covering half of the Geographical area of Visakhapatnam district with 2.97 lakhs of tribals and the incidence of land alienation and indebtedness is as high as in other tribal areas. No Special Deputy

Collector was appointed for this district. Further there is need for coordinating the work of officials implementing various protective legislations. The work of special staff is confined to mainly 3 legislations leaving the other protective legislations. This is to be streamlined and extended to implement other regulations by further suitable expansion and strengthening of administrative machinery, so as to have a holistic view of the problem. For this purpose, a Special Deputy Collector for implementation of protective legislation/^{has} been proposed. Further the Deputy Tahsildars appointed under this scheme and attached to Revenue Divisional Officers may be tagged on to Special Deputy Collector of the Project.

As mentioned earlier the Special Deputy Collector will be under the Direct control of the Project Officer and he will be the appellate authority for protective legislation cases. Necessary arrangements have to be made to give wide publicity about the

provisions of protective legislations, and the Government machinery available for this purpose, free legal aid of the Government and other assistance extended to tribals through the Block machinery.

consideration the physiography, the accessibility, centrality, population, availability of infrastructure, command area of each centre etc. Of 2 centres identified as higher order centres, 3 potential urban centres lying in the heart of the tribal areas are chosen for location of these institutions. The brief background of these central places are discussed hereunder:

P A D E R U:

Paderu is the headquarters of Taluk as well as Block. The sub-treasury is located at Paderu. Being centrally located in the Project area, it can be developed as the Headquarters of the Project. In addition to taluk and block offices certain divisional offices like Executive Engineer (R&B), Coffee Board, Survey Department are located at Paderu. It is also a Central place with a network of roads connecting with all block headquarters of the project area. It has a regular bus services to the District Headquarters and nearby market

centres. Paderu has regular postal and tele-communication facilities. It has electricity which is a pre-requisite for establishment of higher order institutions. Banking facilities are also available with the establishment of a Branch of Union Bank of India. Moreover sufficient levelled land is available for establishment of institutions. If the Paderu - J. laput road is completed, it would open-up the vast tribal area in Iedabayalu and Munchingiput Blocks. It would make possible ^{for} marketing of Minor Forest Produce and Agricultural produce by Girijan Cooperative Corporation. Due to lack of communications, the Minor Forest Produce and agricultural produce in these areas is flowing out to nearby markets at Koraput and Jeypore in Orissa State.

CHINTAPALLI:

Chintapalli is another higher order centre which is well connected by all-weather road. It is the seat of Block as well as Taluk

CHAPTER - VII

MESO LEVEL PROGRAMMES

The programmes envisaged under the Integrated Area Development Plan broadly fall under two categories viz., Micro and Meso. The programmes of lower order and limited coverage fall under the first category while the programmes consisting of higher order functions and wider coverage fall under the later category. The Programme like establishing Poultry Farm etc., have the radiation effect mostly to Blocks while the radiation effect of Livestock farm cut across the Block boundaries.

These Meso-level programmes are suggested on a selective basis for the location taking into

centres. Paderu has regular postal and telecommunication facilities. It has electricity which is a pre-requisite for establishment of higher order institutions. Banking facilities are also available with the establishment of a Branch of Union Bank of India. Moreover sufficient levelled land is available for establishment of institutions. If the Paderu - Jhalaput road is completed, it would open-up the vast tribal area in Iedabayalu and Munchingiput Blocks. It would make possible ^{for} marketing of Minor Forest Produce and Agricultural produce by Girijan Cooperative Corporation. Due to lack of communications, the Minor Forest Produce and agricultural produce in these areas is flowing out to nearby markets at Koraput and Jeypore in Orissa State.

CHINTAPALLI:

Chintapalli is another higher order centre which is well connected by all-weather road. It is the seat of Block as well as Taluk

Headquarters from a long time. It has linkages with market and urban centres of the District and neighbouring districts of Andhra Pradesh and Orissa. It is connected by road to important regulated market towns like Anakapalli, Rajahmundry. It is also connected with Balimela Dam in Orissa State and Sileru Hydro Electric Project. There is already a livestock farm and basic sericulture seed Research Station, Tassar Silk Seed Farm. Soil Conservation Subdivisional Office is located here. There is a fair weather road connecting Paderu and G.Madugula Block and an all-weather road to Koyyuru. It has electric supply. Water can be tapped from a stream situated at a distance of 2 K.Ms. It has banking facilities and regular postal and telegraphic services. In view of its central location, better accessibility and availability of water, banking and postal services, Chintapalli has vast potential for further development. Hence it is an ideal location for establishment of Meso-level programmes.

