

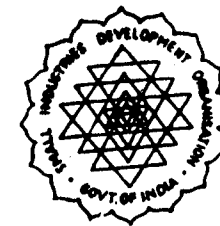
Gazette Section City

REPORT ON THE
INDUSTRIAL DEVELOPMENT POTENTIALITIES
OF
TIRUCHIRAPPALLI DISTRICT

Tiruchirappalli District Gazetteer
Industries Chapter file.



CURNEY - Aug - September 1980



February 1981

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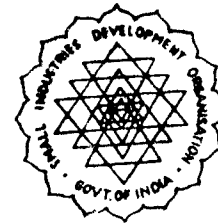


SMALL INDUSTRIES SERVICE INSTITUTE

Ministry of Industry
Government of India

65/1, G. S. T. ROAD,
MADRAS

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OF
TIRUCHIRAPPALLI DISTRICT**



February 1981



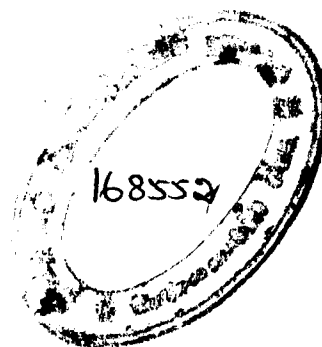
SMALL INDUSTRIES SERVICE INSTITUTE
Ministry of Industry
Government of India
65/1, G. S. T. ROAD, GUINDY,
MADRAS-600 032.

REPORT ON THE
INDUSTRIAL DEVELOPMENT POTENTIALITIES
OF

TIRUCHIRAPALLY DISTRICT

FEBRUARY, 1981

GOVERNMENT OF INDIA
SMALL INDUSTRIES SERVICE INSTITUTE
MINISTRY OF INDUSTRY
GUINDY, MADRAS 600 032



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FOREWORD

An Industrial Potential Survey of Tiruchirapalli District was conducted as early as 1966 and the Pre-Intensive Campaign Survey in 1973 by the Small Industries Service Institute, Madras. Since a long time has elapsed, the State Department of Industries, Government of Tamil Nadu, desired the Institute to conduct a fresh survey to assess the present scope for the development of small-scale industries in the district.

In response to the request from the State Industries Department, a team of officers of this Institute undertook a survey of the District in collaboration with the District Industries Centre, Tiruchirapalli during August-September 1980. //

The effective guidance received from Shri S. Srinivasan, Collector of the district, was a source of inspiration to the team in the conduct of the survey. We express our grateful thanks to him for his cooperation and guidance.

But for the wholehearted and active cooperation of Shri P. K. Poornanandam, the then General Manager in charge, Shri S. Veluswamy, Manager (Economic Investigation) and Shri P. Muthuswamy, Investigator of the District Industries Centre, Tiruchirapalli, the Survey would not have been the success it was. We place on record our deep sense of gratitude to them.

We also place on record our sincere gratitude to the different District Officers, Divisional Development Officers, Commissioners of Panchayat Unions, Small Industries Association, Technical Institutions and industrialists for their valuable cooperation and enlightened suggestions for the industrialisation of the district.

I have pleasure in placing on record my appreciation of the work done by the Survey Team of the Small Industries Service Institute, Madras and the other members of the staff of the Small Industries Service Institute who provided able support to the survey team.

The findings of the Survey, presented in the report, it is hoped, will be of interest not only to the District Industries Centre but also to all other agencies connected with the promotion of different sectors of industries and the prospective entrepreneurs.

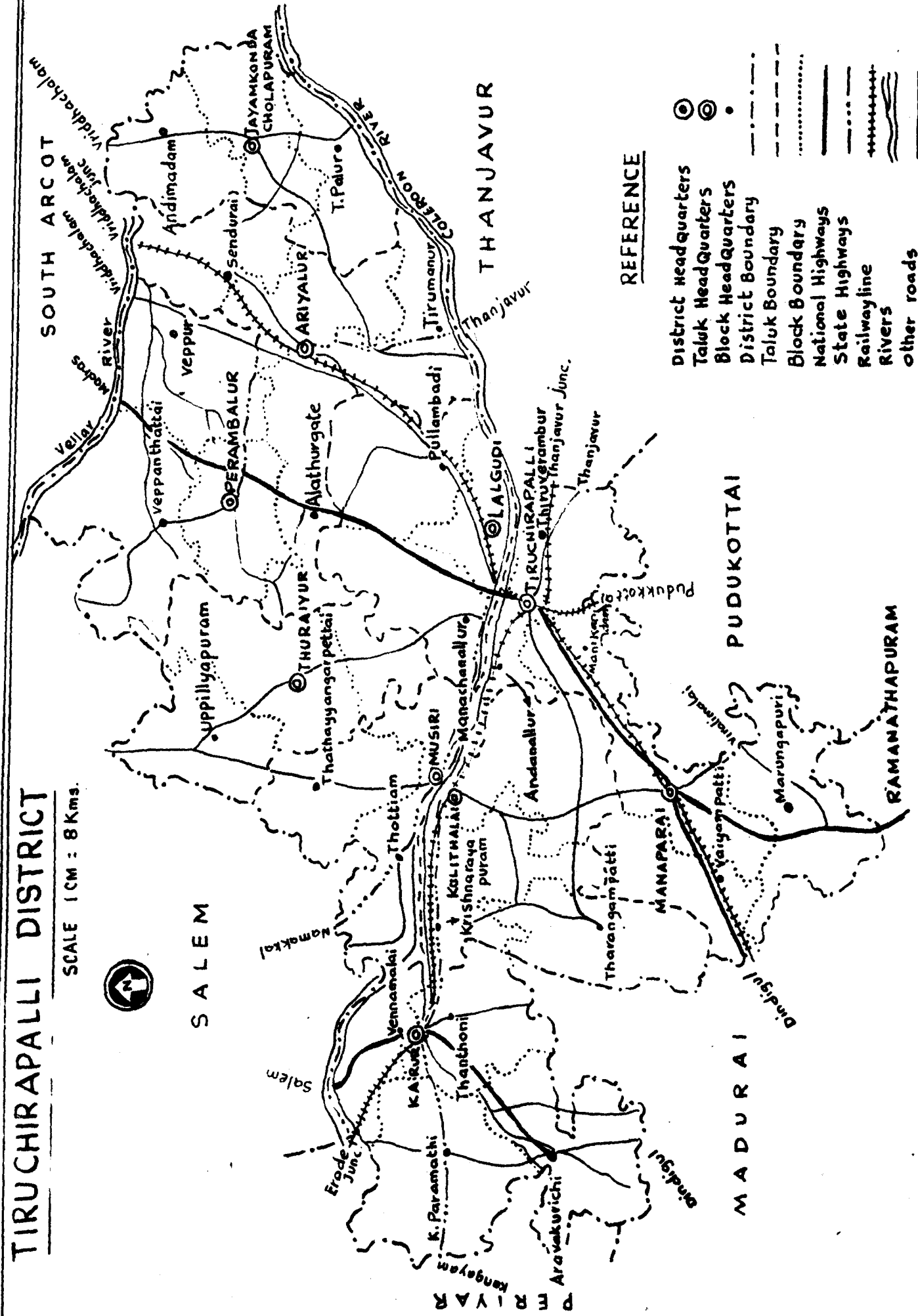
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Date: 18 2 1981

C V KUPPUSWAMY
DIRECTOR



TIRUCHIRAPALLI DISTRICT

SCALE 1 CM = 8 Kms.