A R A K U:

Araku is another important higher order Centre. It is connected by all weather road to important towns like Vizianagaram, a regulated market town and Visakhapatnam, District Headquarters. The place has already developed administrative infrastructure. The District Agriculture Officer who is exclusively in charge of Scheduled Area is stationed at Araku. The Offices of Deputy Director (Industries), Divisional Soil Conservation Officer and Chief Entomologist of National Malaria Eradication Programme unit are situated at Araku. A Sericulture Farm, a Horticultural Research Farm (Padmapuram Orchards) and Seed Multiplication Farm are situated in the proximity of Araku.

The D.B.K.Railway line is passing through Araku Valley. Araku is an important halting station on D.B.K.Railway line and there is already a fairly big colony of Railway Staff.

Araku has both electricity and potable water supply. Medical and Educational facilities are available at Araku. Further it has regulated bus services to Visakhapatnam and Vizianagaram. Postal and Telecommunication and Banking facilities are available at Araku. Sufficient levelled land is available for establishment of higher order institutions. It commands good hinterland for agricultural, horticultural and Minor Forest Produce. Above all, it has salubrious climate and it is a tourist Centre. In view of all these advantages, Araku is selected for establishment of Meso-level Institutions.

A G R I C U L T U R E:

Massive seed distribution programme is envisaged under Agricultural Development Programme in the Integrated Area Development Plan. The present system of procuring the

seeds of High Yielding Variety from outside through official channels is resulting in inordinate delays and heavy expenditure on transport. Due to inordinate delays, it has become difficult to ensure timely supply of seed. It is therefore proposed to produce the entire seed requirements within the project area so as to ensure timely supply of good seed. There are two Agricultural Farms working in the project area which can be geared to produce the seed required for the project area. The Seed Multiplication Farm at Tajangi has over 30 acres of irrigated land which with the provision of all the improved inputs and necessary draft force for ploughing, thrashing and transportation of crop, is capable of producing about 600 quintals of paddy. It is possible to raise paddy for seed purposes in about 10 acres of the livestock Farm, Chintapally. The Livestock farm has over 800 acres of land for growing fodder. A portion of its land can be irrigated by a

perennial spring flowing through the farm lands. The farm has necessary farm machinery and a Farm Manager who is exclusively incharge of farm lands. With the development of this land it is envisaged to raise about 200 quintals of paddy seed and 300 quintals of Ragi and 100 quintals of Bajra and Jowar seed each in the lands of livestock Farm. It is also envisaged to produce 1,000 quintals of paddy and 1,000 quintals of millets at Tajangi Joint Cooperative Farm, Tajangi. It is at present in initial stages. The land is being developed to make it suitable for cultivation. The services of an Agriculture Graduate are available for development/^{of}land and cultivation of various crops on scientific lines. Similarly it is envisaged to produce 200 quintals of High Yielding Variety of paddy seed and 300 quintals of various High Yielding Variety of Millet seed at the exploratory and Demonstration Farm at Kothavalasa near Araku by widening and deepening the existing irrigation water Tank. This would

cater to the requirements of High Yielding Variety Seed for the First ten years.

SEED DEVELOPMENT PROGRAMME

Development of Seed Multiplication Farm, Tajangi

Sl. No.	Item of expenditure	Recurring Rs.	Non-recurring Rs.
1.	Improvement of Provision of Farm Equipment for Seed Multiplication Farm at Tajangi.	..	50,000/-
2.	Farm Store	..	25,000/-
3.	Supply of Inputs @ 300/- rupees per acre.	10,000/-	..
4.	Working Capital	6,000/-	..
Total:		16,000/-	75,000/-

DEVELOPMENT OF KOTHAVALASA FARM

Sl. No.	Item of expenditure	Recurring Rs.	Non-recurring Rs.
1.	Improvement of provision of farm equipment for seed Multiplication Farm at Kothavalasa.	..	75,000/-
2.	Farm store	..	35,000/-
3.	Supply of inputs	15,000/-	..
4.	Working capital	10,000/-	..
		25,000/-	1,10,000/-

ESTABLISHMENT OF AGRICULTURAL RESEARCH STATION:

Continuous and systematic research support is essential for exploratory trials for new introduction and standardization of Technical Know-how and agronomic practices before introducing various high yielding varieties of field and fruit crops. Establishment of Agricultural and Horticultural Research Stations with small testing units in different altitudes is envisaged in the project area. Exact location of these farms can be done after studying the micro-climatic conditions, irrigation sources, availability of sufficient cultivable land and other necessary infrastructure. For the present, the existing Exploratory-cum-Demonstration Farm at Kothavilase and Padmapuran Orchard can be upgraded so that these can serve as Research Stations for experimentation on various field and fruit crops. Padmapuran Orchard can also serve as a nursery for various fruit plants to cater to the needs of the fruit seedlings in the project area. Both these Farms

have to be strengthened by providing the assured source of water, adequate staff and other amenities.

DEVELOPMENT OF PADMAFURAM ORCHARD

Sl. No.	Item of expenditure	Recurring Rs.	Non-recurring Rs.
1.	Farm equipment	..	35,000/-
2.	Store	..	20,000/-
3.	Repairs to the Pip-eline (water supply)	..	10,000/-
4.	Fencing and Revetting Tank etc.	..	10,000/-
5.	Supply of Inputs	15,000/-	..
6.	Staff salaries, Wages to Labour and Contingencies.	60,000/-	..
		75,000/-	75,000/-

With massive programme for horticultural and pomicultural development in the project, heavy marketable surplus of fruits and exotic vegetables like potato, tomato, cauliflower and cabbage etc. is expected within a span of 5 years.

The tribals are losing heavily due to lack of marketing and storage facilities for their produce. If Cold Storage facilities are provided in the Project Area, the tribal cultivators can be benefitted very much by marketing their produce during lean season at high prices. It is proposed to establish the cold storage at Paderu with a storage capacity of 100 tons of vegetables and fruits at a cost of Rs.1.00 lakhs.

Due to lack of ware housing facilities, the tribals are losing heavily by selling their agricultural produce immediately after harvest at low prices. Provision of ware housing facilities would not only help tribals to market their produce at right time for good price but also enable them to avail of institutional credit from cooperative societies and commercial banks against the security of agricultural produce. It is therefore envisaged to construct three godowns at Paderu, Chintapalli and Araku at a cost of Rs.5 lakhs each.

It is envisaged to undertake soil conservation work and development of cultivable waste land and pasture land on a large scale in the project area. Soil Conservation Units are at present undertaking work in Machkhund and Sileru basins. The soil conservation has to be taken in the other areas also. The details of Soil Conservation works are furnished in the Soil Conservation Scheme. It is therefore proposed to establish a Soil Conservation Unit at Paderu. Three Land Development Units equipped to reclaim and develop 500 Hectares each per annum will be established at Chintapalli, Paderu and Araku.

In the agriculture plan an intensive coverage under improved varieties of Paddy and other crops has been proposed in the project area. Soil testing will be a necessary pre-requisite for this programme. A soil testing laboratory has been proposed to be established at Paderu. The detailed estimates are given here under.

ESTABLISHMENT OF SOIL TESTING LABORATORY

Sl. No.	I t e m	Recurring Rs.	Non-recurring Rs.
1.	Furniture	..	25,000
2.	Laboratory equipment	..	35,000
3.	Chemicals & Glass wares	..	30,000
4.	Other contingencies.	..	5,000
5.	Establishment	21,200/-	..
6.	Replacement of equipment.	2,000	
7.	Replacement of Glass wares & Chemicals.	4,000	
8.	Contingencies.	2,000	
		29,200	95,000

ANIMAL HUSBANDRY:

Strengthening of Livestock Farm: The livestock farm at Chintapalli has not made any perceptible impact on the livestock development in the project area inspite of its long existance. It has all the

necessary infrastructure and staff support to achieve its avowed objectives of upgrading the local livestock and demonstrating the improved methods of rearing and feeding the cattle and fodder development to the tribals. It has got excellent scope for development into a full fledged Demonstration-cum-Production Farm and is capable of galvanising the animal husbandry programmes in the project area, if its functioning is streamlined. A detailed programme for strengthening the structure and stream-lining the functioning of the Livestock Farm is given separately under Animal Husbandry Schemes so as to make it the hub of livestock development Programme in the Project area.