SURVEY TEAM OF THE SMALL INDUSTRIES SERVICE INSTITUTE, MADRAS

1. Shri V S KARUNAKARAN : Deputy Director
- Mechanical Engineering
2. Shri S GURUSWAMY : Assistant Director
- Production Index
3. Shri S SUNDARESAN : Assistant Director
- Chemicals
4. Shri P B NAIR : Small Industry Promotion Officer
- Ancillaries
5. Shri O K SWAMINATHAN : Investigator
- Economic Investigation &
Statistics

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TIRUCHIRAPALLI DISTRICT AT A GLANCE VIS-A-VIS TAMIL NADU

	<u>Tiruchirapalli District</u>	<u>Tamil nadu</u>
<u>I. Physical and Geographical features:</u>		
1. Area	11,114 sq.km.	1,30,069 sq.km.
2. No. of taluks	10	132(Districts-16)
No. of Divisions	4	
3. No. of Panchayat Unions	31	374
4. Main rivers	Cauvery & Coleroon	Cauvery, Vaigai, Thamaraparani & Pennai.
5. Average rainfall	867.8 mm	946 mm
6. Coastal line	Nil	997 km
<u>II. Population (1971):</u>		
1. Total population	31.92 lakhs	411.99 lakhs
2. Males	16.07 "	228.70 "
3. Females	15.85 "	222.42 "
4. Annual growth rate of population during 1961-71	1.96%	1.81%
5. Density of population	287 per sq.km.	317 per sq.km.
6. Working force	12.02 lakhs (38%)	147.41 lakhs (35.78%)
7. Literacy rate	37.50%	39.46%
<u>III. Agriculture:</u>		
1. Gross area under cultivation	7.09 lakh hectares (1978-79)	66.36 lakh hectares.
2. Important crops	Paddy, cholam, cumbu, ragi, maize, red gram, sugar cane, cotton, ground nut, gingelly, coconut, chillies banana & cashew.	Paddy, millets, pulses, ground nut, chillies, banana, coconut, cashew, sugar cane, cotton, palmyrah, etc.
<u>IV. Forest:</u>		
1. Area under forest	0.61 lakh hectares	22.15 lakh hectares.
2. Important forest produce	Firewood, sandalwood, Cashewnut, Eucalyptus & Bamboo	Teakwood, Firewood, Casuarina, Eucalyptus, Sandalwood, bamboo, rubber etc.
<u>V. Livestock and poultry (1977):</u>		
1. Total livestock population	25.05 lakhs	241.46 lakhs
2. Cattle	8.68 "	108.01 "
3. Buffaloes	2.97 "	30.77 "
4. Sheep and goats	12.51 "	94.91 "
5. Others	0.89 "	7.76 "
6. Poultry population	11.30 "	143.47 "

: 2 :

VI. Minerals:

- | | |
|---------------|----------------------------|
| 1. China clay | 1. Asbestos; 2. Bauxite, |
| 2. Limestone | 3. Clay; 4. Feldspar; |
| 3. Gypsum | 5. Fireclay; 6. Garnet |
| 4. Quartz | (abrasive); 7. Gypsum; |
| 5. Feldspar | 8. Kaslin; 9. Lignite; / |
| 6. Fireclay | 11. Limeshell; 12. Magne- |
| | site; 13. Mica; 14. Quartz |
| | 15. Sillimanite; |
| | 16. Vermiculite; |
| | 17. Sulphur. |

/10. Limestone

VII. Infrastructural facilities:

- | | | |
|----------------------------------|---|---|
| 1. Road | 9,222 km
(1977-78) | 1,05,319 km (1977-78) |
| 2. Railways | 274 kms
(Broad gauge
98 km
Metre gauge-
176 km) | 6,397 kms.
BG 2,469 km
MG 3,928 km |
| 3. Post Offices | 1,050 (1978-79) | 11,491 (1977-78) |
| 4. Telegraph Office | 155 (1978-79) | 2,916 (1978-79) |
| 5. Public Call offices | 249 " | 4,036 " |
| 6. Total power consumption | 459.4 million units (1978-79) | 10,206 million units (1978-79) |
| 7. Water supply | Mostly depending on rivers wells & tanks. | Rivers, wells & tanks. |
| 8. Technical Education: | | |
| Engineering college | 1 | 12 |
| Polytechnics | 2 | 30 |
| Industrial Training Institutes | 2 | 32 |
| | <u>Existing Industrial Estates</u> | <u>No. of sheds</u> <u>No. of places</u> |
| 9. Factory space | Ariyamangalam - 1 | 33 33 |
| 10. " | Karur - 1 | 6 |
| | Thiruverumbur - 1 | 34 No. of sheds 783 |
| | Thurvakudy - 1 | |
| 10. Branches of commercial banks | 195 (197.) | 2,645 (1978-79) |
| 11. Population per bank branch | 19,950
(1978-79) | 21,600
(as on 30.6.1976) |
| 12. Existing Industries | a. Large scale (about 45) textile mills, cement, sugar mills, rice mill, high pressure boilers, seamless steel tube, leather etc. | a. Medium and large industries (about 1175 units by end of 1977) Textiles, iron and steel castings, forgings, special steels, fuel gas, diesel engines, electric motors, electrical furnaces, cables & wires teleprinters, automobiles & parts, sugar machinery, typewriters, calculators, flour mills, incubators, cement, matches, bicycle etc. |
| | b. Registered small scale units as on 31.3.80-1052 | 28,642 |

: 3 :

- b. Registered small scale units as on 31.3.80 -1052 28,642.

Main products manufactured:

Food, tobacco, cotton, textiles, wood, paper, leather and chemical products, metal products, machine tools and parts, transport equipments, etc.	Marine products, food and allied products, hosiery and readymade garments, leather and leather products, metal products, glass and ceramic products, chemical products, electrical products, matches, fire works, litho & offset printing, etc.
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SUMMARY OF THE REPORT ON THE INDUSTRIAL DEVELOPMENT POTENTIALITIES OF
TIRUCHIRAPALLI DISTRICT

CHAPTER I

Introduction

Tiruchirapalli district is situated almost centrally in Tamil Nadu. The district is bounded by Salem and South Arcot districts in the North, Thanjavur district in the East, Ramanathapuram, Madurai and Pudukottai districts in the South and Coimbatore district in the West.

The district has a total geographical area of 11,114 sq. kms. The district has 4 divisions, 10 taluks and 31 blocks. The administrative Headquarters of the district is Tiruchirapalli Town which is situated on the banks of the river Cauvery, the major river of the district.

(Chapter I)

CHAPTER II

Resource Analysis

A. Human Resources

The population of the district as per the Census of India, 1971 (after the formation of Pudukottai District) was 31.92 lakhs - 16.07 lakh males and 15.85 lakh females. The decennial growth rate of population was 19.60% and the density of population per sq. km was 287.

B. Material Resources

i. Agricultural Resources

The gross cropped area during 1978-79 was 7.09 lakh hectares, i.e. about 62% of the total geographical area of the district. During this period the district had about 2.19 lakh hectares of cultivable waste, current fallows and fallow lands constituting about 19% of the total geographical area and cultivation could be extended to these lands by ensuring adequate water supply, effective improvement in soil conditions and providing adequate inputs to the agriculturists.

Paddy, cumbu, ragi, varagu, maize etc. are the most important food grains produced in the district. Banana, sugarcane, groundnut, chillies, cotton, coconut, gingelly, cashew, mangoes, tapioca and palmyrah form the bulk of the important commercial crops of the district.

ii. Forest Resources

The area under forest in the district is about 60,773 hectares, forming only about 5.30% of the total geographical area of the district. The important forest produce are firewood, sandalwood, cashewnut, eucalyptus and bamboo.

iii. Livestock Resources

The livestock population of the district as on 15 7 1977 was about 25.05 lakhs consisting of 8.68 lakh heads of cattle, 2.97 lakh buffaloes, 6.74 lakh sheep, 5.77 lakh goats and 0.89 lakh pigs. It is roughly estimated that about 0.17 lakh hides and 3.96 lakh skins will be available per annum in the district.

iv. Fishery Resources

The district being an interior district has no coastal line. Hence fishing operations are confined to rivers, tanks, wells, etc. Inland fish available in the district is not significant and almost the entire catch is reported to be consumed locally offering no scope for industrial utilization.

v. Mineral Resources

The district is endowed with a variety of minerals like limestone, gypsum, quartz, feldspar, fireclay etc. offering scope for further utilization in industries.

(Chapter II)

Industrial Climate and Economic Facilities

The district has fairly developed infra-structure facilities that can contribute to the development of industries in many of its areas.

1. Transport

a. Road: The total length of road in the district is 9,222 kms in 1977-78. Though all the important centres in the district are connected by motorable road some of the villages in Ariyalur, Udayarpalayam, Manaparai and Thuraiyur have yet to be linked by motorable road.

Fairly adequate facilities exist for regular transport of passengers and freight within the district and the neighbouring districts.

2. Communication

Post and Telegraph facilities are available to the extent of 1,050 post offices and 118 telegraph offices as on 31 3 1979. However, communication facilities have yet to be extended to remote areas.

3. Railways

Tiruchirapalli is one of the important railway junctions in South India. The total length of railway lines passing through the district is 274 kms. The district is well connected by rail with all important places in the State as well as in the country.

4. Airport:

A civil airport is located at Sembattu, on the outskirts of Tiruchirapalli town, having air link with Madras, Madurai, Trivandrum, Cochin and Colombo.

5. Radio Station

A Radio Broadcasting Station is functioning at Tiruchirapalli.

6. Power Supply

The overall position of power supply in the district is satisfactory except for occasional shortage of power during lean periods. It is understood from the Tamil Nadu Electricity Board that there will not be normally any problem in providing electricity to small scale units.

7. Availability of water

River Cauvery runs through the middle of this district. Areas adjoining the Cauvery and other rivers are adequate in water supply. Areas lying farther away from the river have to depend on rain fed tanks and sub-soil resources.

8. Banking facilities

The district is having fairly good banking facilities in most of the areas. However certain blocks such as Andimadam, T.Palur, Sendurai, Kadavur and Vaiyampatti are very much under banked. It is important that measures are taken to rectify the regional imbalance and ensure that bank branches are adequately opened in under and unbanked centres.

9. Technical skill

There is no dearth of technical skill in the district. There are one regional engineering college, two polytechnics and two industrial training institutes in the district, imparting training in different technical trades.

10. Factory Space : Industrial Estates at ^{1) Ariyamangalam} ^{2) Karur} ^{3) Thiruverambur} ^{4) Thuvakudi}

There are 2 conventional type of industrial estates, one at Ariyamangalam and the other at Karur. The industrial estate at Thiruverambur houses exclusively the units ancillary to BHEL. Most of the units in the Developed Plot at Thuvakudi also are ancillary to BHEL. There is a functional industrial estate for Electrical and Electronic Industries at Thuvakudi. Besides, mini-sheds have been constructed at Arumbavur, Musiri and Thathaiyangarpet and sheds are under construction at Padalur and Thuvakudi. There are proposals to construct sheds in some more places.

11. Entrepreneurship

People engaged in industry, trade and commerce and agriculturists are willing to take to industries. A large number of technicians coming out of the technical institutions and educated unemployed persons, when properly motivated, may also take to industries.

(Chapter III)

Existing Industries

Industrial development in the district is mainly confined to certain pockets of urban areas like Tiruchirapalli and Karur.

Large scale industries

There are 45 medium and large scale industries in the district providing employment to about 35,500 persons manufacturing boilers, seamless steel tubes, small arms, meters, mild steel sections, goods wagon, automobile body, cement, sugar, firebricks, industrial alcohol, textile yarn hydrogenated oil etc. There is a proposal to set up a large scale unit for the manufacture of paper and boards by utilising bagasse available from the sugar mills.

Small Scale Industries

The number of small-scale units registered as on 31 3 1980 is 1,052 and 1,260 as on 30 6 1980. Sixty per cent of the units registered are in Tiruchirapalli Taluk.

The main products manufactured in the district are synthetic diamonds, domestic utensils, structural metal products, agricultural hand tools, steel furniture, cement products, bricks, polythene bags, tanned leather, etc.

Handloom and powerloom industry

Tiruchirapalli is one of the important districts for handloom industry, providing employment to about a lakh persons.

Powerloom industry is concentrated in Karur Taluk. There are about 450 powerlooms in the district providing employment to about 1,000 persons.

Cottage and Village Industries

The district is noted for cottage and village industries such as carpentry, blacksmithy, pottery, cobblery, wood carving, mat weaving, basket making, oil crushing, etc.

(Chapter IV)

New Industrial Possibilities

A number of industries have been suggested based on the resources available in the district. Industries ancillary to medium and large industries and industries based on the raw materials produced by them are also suggested. Some industries based on demand have also been suggested.

The following are the new industries suggested in the report:-

(A) Small Scale Industries

Sl. No.	Name of the products	No. of units	Suggested location
<u>I. Industries based on Agricultural Resources</u>			
<u>i. Industries based on paddy</u>			
a.	Rice bran oil (revival of the existing unit)	1	Trichy
b.	Straw board	3	One each at Musiri, Karur, Pullambadi or Lalgudi.
c.	Activated carbon from paddy husk	2	One each at Manachanallur and Lalgudi
d.	Household detergents based on paddy husk	2	One each at Karur & Tiruchirapalli.
<u>ii. Industries based on groundnut</u>			
a.	Refining of groundnut oil	1	Manachanallur
b.	Peanut candies	5	One each at Ariyalur, Udayarpalayam, Karur, Perambalur & Manapparai
<u>iii. Industries based on Banana</u>			
a.	Banana chips	4	One each at Tiruchirapalli, Musiri, Kulithalai & Lalgudi.
b.	Banana Fibre	4	-do-
c.	Packing bags out of Banana fibre	1	Tiruchirapalli
d.	Cushioning material out of banana stems	4	One each at Trichy, Musiri, Kulithalai and Lalgudi

Sl. No.	Name of the products	No. of units	Suggested location
<u>iv. Industries based on Chillies</u>			
a.	Oleoresin from Chillies	2	One each at Perambalur & Ariyalur
b.	Chilli powder and curry powder	2	-do-
<u>v. Industry based on sugar cane</u>			
	Wax from press mud	1	Kattur/Lalgudi
<u>vi. Industries based on coconut</u>			
a.	Coir ropes, mats and mattings	5	One each at Kulithalai, Musiri, Manapparai, Lalgudi, Tiruchirapalli taluks
b.	Desiccated coconut	4	One each at Tiruchirapalli, Lalgudi, Kulithalai and Musiri
c.	Particle board from coconut husk	1	Tiruchirapalli
d.	Cement coconut pith concrete for thermal insulation	1	-do-
<u>vii. Industries based on Cashew</u>			
a.	Cashew shell liquid	1	Jayankondan
b.	Cashew apple, syrup and jams	1	"
c.	Tannin from cashew testa	1	"
d.	Salted and sweetened cashewnut	1	"
<u>viii. Industries based on Tapioca</u>			
a.	Sago/starch	2	One each at Veppanthattai and Ariyalur.
b.	Tapioca chips	1	Ariyalur
<u>ix. Industries based on Jasmine</u>			
a.	Jasmine oil	1	Tiruchirapalli or Karur Taluk.
<u>x. Industries based on Palmyrah</u>			
a.	Palm leaf products	3	One each at Perambalur, Karur and Manapparai
b.	Palmyrah defibring and manufacture of brushes	3	-do-
c.	Palmyrah, candy, sugar and palm cola	3	-do-
<u>II. Industries based on Livestock Resources</u>			
a.	Common facility centre for finished leather	1	Sembattu
b.	Leather footwear and leather goods	5	One each at Tiruchirapalli, Kulivalam, Thirumanur, Thuraiyur & K Paramathi
c.	Steamed bone meal	1	Sembattu.