I N D U S T R I E S:

The climate, soil, rainfall and altitude of the project area are congenial for raising mulberry plantations which in turn offer ample scope for sericulture programme on a large scale. In view of its natural advantages Government have already

started sericulture schemes by way of opening basic seed and research farm at Chintapalli and Chawkie rearing unit at Araku. Extension work is undertaken on a moderate scale in these two blocks to encourage mulberry plantations and sericulture by tribals. As a result of extensive programme there is about 60 acres of mulberry plantation in Araku area. If sustained and systematic effort is made, there is vast scope to increase the area under mulberry plantations and take up sericulture by the tribals in Araku, Munchingput, Pedabayalu Paderu and G.Madugula blocks. It is envisaged to bring another 100 acres under mulberry cultivation during Vth Five Year Plan. A tassar silk unit is also functioning at Chintapalli as the Chintapalli forests have luxuriant growth of tomentosa on the foliage of which the tassar silk worms are grown. There is scope for further developing tassar silk in Chintapalli and G.Madugula blocks. In order to achieve this, Sericulture and Tassar Units will be strengthened by providing necessary equipment and

and staff. It is proposed to strengthen the reeling centres at Chintapalli and Araku to provide facilities for reeling the cocoons collected from the private and state farms in the project area so as to provide employment potential to 100 tribal women at each of the centre. The Central Silk Board will be approached to ensure Silk and Tassar yarn produced at these centres/^{and yarn} will be marketed through central silk board to ensure good price for them.

In view of existence of favourable conditions in the project area tapioca cultivation is envisaged on an extensive scale in the immediate future in the project area. Tapioca produced in the project area will be a cheap raw material for manufacture of 'sago' and vermicelli and other tapioca based edible products. It is proposed to establish three Tapioca processing units at Araku, Chintapalli and Taderu in order to procure tapioca produced in the hinterland and manufacture tapioca based food products and market them through the

Girijan Cooperative Corporation limited. These units would not only assure good price for tapioca ^{also} crop but provide employment to the tribals. (The financial implications are furnished under industries).

In order to exploit the vast potential of citrus, Jack and other fruits available at cheap rates in the project area, it is envisaged to expand the existing unit at Iaderu and establish two fruit canning units at Chintapalli and Arasu during the Fifth Five Year Plan.

These units will further be expanded in VI Five Year Plan to utilise the new crop from the new orchards laid out in the fifth Five Year Plan period. Establishment of Fruit Canning Units would not only assure good price for the fruits produced at in the project area but also create an employment potential for the tribals.

CENTRAL WORK SHOPS:

The project area at present does not have facilities for repair and servicing of even basic

agricultural implements. In the wake of massive programmes launched for the development of agriculture, Animal Husbandry and other allied sectors on modern and scientific lines which involve use of various types of farm and other equipment, it is essential to establish three workshop-cum-service stations at Araku, Chintapalli and Paderu with facilities to attend to repairs and servicing of various types farm and other equipment at a cost of Rs.2.00 lakhs each.

There is no petrol pump and automobile workshop in the entire project area. As a result it is becoming necessary to send the vehicles to Visakhapatnam and Vizianagaram for fuel and repairs of Government vehicles which is not only resulting in hampering of development work but also in wastage of precious fuel and time. This can be avoided by establishing three petrol pumps at Araku, Chintapalli and Paderu. The Indian Oil Corporation will be approached to open petrol pumps at these places under its programme of providing employment to educated unemployed.

MARKETING:

Regulated Market is proposed to be established at Faderu during V Five Year Plan so that it can regulate the price structure of various commodities marketed at various shandies in the project area. Sub-regulated markets will be established at Araku and Chintapalli during VI Five Year Plan.

A sum of Rs.1.00 lakh is earmarked for establishment of regulated market at Faderu in the Fifth Five Year Plan, and a sum of Rs.1.00 lakh is earmarked for establishment of sub-regulated markets at Araku and Chintapalli.