Sl. No.	Name of the products	No. of units	Suggested location
<u>III. Industries based on mineral resources</u>			
<u>i. Industries based on clay</u>			
a. Bricks		5	Manapparai, Karur, Manikandam, T Palur & Thirumanur
b. Tiles		2	Krishnarayapuram & Kulithalai
<u>ii. Industries based on lime</u>			
a. Chemical grade lime		2	One each at Ariyalur and Manachanallur
b. Precipitated calcium carbonate		1	Manachanallur or Ariyalur
c. Bleaching powder		1	Manachanallur
<u>iii. Industries based on Gypsum</u>			
a. Plaster of Paris		1	Perambalur taluk
b. Chalk crayons		2	One each at Ariyalur & Perambalur
<u>iv. Industries based on quartz and feldspar</u>			
a. Glass-ware		1	Manapparai
b. Mineral crushing unit		1	-do-
<u>v. Industries based on Granite stone</u>			
a. Stone crushing		4	One each in Thuraiyur, Thanthoni, Perambalur & Karur blocks.
<u>IV. Ancillary Industries and Industries to meet the requirements of Medium/Large Scale Industries</u>			
<u>i. Ancillary Industries to M/s Bharat Heavy Electricals Ltd., Tiruchirapalli</u>			
a. Sophisticated machining & fabrication		1	Thiruverumbur
b. Paints & rust preventing fluid		1	-do-
c. Packing cases		2	Thiruverumbur/Thuvakudi
d. Medicated soap		1	Thiruchirapalli
e. Plastic Injection moulded items		1	-do-
f. Junction boxes		1	Thiruverumbur
g. End connectors		1	-do-
h. Cable trays		1	-do-
i. PVC sheets		1	Thiruchirapalli
j. Metallic name plates		1	-do-

Sl. No.	Name of the products	No. of units	Suggested location
<u>Electronic industries (contd)</u>			
1.	Battery chargers/float chargers	1)	Thuvakudi
m.	Electronic single phasing preventors	1)	
n.	Transformers for electronic application	1)	
o.	Wire wound resistors	1)	
p.	Repairing and servicing of Electronic equipment	1)	
<u>Electrical Industries</u>			
<u>a. Transformer & line materials</u>			
i.	Distribution Transformer, potential transformer and current transformer and transmission line hardware	1	
<u>b. Wiring materials and accessories</u>			
1.	Bakelite switches and sockets	1	
2.	Link clips	1	
3.	Wooden electrical accessories	1	
<u>c. Light fittings</u>			
1.	Fittings for Fluorescent tubelights, decorative lights, industrial lights and street lights	1)	
2.	Tubelight chokes and starters	)	
<u>d. Domestic Electrical Appliances</u>			
1.	Mixers/grinders	1)	Thuvakudi
2.	Hot plates, cooking ranges and bread toasters	1)	
3.	Electric Iron	1)	
e.	Electric motor repairing and rewinding of coils	1)	
<u>iii. Chemical Industries</u>			
a.	Modified Amyl Alcohol	1	Thiruchirapalli
b.	Polythene bags	1	-do-
c.	Plastic vials	1	-do-
d.	PVC pipes	1	-do-
e.	Pencil lead	1	Samayapuram
f.	Safety matches	7	Match Service Societies with 100 units each. One service society at each taluk where there are no such service societies.
g.	Splints & Veneers	7	One each for a taluk
h.	Dyestuff & Dye stuff intermediate	1	Tiruchirapalli or Karur

Sl. No.	Name of the products	No. of units	Suggested location
<u>IV. Ancillary Industries...</u> (contd)			
<u>ii. Ancillary Industries to M/s SIMCO Meters Ltd. Tiruchirapalli</u>			
a.	Cold headed steel screws	1	Near Simco Meters Ltd. Tiruchirapalli
b.	Shunt laminations	1	-do-
c.	Bottom pivot and top bearing pins	1	-do-
d.	Grub screws	1	-do-
<u>iii. Ancillary Industries to Cement Factories</u>			
a.	Chilpeps	1	Dalmiapuram
b.	Black bolts and nuts	1	Tiruchirapalli
c.	Uniform for workers	1	Ariyalur
d.	Printing press	1	-do-
<u>iv. Ancillary Industries to Textile Mills</u>			
a.	Paper cones	1	Ramjee Nagar
b.	PVC Bobbins	1	-do-
<u>v. Ancillary Industries to Golden Rock Workshop of Southern Railway</u>			
a.	Ferrous and non-ferrous castings	1	Golden Rock
b.	Forgings	1	-do-
<u>V. Industries based on Demand</u>			
<u>i. Mechanical Engineering Industries</u>			
a.	Improved agricultural implements	1	Thiruverumbur
b.	Tool room shop	1	Tiruchirapalli
c.	Animal drawn cart	1	Manapparai
d.	Rice mill parts	1	Tiruchirapalli
e.	Bullock shoes	1	Karur
f.	Gobar Gas Plant	1	Thiruverumbur
g.	Automobile body building	1	Karur
h.	Common facility centre for Blacksmiths	1	Kuppureddypatti
i.	Brass & Copper sheets and circles	1	Jayamkondan
j.	Steel & wooden furniture	1	Manapparai
<u>ii. Electronic and Electrical Industries</u>			
<u>Electronic Industries</u>			
a.	A M & A M/F M Radio	1	Thuvakkudi
b.	Mono/PA Amplifier	1	
c.	Car Radios	1	
d.	Microphones	1	
e.	Aerial/Antenna for radio/TV receivers	1	
f.	Electronic Fan regulators	1	
g.	Electronic gas lighters/cigarette lighters	1	
h.	Electronic emergency lantern	1	
i.	Inverters/Convertors upto 500 volt amps.	1	
j.	Electronic pH meters	1	
k.	Electronic industrial timers	1	

Sl. No.	Name of the product	No. of units	Suggested location
<u>iii. Chemical Industries (contd.)</u>			
i.	Modern Dye House	1	Thathaiyangarpet
j.	Drugs and Pharmaceuticals	1	Tiruchirapalli
k.	Thenyl	1	-do-
<u>IV. Others</u>			
a.	Mechanised korai mat weaving	4	One each in the taluks of Musiri, Lalgudi, Manapparai and Karur
b.	Aloe fibre extraction and rope making	2	Kadavur block
c.	Low count yarn	1	Tiruchirapalli
d.	Silk reeling	3	One each in the taluks of Manapparai, Karur and Kulithalai.
e.	Inland fishing nets	1	Krishnarayapuram
f.	Poultry and cattle feed	1	Lalgudi or Karur
g.	Bakery and Biscuits	1	* A unit each for a Panchayat Union where there is no such unit.
<u>B. Medium/Large Scale Industries</u>			
1.	Particle Board from groundnut shell	1	Manachanallur
2.	Sugar Mill	1	Pugalur/Musiri Block
3.	Mini-cement plant	1	Karur taluk
4.	Steel castings	1	Tiruchirapalli.