EDUCATION:

There are 8 High Schools functioning in the Project area. It is expected that 100 students are likely to leave the high schools on successful completion of high school education to seek higher education. As there are no institutions for collegiate education within the Project area, very few

tribal students are pursuing their further studies at nearby Urban Centres. In order to promote higher education in the project area, one Junior College is proposed in the Project Area which can subsequently be upgraded as degree College. Paderu being the centrally located place in the Project area is ideally suited for location of the Junior College.

Programmes for the technical training of the tribals have been proposed in the project. There is an acute dearth of skilled workers in the project area. The demand for workers trained in various industrial trades will increase during the project period. In order to cater to the growing need for skilled workers, and to promote industrial growth in the project area an Industrial Training Institute with facilities to impart training in various industrial trades. The Institute should specialise in imparting training in mining. Training in mining is particularly essential to cater to the demand for trained miners with the exploitation

of limestone, bauxite and other mineral ores available in the project area. One Industrial Training Institute is proposed at Yendapallivallasa which has all the amenities needed for establishing an I.T.I., communications, electricity, site for construction of building, water supply etc.

Unemployed tribal youth will be granted licences for financial aid for opening petrol pumps. The petrol pumps will be equipped to undertake servicing and minor repairs.

MEDICAL AND HEALTH:

The existing hospitals at Chintapalli and Araku are proposed to be upgraded into full-fledged hospitals with inpatient wards and operation theatres equipped to conduct major and minor operations. The V.D.Clinics are also proposed to be attached to these hospitals in view of increasing incidence of V.D. in the project area.

STRENGTHENING OF THE HOSPITALS

Sl. No.	Item of expenditure	Recurring	Non-recurring
		Rs.	Rs.
1.	Purchase of Surgical equipment etc.	..	30,000/-
2.	Purchase of Hospital equipment, Medicines, diet etc.	30,000/-	..
		30,000/-	30,000/-

ADMINISTRATION

At the district level Collector is chief Coordinating the implementing authority. He is assisted by various subject matter specialists like, Deputy Director (Agriculture), District Veterinary Officer, Deputy Director (Industries), Executive Engineer Irrigation, R & B, Panchayat Raj, Deputy Registrar of Cooperatives, District Tribal Welfare Officer, District Panchayat Officer, District Educational Officer, District Medical and Health Officer, Assistant Director, Handlooms and other district Officers. These officers have their divisional officers to assist for both implementation

and supervision of programmes. The District Officers act as Personal Assistants to the Collector. Apart from this there is District Revenue Officer who is exclusively incharge of Revenue subjects at District level. Collector is assisted by 3 Revenue Divisional Officers.

Consequent on the introduction of Democratic Decentralization a three tier system of Development Administration i.e., Zilla Parishad, at District level, Panchayat Samithi at Block level and Panchayat at village level came into existence. These institutions have been created for Planning and execution of Community Development Programmes. Zilla Parishad is headed by Chairman who is a non-official. Its general body consists of all the Samithi Presidents of the district and other nominated and Coopted members. There is a Secretary for Zilla Parishad who is assisted by Managers and other Ministerial staff. Various sub-committees are constituted for various subjects over which the

Collector presides as ex-officio Chairman. These Committees meet periodically for reviewing and approving of the schemes for implementation in the concerned Samithis..

At Samithi level, Block Development Officer is the main coordinating and implementing functionary, who is assisted by Manager and subject matter specialists designated as extension staff. These specialists include Agriculture, Animal Husbandry, Cooperation, Engineering, Medical, Industries, Panchayat etc. At Samithi level also there is general body and 7 Standing Committees for various subjects. All the village Panchayat Presidents will be the members of Samithi general body. In addition to it there are certain coopted members from different fields. The Committees meet periodically for review, sanction and implementation of the schemes. Thus the arrangement is made for ensuring people's participation through 3 tier system of Panchayat Raj.

The project area consists of 8 Tribal Development Blocks covering fully the 2 Taluks of Chintapalli and Paderu and parts of S.Kota, Narasipatnam and Chodavaram Taluks. The Revenue Divisional Officers are supervising authorities over the Samithis falling within their jurisdiction. The project area constitutes 50% of the total geographical area of the District.

Some of the Divisional and District Officers are stationed within the jurisdiction of the project area. Executive Engineer (R & B) and Divisional Panchayat Officer are stationed at Paderu. District Agricultural Officer, Deputy Director of Industries, Soil Conservation Officer, are stationed at Araku. These officers are not under the control of Zilla Parishad, but they are under the supervision of their superior Officers at Headquarter.

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The general sector fund for implementation of the programmes are routed through the Heads of the

Departments to Zilla Parishad which are in turn released to the concerned Samithis. The Tribal Welfare funds are released by the Director of Tribal Welfare to the District Collector and to the District Officers for specific schemes to be implemented in their jurisdiction. In view of the heavy financial investments envisaged in the Integrated Area Development Plan, the implementation of the programmes requires an exclusive administrative body besides an advisory committee to guide and advise the project administration in the implementation process of the project. As the multiple agencies functioning in the project area are under the control and supervision of different Departmental officers, there appears to be lack of proper coordination among themselves. Hence the proposal for a single agency for programme implementation and supervision. As stated earlier it is envisaged to have an Advisory Committee and Project Authority. The composition of the proposed Executive and Advisory bodies are mentioned hereunder.

ADVISORY COMMITTEE

1. Collector	Ex-Officio Chairman
2. District Tribal Welfare Officer	Member
3. Zilla Parishad Chairman	"
4. President of District Cooperative Central Bank, Vizianagaram.	"
5. Managing Director, Girijan Cooperative Corporation.	"
6. Deputy Director, Agricultural	"
7. Deputy Director, Industries.	"
8. Superintending Engineer, Minor Irrigation & R & B.	"
9. Assistant Director, Handlooms	"
10. District Health & Medical Officer.	"
11. District Educational Officer	"
12. Conservator of Forests.	"
13. Assistant Director Mines & Geology.	"
14. Deputy Director Fisheries.	"
15. District Veterinary Officer	"
16. Deputy Registrar Cooperative Societies.	"
17. Local M.I.As (Tribal)	"
18. Samiti Presidents (8 T.D.Blocks)	"
19. Agent of the Lead Bank State Bank of India.	"
20. Zonal Director of Backward Classes Welfare	"
21. Project Officer.	Member Secretary.

Besides these Divisional Officers and other subject specialist of Forest and Engineering Departments will be special invitees as and when their subjects are included in the Advisory Committee meeting.

The Project Advisory Committee will advise the project authority on the nature of schemes to be implemented and the location of schemes within the project. Committee will meet once in three months. Efficient and expeditious implementation of schemes presumes delegation of ample powers to the project authority.

There will be a Project Officer who will be the Executive Chief. The Project Officer would be designated as Additional Collector so that he is invested with power of execution and judiciary so as to hear the decisions of the lower court cases relating to particularly land alienation and Debt relief etc.

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PROJECT AUTHORITY

Designation	Scale of pay.	No. of posts.
1. Project Officer	900-1400	1
2. Asst. Project Officers		
a) Agriculture	600-1000	1
b) Animal Husbandry	600-1000	1
c) Education	700-1100	1
d) Industries	700-1100	1
e) Special Deputy Collector (Protective Legislation)	500--900	1
f) Executive Engineer	700-1100	1
g) Administrative Officer	500--900	1
h) Evaluation Officer	500--900	1
3. Asst. Accounts Officer.	300--600	1
4. Manager (Programmes Establishment)	250--500	2
a) Evaluation Assts.	250--500	3
Agriculture Extension Officers	250--500	27
5. Senior Assistants..	140--200	6
6. Junior Assistants.	90--192	12
7. Typists (Steno 1)	90--192	5
8. Attendants.	62---90	12

The District Agriculture Officer who is stationed at Araku will be the Assistant Project Officer (Agriculture) of the project. Similarly the Deputy Director Industries stationed at Araku will be Assistant Project Officer of the Project. Executive Engineer R & B stationed at Paderu will be the Assistant Project Officer of the Project and the project area will come under control of the Executive Engineer. The District Tribal Welfare Officer now attached to Collector will be stationed at Project headquarters and he will be the Administrative Officer. The other Officers will have to be recruited afresh. The Deputy Tahsildar now attending to Protective Legislation work will be brought under the control of the Project Authority. The Block Officers and their extension team would also come under the direct control of the Project Officer. Besides these all other developmental Departmental staff who are working in the project area would have to be placed under the administrative control of the Project Authority. However, the