(Chapter V)

REPORT ON THE INDUSTRIAL DEVELOPMENT POTENTIALITIES OF TIRUCHIRAPALLI
DISTRICT

CHAPTER I

INTRODUCTION

1.1. Tiruchirapalli District is situated almost centrally in Tamil Nadu. The district has inherited many unique features in the cultural and religious fields from the Chola Dynasty.

1.2. It is covered under the District Industries Centre programme, under which a package of assistance is provided to the small scale and cottage units/entrepreneurs under one roof. Since the previous industrial potential survey of the district was conducted as early as 1966 and the pre-intensive Campaign Survey in 1973 by the Small Industries Service Institute, Madras, the State Directorate of Industries, Government of Tamil Nadu requested this Institute to conduct afresh an Industrial Potential Survey of the district. The Small Industries Service Institute in close and active collaboration with the District Industries Centre, Tiruchirapalli, undertook a survey of the district from 21 8 1980 to 6 9 1980.

Methodology of the survey

1.3. Before proceeding to the district, a team of officers of the Institute collected basic statistics and information relating to the resources of the district from Government Departments and published reports, to the extent possible. The team also collected prior to and during the field visits and also subsequently, data from the different offices with the help of the District Industries Centre, Tiruchirapalli.

1.4. While at Tiruchirapalli the team, along with the officers of the District Industries Centre held preliminary discussions with the District Collector and other concerned district officers about the availability of resources, their present utilisation and scope for further utilisation of the resources for industrial purposes.

1.5. The team also discussed with the officers of the District Industries Centre about the existing pattern of industries and collected vital information about them with a view to studying the scope for further development of such industries.

1.6. It also had discussions with the District Small Industries Association, Divisional Development Officers, Commissioners of Panchayat Unions, Officials of the State Khadi and Village Industries Board, Small Scale Industrialists, Medium and Large Scale Units, Technical institutions and other knowledgeable persons connected with Industry, Trade and Commerce on the Industrial Potentialities of the District.

1.7. The Survey has revealed the existing imbalance in the industrial development in different taluks of the district. The survey team has come to know that industries in general have developed mainly in and around Tiruchirapalli Town and to some extent in Karur Taluk. Therefore, the team feels that concerted efforts have to be made for industrialising the backward areas by utilising the resources - men and material judiciously.

Physical and Geographical Features of the District

1.8. The district lies between 10° and 10°30' of northern latitude and 77°45' of eastern longitude. It is bounded by Salem and South Arcot Districts in the north, Thanjavur district in the east, Ramanathapuram, Madurai and Pudukkottai Districts in the south and Coimbatore District on the west.

1.9. After the formation of Pudukkottai as a separate district by carving out certain areas of Tiruchirapalli and Thanjavur districts, the area of the present Tiruchirapalli district is 11,114 sq.kms.

1.10. It is an inland district without any coastline. It consists of 4 divisions, 10 taluks, 31 panchayat unions and 883 village panchayats. It has 6 municipalities and 44 town panchayats. It is the sixth largest district in area in the State. It has its administrative headquarters at Tiruchirapalli town which is situated on the banks of the river Cauvery. Basic statistics relating to the Panchayat Unions in the District are given in Appendix-I.

Rivers, Hills and Forests

1.11. The Cauvery and the Coleroon are the major rivers of the district. River Cauvery enters the district at its western extremity. It flows west to east dividing the district into two. The Cauvery, at the upper anicut, bifurcates throwing its largest tributary - the Coleroon which is a flood carrier. The Cauvery flows through Tiruchirapalli town and then towards Grand Anicut. It finally enters into Thanjavur District. The river Coleroon forms the southern boundary of Lalgudi and Udayarpalayam Taluks as far as the Lower Anicut, at the Eastern limit of the district.

1.12. Several other small rivers such as Amaravathi, Marudayar, Vellar etc. are mostly seasonal, and are the tributaries of the Cauvery. River Amaravathy gets freshes during both north east and south west monsoon. Others get freshes during North East Monsoon.

1.13. The Pachamalai Hills, situated partly in Perambalur and Thuraiyur taluks, is the most important hill in the district.

1.14. The forest area in the district is about 60,773 hectares, which is only 5.30% of the total geographical area. The hilly regions of Perambalur and Thuraiyur blocks form the major forest areas.

Climate and rainfall

1.15. The district has a high mean temperature and low degree humidity. It is not subject to extremes of climate.

1.16. The normal rainfall in the district is 867.8 mm and the actual for the year 1978-79 was 815 mm. The maximum and minimum temperature of the district are 38.8°C and 20.8°C respectively.

CHAPTER II

ANALYSIS OF THE RESOURCES OF THE DISTRICT

A. HUMAN RESOURCES

2.1. The population of Tiruchirapalli District according to 1971 Census, was 38.49 lakhs. When Pudukkottai was formed as a separate district by carving out certain portions of erstwhile Tiruchirapalli and Thanjavur districts, the population of the present Tiruchirapalli district was reduced to 31.92 lakhs; of this total population, males constitute 16.07 lakhs and females 15.85 lakhs. The decennial growth rate of population of the erstwhile Tiruchirapalli District was 19.60. The density of population of Tiruchirapalli District per square km was 287.

Working force and occupational structure

2.2. According to the 1971 Census the working force of Tiruchirapalli district constituted about 38% of the total population and the details of the same according to categories are given below. The percentage of working force, category-wise for the State as a whole, is also indicated against each:

Occupation	No. of persons (in lakhs)	Percentage to total workers	
		Dist.	State
<u>1. Primary Sector</u>			
i. Cultivators	5.02	41.8	31.3
ii. Agricultural labourers	3.30	27.5	30.5
iii. Livestock, forestry, fishing, hunting, plantations, orchards and allied activities	0.11	0.9	2.7
iv. Mining and quarrying	0.03	0.3	0.3
<u>2. Secondary Sector</u>			
i. Manufacturing, processing, servicing and repairs:			
a. Household industries	0.40	3.3	4.5
b. Other than household industry	0.97	8.1	8.8
<u>3. Tertiary Sector</u>			
a. Construction	0.17	1.4	1.6
b. Trade and commerce	0.81	6.7	7.8
c. Transport, storage and communication	0.33	2.7	3.2
d. Other services	0.88	7.3	9.3
Total	12.02	100.0	100.0

Trends in unemployment

2.3. As stated earlier, the total non-working force in the district constitutes about 62% of the total population, which indicates the high level of unemployment in the district.

2.4. It may be seen from the above that about 70% of the working force is employed in agriculture which is higher than the State average of about 62%. The percentage of cultivators is also higher than the State average. In all other categories of occupation, the percentage of workers in the district is below that of the State except for mining and quarrying which is the same for the district and the State. It may be derived from the above that the economy of the district is still predominantly agriculture oriented.

2.5. The unemployment trend of the district can be seen from the data maintained in the Live Register of the District Employment Office. As per this register the number of registrants in the district as on 31 3 1977 was 1,09,080, as on 31 3 1978 was 1,33,555, as on 31 3 1979 was 93,578 and as on 31 3 1980 was 85,193.

2.6. The details of the applicants on the live register as on 31 3 1977 and 31 3 1978 based on the occupation sought and educational standards attained by them are given in the following table.