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f) Executive Engineer	700-1100	1
g) Administrative Officer	500--900	1
h) Evaluation Officer	500--900	1
3. Asst. Accounts Officer.	300--600	1
4. Manager (Programmes Establishment)	250--500	2
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8. Attendants,	62---90	12

development functionaries attached to the Project Authority would continue to be under the technical control of their superior officers of their respective Departments attached to the Macro level set up as proposed in the sub-plan which is as follows

1. Commissioner for Tribal Welfare
2. Project Co-ordinator
3. Director of Tribal Welfare
4. Joint Director, Tribal Welfare
5. Deputy Director Tribal Welfare
6. Deputy Director (Subject matter specialists) .
 - i) Agriculture
 - ii) Animal Husbandry
 - iii) Education
 - iv) Industries
 - v) Co-operation.
7. Information Publicity and Statistics Cell.
 - i) Information Officer
 - ii) Statistical Officer.

It is proposed to have a concurrent evaluation Cell so as to enable the evaluation of

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the programmes and also to indicate a few plans in light of the Evaluation and provide the necessary technical Assistance to the Project Authority in the formulation of schemes. The Headquarters of the proposed Project may be located at Paderu.

To facilitate smooth and timely implementation, various developmental Departments will have to place the funds at the disposal of the Project Officer. Like-wise Zilla Parishad also has to place the funds directly at the disposal of the Project Officer instead of releasing funds to various Tribal Development Blocks in the Project area. This arrangement will facilitate the quick flow of funds through a single agency.

At the state level there is at present a State Committee on Tribal Development chaired by the Commissioner, Tribal Welfare (Member Board of Revenue). The Secretaries Finance, Planning, Revenue presently newly created (Employment and Social Welfare)

and only the Heads of Departments concerned are members. This committee is responsible for the formulation and review of the Tribal Welfare Schemes. Now in the context Integrated Area Development Plan the composition and functions of this committee may have to be modified. It may comprise all Secretaries to Government except, Home and Law. (Macro level committee) with Director of Tribal Welfare as Member Secretary. Zonal Director, Backward Classes will be a Member of this Committee.

The Project Advisory Committee shall furnish to state Committee a detailed programme of Action each year 6 months in advance and this programme shall be implemented after it is approved by the State Committee. This will obviate reference of individual schemes to Government as each Department will have sufficient time to examine the respective schemes in detail as the Advance programme of Action will be made available to them at least 6 months in advance. Modifications and formal administrative sanctions will however be approved

accorded by the Project Officer/Collector/Advisory Committee as indicated here under. Thus the newly constituted committee will be responsible for sanction of the Annual Action Programme besides review of the schemes.

DELEGATION OF POWERS

- | | |
|--|---|
| 1. Diversion of funds from one sector to another. | Government. |
| 2. Diversion of funds from the scheme to another within the same sector. | Project Officer (5000) Collector (10000) Advisory Committee (20000)
Department concerned if it exceeds Rs.20,000/- |
| 3. Technical sanctions. | Collector with the assistance of the Technical Officer at District level connected with the scheme concerned will exercise the powers the Head of Departments except in case of Medium Irrigation major construction works and electricity schemes which will be processed through the normal channels. |
| 4. Detailed Administrative sanctions of schemes approved by the State Committee on Tribal Development. | 1. Upto Rs.25,000/- Project Officer
2. Upto Rs.50,000/- Collector
3. Above Rs.50,000/- Advisory Committee |

The cost of the establishment works out to Rs.4.32 lakhs per annum. The non-recurring expenditure in items like Furniture, Equipment, Vehicles works out to Rs.4.50 lakhs. A sum of Rs.17.50 lakhs has been provided for construction of Office building and staff quarters at Project Headquarters.

	<u>Recurring</u>	<u>Non-recurring</u>
Staff.	4,12,000	..
Petrol	6,000	..
Contingencies	14,000	..
Office building		2,50,000
Staff quarters		15,00,000
Furniture and Equipment.		2,50,000
Vehicles.		2,00,000
	<u>4,32,000</u>	<u>22,00,000</u>

Per Annum

Total expenditure Rs.86.40 lakhs + Rs.22.00

Grand total 108.40 lakhs