Sl. No.	Description	As on 31 3 77	As on 31 3 78
1.	Professional Technical and related workers	6,218	7,915
2.	Administrative, Executive and Managerial workers	219	503
3.	Clerical and related workers	2,815	4,418
4.	Sales workers	2	2
5.	Farmers, Fishermen, Hunters and related workers	928	592
6.	Service workers	21	18
7.	Production and related workers, Transport equipment operators and labourers	7,619	8,418
8.	Persons without professional vocational training and previous experience	-	-
9.	Graduates in Arts	2,347	2,268
10.	Graduates in Science	2,317	2,301
11.	Graduates in Commerce	518	501
12.	Matriculates	40,751	59,597
13.	Eighth Standard and above but below SSLC	32,642	33,532
14.	Literates and Below Eighth Standard	12,653	13,453
15.	Illiterates	30	37
	Total	1,09,080	1,33,555

2.7. It may be seen from the above that in spite of the declining trend in the matter of registration of unemployed persons still a large number of professional, technical, production and related workers and educated persons are unemployed. Therefore, availability of skilled and unskilled workers for employment in industries will not pose any problem.

Level of Literacy

2.8. The literacy rate of population of the district is 37.50% as against the State average of 39.46%. The rate of literacy, however, varies from taluk to taluk, the maximum rate of literacy being 58.3% in Tiruchirapalli taluk and the minimum 27.01% in Manapparai taluk. The percentage of literates, Talukwise, is given below:

Taluk	Percentage of literate population
Tiruchirapalli	58.30
Lalgudi	41.74
Thuraiyur	40.19
Musiri	37.86
Karur	37.40
Kulithalai	34.94
Udayarpalayam	32.09
Perambalur	30.06
Ariyalur	27.32
Manapparai	27.01

B. MATERIAL RESOURCES

Agricultural Resources

2.9. Tiruchirapalli District as any other district of the State is predominantly an agricultural district. Of the total geographical area of 11.45 lakh hectares, the gross cropped area in 1978-79 was 7.09 lakh hectares, accounting for 61.94%. The classification of the geographical area of the district during 1976-77, 1977-78 and 1978-79 is given in the following table:

Classification	Area in hectares					
	1976-77	Percentage to total area in the district	1977-78	Percentage to total area in the district	1978-79	Percentage to total area in the district
1	2	3	4	5	6	7
1. Forests	79,821	6.97	79,675	6.95	60,773	5.30
2. Barren and uncultivable land	41,728	3.65	41,728	3.65	38,149	3.33
3. Land put to non-agricultural uses	150,239	13.18	150,363	13.15	157,704	13.77
4. Cultivable waste	43,126	3.76	41,096	3.60	51,043	4.45
5. Permanent pastures and other grazing lands	41,898	3.65	41,898	3.65	30,175	2.66

contd..

	1	2	3	4	5	6	7
6. Land under miscellaneous tree crops, groves and not included in the net area sown	12,962	1.15	12,962	1.13	10,384	0.90	
7. Current fallows	141,352	12.33	113,992	9.95	140,231	12.21	
8. Other fallow land	22,431	2.83	27,711	2.42	27,578	2.40	
9. Net area sown	601,455	52.5	635,588	55.50	628,341	54.95	
10. Total geographical area	1145,013	-	1145,013	-	1145,013	-	
11. Areas sown more than once	61,284	5.35	72,205	6.30	80,303	7.01	
12. Gross cropped area	662,740	57.09	707,793	61.81	709,245	61.94	

2.10 It may be seen from the above tables that the district has 2.19 lakh hectares of cultivable waste, current fallows and fallow lands in 1978-79. Therefore, there is considerable scope for extending cultivation to more areas by ensuring adequate water supply, effective improvement in soil conditions and providing adequate inputs to the cultivators.

Rainfall and Climate

2.11 The normal rainfall of the district stands at 867.8 mm as against the State average of 946 mm. However, the actual rainfall was 771 mm, 1072 mm and 815 mm during the years 1976-77, 1977-78 and 1978-79 respectively. The rainfall in the district is normally 50 to 75% higher during the North-east monsoon season than the South-west monsoon.

2.12. The highest temperature in the district is during May and the minimum during December. The maximum temperature was 38.3°C and minimum 20.8°C during the year 1978-79.

Irrigation

2.13. The main source of irrigation in the district is river Kaveri. The upper anicut was converted into a regulator and the dam was built across Kaveri to control the flow. A regulator just below the bed dam was constructed in 1976 for better regulation of water for irrigation. There are also a number of rain-fed tanks and irrigation tanks formed under special minor irrigation programme. Notable amongst them is the Konniar reservoir completed in 1974. In all, the district had got irrigation facilities from 93 canals, 2,382 tanks and 54,192 wells during 1977-78.

2.14. The gross area irrigated in the district was 1.83 lakh hectares in 1976-77, 2.33 lakh hectares in 1977-78 and 2.62 lakh hectares in 1978-79 which indicates the steady increase in the area irrigated in the district.

2.15. Of the total area irrigated, the area irrigated by canals forms about 35%, by wells 25%, by tanks 11% and the rest by other sources.

2.16. Trichy, Dalgudi, Kulithalai, Ariyalur and Musiri are the taluks mostly irrigated by canals. Perambalur and Karur taluks are mostly irrigated by wells. In respect of irrigation by tanks, Perambalur and Mannapparai taluks top the other taluks which have tank irrigation.

Important crops

2.17. The area of important crops cultivated in the district during 1976-77, 1977-78 and 1978-79 is indicated in the following table:

Crops	1976-77 (Area in Hec- tares)	% to total cropped area	1977-78 (Area in Hec- tares)	% to total cropped area	1978-79 (Area in Hec- tares)	% to total cropped area
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Cereals

1. Paddy	1,21,466	19.09	1,58,541	23.33	1,81,061	26.27
2. Cholan	1,45,942	22.93	1,35,667	19.97	1,30,074	18.87
3. Cumbu	1,00,440	15.78	97,596	14.33	89,905	13.04
4. Ragi	5,654	0.89	66,993	1.03	5,127	0.74
5. Maize	343	0.05	786	0.11	995	0.14

Pulses

6. Bengalgram	172	0.02	125	0.01	218	0.03
7. Red gram	20,670	3.25	19,399	2.85	17,630	2.55

Other crops

8. Sugarcane	11,856	1.86	14,987	2.07	12,064	1.75
9. Cotton	6,791	1.05	7,578	1.11	7,770	1.12
10. Groundnut	53,298	8.38	59,898	8.81	62,581	9.08
11. Gingelly	21,424	3.36	27,856	4.09	25,911	3.75
12. Coconut	3,803	0.60	3,929	0.57	3,841	0.55
13. Castor	822	0.13	637	0.09	657	0.09
14. Tapioca	1,111	0.17	1,227	0.18	1,006	0.14
15. Chillies	12,589	1.98	11,416	1.68	17,355	2.51
16. Onion	3,494	0.55	2,298	0.34	3,039	0.44
17. Mango	1,439	0.22	1,406	0.21	1,432	0.20
18. Cashew	NA	NA	21,720	3.06	23,670	3.33
19. Banana	10,745	1.68	11,943	1.76	11,912	1.72

2.18. The yield of important crops during 1976-77, 1977-78 and 1978-79 in the district is furnished below:

Name of Crop	Production in Tonnes		
	1976-77	1977-78	1978-79
1	2	3	4
1. Paddy (in terms of rice+)	2,52,040	3,67,150	3,86,000
2. Cholan	1,18,250	1,00,590	81,000
3. Cumbu	96,940	63,290	76,000

contd..

1	2	3	4
4. Ragi	7,680	12,430	12,000
5. Pulses	13,140	11,260	N A
6. Sugarcane (in terms of gur)	97,420	1,54,090	1,52,870
7. Cotton (in bales of 180 kg Lint)	5,920	9,170	5,000
8. Gingelly	8,190	7,270	9,000
9. Groundnut (unshelled)	46,940	53,880	63,000
10. Coconut	NA	580 lakh	581 lakh
		nuts	nuts
11. Banana	NA	3,34,450	NA
12. Tapioca	NA	37,700	37,470
13. Chillies	10,750	5,240	17,000
14. Cashew (raw nuts)	NA	2,780	2,960
15. Mangoes	NA	20,920	18,320
16. Onion	NA	NA	31,470

2.19. From the above tables it may be observed that while paddy, cholam, cumbu are the important food grains, sugarcane, groundnut, chillies, coconut, gingelly, banana, cotton are the important commercial crops of the district.

UTILISATION OF CROPS

Paddy

2.20. Paddy is the major crop cultivated in the district, in that 1.81 lakh hectares (26.27% of the total cropped area) were cultivated during 1978-79. The cropping pattern varies from area to area depending upon the availability of water. In the areas irrigated by river, paddy is grown as a single or a double crop depending on the duration of the crop. Under the intensive agriculture area development programme considerable areas have been converted into double crop lands.

2.21. Production of paddy in terms of rice in the district during 1978-79 was 3.86 lakh tonnes. Paddy is the staple food of the people in the district and hence a major portion of rice produced is consumed within the district. Paddy is hulled in more than 30 traditional rice mills in the district of which more than 20 are located in Manachanallur. Besides, there is one modern rice mill at Trichy set up recently by the Tamil Nadu Civil Supplies Corporation. This rice mill has got a capacity to hull two tonnes of paddy per hour and it works for 3 shifts per day throughout the year. The traditional rice mills and the modern rice mill hull almost the entire paddy available in the district and also the paddy obtained from the neighbouring district of Thanjavur. The traditional rice mills are mostly using hullers whereas the modern rice mill uses shellers. It is gathered that the output of rice, husk and bran available from the hulled paddy is about 68%, 22% and 10% respectively.

2.22. Husk available from the rice mills is mostly used as fuel in the furnaces. However, it is gathered that husk could be made available by the modern rice mill for industrial utilisation.

2.23. Rice bran available from the modern rice mill is reported to contain 22% of oil and that obtained from traditional huller units 10 to 12%. Therefore, the bran obtained from shellers fetches prices ranging from Rs 1,200 to Rs 1,700 per tonne, whereas the bran obtained from the huller unit fetches Rs 525 per tonne. There is good demand for bran produced by the modern rice mill by the units manufacturing rice bran oil in Thanjavur and the bran produced by the traditional mills is sold within the district and also sent to the neighbouring district of Salem and Andhra Pradesh.

2.24. In this connection it may be pointed out that a unit for the extraction of rice bran oil by solvent extraction process was set up as early as 1962-63 but the unit has not commenced regular production since its inception, perhaps due to the non-availability of quality bran and due to some other reasons. It is considered essential that this unit is helped for its early revival or is taken over by the Tamil Nadu Civil Supplies Corporation. Rice bran oil finds very good demand for industrial uses.

Paddy Straw

2.24. Paddy straw available in the district is about 6.50 lakh tonnes. It is at present mostly used as fodder. There is good scope for setting up a few units for the manufacture of straw board.

Other Cereals

2.25. Next to paddy, Cholam, Kambu, Maize, Ragi, Kora, Varagu, Samai are the other cereals cultivated in the district. The total area of cultivation of these crops in 1978-79 is about 4.81 lakh hectares. Of the total cereals including paddy, other cereals form 66% of the total area. Next to paddy, cholam and cumbu are the major cereals and these are cultivated in large areas in Perambalur, Kulithalai, Musiri, Thuraiyur, Ariyalur and Karur taluks. These cereals are mostly consumed by the people in the district.

Pulses

2.26. The area under pulses in the district is about 0.35 lakh hectares in 1977-78. Red gram, Green gram, Horse gram and Black gram are the major pulses cultivated. The main taluks under pulses are Kulithalai, Balgudi and Karur. Pulses available in the district are also mostly consumed within the district.

Condiments and Spices

2.27. Spices and condiments are cultivated in an area of about 0.29 lakh hectares in 1977-78 of which turmeric and chillies are the major ones. Chillies are cultivated in an area of about 0.11 lakh hectares and turmeric in about 0.01 lakh hectares. Chillies are cultivated in large areas of Perambalur Taluk, though it is also cultivated in all taluks to some extent. However, the area under cultivation of these crops is not significant in the taluks of Trichy and Musiri. The production of chillies in the district was 0.17 lakh tonnes. There is scope for utilising chillies for industrial purposes.

Groundnut

2.28. Groundnut is another major commercial crop cultivated in the district. During 1978-79 it was cultivated in an area of about 0.67 lakh hectares and the yield of unshelled groundnut was 0.63 lakh tonnes. The major taluks where groundnut is cultivated are Udayarpalayam, Karur, Perambalur, Manaparai and Ariyalur.

2.29. Groundnut available in the district is crushed in a number of oil mills and oil extracted. Oil mills are concentrated in Manachanallur. Besides there are a number of power and non-power oil gannies in different parts of the district. However, there is scope for starting a few more oil mills and power gannies in the district. There is also scope for setting up a unit for refining of groundnut oil preferably at Manachanallur.

2.30. Oil cake could be utilised by the existing rice bran oil unit at Trichy for extracting residuary oil by solvent extraction process.

2.31. Groundnut shell which is used as fuel at present can be utilised for the manufacture of particle boards. This unit can be set up as a joint sector unit with the participation of the Tamil Nadu Industrial Development Corporation Limited.

Sugarcane

2.32. Sugarcane is cultivated in an area of about 0.12 lakh hectares. The yield was 1.75 lakh tonnes in terms of gur, in 1978-79.

2.33. The main taluks of cultivation of this crop are Ariyalur, Karur, Lalgudi, Perambalur and Kulithalai. Sugarcane available in the district is utilised for the manufacture of jaggery by cottage units and for the manufacture of sugar by four sugar mills, one each located at Pettavalthalai, Kattur, Perambalur and Karur. There is scope for setting up another sugar mill in the district, preferably at Pugalur or in Musiri taluk which is a backward taluk, by encouraging the agriculturists to extend the cultivation of this crop in new areas.

2.34. The bagasse available in the sugar factories are utilised mostly as fuel in their furnaces. There is a proposal to set up a large scale unit for the manufacture of paper at Pugalur in Karur taluk by utilising bagasse available from the sugar mills.

2.35. Molasses available from the sugar mills are at present utilised by a large scale unit at Tiruchirapalli for the manufacture of alcohol. Molasses are also utilised by the units manufacturing cattle and poultry feed.

2.36. Press-mud which is available as a waste product in the sugar mills, estimated to be about 25,000 tonnes per annum, is at present used as manure in the fields and there is scope for utilising this item for the manufacture of wax, which is a high value product.

Banana

2.37. Banana is another major crop of the district and it is cultivated in an area of about 0.12 lakh hectares in 1977-78. Trichy, Kulithalai, Musiri and Lalgudi are the taluks in which Banana is cultivated in large areas constituting more than 90% of the total area under this

crop in the district. The annual yield of banana in the district is roughly estimated at 3.34 lakh tonnes. The Banana Research Station at Tiruchirapalli is dedicated to research for evolving high yielding strains suitable to the local conditions and for recommending suitable agronomy conditions.

2.38. Poovan, Mendran and Mondan are the important varieties of bananas cultivated in the district of which Mendran accounts for 25% of the total acreage under banana. Banana available in the district is consumed in the district, and also in the neighbouring districts. Banana, especially Mendran variety, is also sent to Kerala.

2.39. There is good scope for setting up units for the manufacture of powder and chips out of banana, especially from the Mendran variety.

2.40. Banana pseudo stem does not find much of industrial or commercial use at present. Taking an average of 2,500 plantains in a hectare, the number of pseudo stem available in the district may be taken as 300 lakh numbers per annum. There is good scope for setting up a number of units for the extraction of fibre and making packing bags. Cushioning material that could be used as wrapper for glass and other fragile items can also be manufactured out of banana pseudo stem.

Coconut

2.41. Coconut is grown in about 0.04 lakh hectares in 1978-79 and the important places where it is grown are Tiruchirapalli, Lalgudi, Kulithalai, Manapparai and Musiri, accounting for 75% of the total area under coconut cultivation in the district. The yield of coconut was 581 lakhs nuts. The Government Nursery at Srirangam produces about 15 lakh coconut seedlings per annum and supplies them to the agriculturists.

2.42. Coconut is consumed locally and also sent to other parts of the country. It is also crushed in the local oil mills for oil extraction. In view of the availability of huge quantities of coconut there is good scope for setting up a few units for the manufacture of desiccated coconut.

2.43. Coir yarn is extracted from coconut husk by about a dozen units in the district and the fibre is mostly sent to Salem for the manufacture of ropes. It is also utilised to a little extent locally for the manufacture of ropes manually. There is good scope for setting up a few mechanised units for the manufacture of ropes, mats and mattings.

2.44. Coconut shell is mostly used as fuel. Few units may be encouraged for the manufacture of shell powder and activated carbon out of coconut shell. The manufacture of these items could be taken up preferably by the desiccated coconut units suggested earlier.

2.45. Huge quantities of coconut pith is available as waste from defibrating units, unutilised for any economic purpose. The possibility for utilising coconut pith for the manufacture of items such as insulation materials, expansion joints fillers etc. may be explored.

2.46. Interested parties may approach the Coir Research Station, Kalavoor, Alleppey District, Kerala, for getting technical details in this regard.

Mangoes

2.47. Mango is grown in an area of 0.01 lakh hectares in 1978-79. Manapparai, Udayarpalayam and Tiruchirappalli are the important taluks where mango is grown in large areas. The production of mango is estimated at about 0.18 lakh tonnes per annum and it is mostly consumed locally. There is scope for setting up a few units for fruit preservation.

Gingelly

2.48. Gingelly is another oil seed produced in the district. It is cultivated in about 0.26 lakh hectares. The production of gingelly in 1978-79 was about 0.09 lakh tonnes.

2.49. As stated earlier, oil is extracted by some oil mills and oil ghannis in the district. However, there is still scope for setting up some more power operated oil ghannis in the district.

Tapioca

2.50. Tapioca is cultivated in about 0.01 lakh hectares in 1978-79, mostly in Perambalur and Ariyalur taluks. The yield of tapioca tuber in the district is about 0.37 lakh tonnes per annum. Tapioca tuber is utilised at present by a few units in the District for the manufacture of sago/starch. It is also sent to the neighbouring district of Salem for utilisation by the sago units. Therefore, a few more units for the manufacture of sago/starch may come up in the district.

Jasmine

2.51. Jasmine, a flower crop, is cultivated in about 200 hectares, mainly in Trichy and Karur taluks. A unit for the extraction of Jasmine oil can come up in the district. Necessary encouragement may be given to the Agriculturists for extending the area of cultivation under Jasmine in suitable areas.

Cotton

2.52. Cotton is cultivated in about 0.08 lakh hectares in the district. Manapparai, Perambalur, Lalgudi and Kulithalai are the important taluks where the crop is cultivated in large areas. The yield of cotton was about 9,170 bales in 1977-78. Cotton available in the district is utilised by 4 Textile Spinning Mills - 2 each at Trichy and Karur. However, waste cotton available from these mills may be utilised for industrial purposes.

Cashew

2.53. Cashew is cultivated in about 0.24 lakh hectares in 1978-79 in Ariyalur and Udayarpalayam taluks. Tamil Nadu Forest Plantation Corporation alone owns about 5,700 hectares. The production of cashew nut in the district is roughly estimated to be about 3,000 tonnes per annum. There are proposals to increase the area under cashew plantation considerably.

2.54. There are 5 units in Jayankondan for processing of cashew, of which at present only one unit is working effectively. Two units are yet to commence production and the remaining 2 have yet to commence regular production. The unit which is processing cashew nut at present has a capacity of 1,500 tonnes per annum. The total annual capacity of all the 5 units put together will be about 4,500 tonnes. The present working unit is also producing cashew shell liquid.

2.55. Cashew apple available in the district, estimated to be about 12,000 tonnes per annum, does not find any economic use. There is scope for the manufacture of syrups and jams out of cashew apple. This proposed unit can also utilise tomatoes, mangoes, etc. available in the district for the manufacture of jams.

Palmyrah

2.56. Palmyrah is grown in large areas in Perambalur, Karur and Manapparai taluks in waste lands, tank bunds, canal banks and also in private lands. There is good scope for developing units for the manufacture of palmyrah products such as fibre, brushes, palm gur and palm leaf products in these taluks.

ii. Forest Resources

2.57. The total area under forest in the district is about 60,773 hectares which is only 5.30% of the total geographical area of the district. The majority of the forest resources are in the hilly regions of Perambalur and Thuraiyur Taluks, but these are also scattered in the plains of Ariyalur and Udayarpalayam taluks.

2.58. The important forest produce are - Firwood, Sandalwood, Cashewnut, Eucalyptus and Bamboo. Sandalwood is grown in small areas in Pachaimalai hills. The State Government has plans to increase the area under Sandalwood during the 6th Plan period. The output of forest produce in the district being negligible, they do not offer much scope for setting up any forest based industry.

iii. Fishery Resources

2.59. The district has no marine resources and hence fishing operations are confined to rivers, tanks, wells, etc. The inland fish caught in the district are consumed locally and therefore there is no scope for starting industries based on fish.

IV. LIVESTOCK RESOURCES

2.60. The live-stock population of the district as on 15 7 1977 was about 25.05 lakhs, consisting of 8.68 lakh heads of cattle, 2.97 lakh buffaloes, 6.74 lakh sheep, 5.77 lakh goats and 0.89 lakh pigs. The poultry population of the district during the same period was 11.30 lakhs - consisting of 11.13 lakh fowls - 0.16 lakh ducks and the rest others.

2.61. Of the total cattle and Buffalo population, cows constitute 3.07 lakhs and female buffaloes 1.62 lakhs. Of the total cows and buffaloes breeding cows and buffaloes form 3.71 lakhs. The cows and buffaloes in milk constitute only 1.76 lakhs of the total cattle and buffaloes. The annual yield of both buffalo and cow milk is about 4.28 lakh litres. The availability of milk per person per day works out at 0.130 litres. The low per capita availability of milk may be attributed mainly to poor yield of milk per animal and low number of milch animals per person. The Animal Husbandry Department through various programmes such as Intensive Cattle Development Project and Key Village Centres is engaged in producing improved graded animals by resorting to artificial insemination of indigenous animals. With the emergence of healthy and

productive cattle, there will be scope for milk chilling centres, and manufacture of milk products in the near future. However, at present there is scope for setting up units for the manufacture of cattle feed. There is also good scope for the manufacture of mineral mixture of calcium, phosphorous, magnesium, sodium, manganese, fluorine, and trace elements, which constitute the nutrient components of the animals. There is also scope for the manufacture of plastic vials for storing semen, nylon syringes etc. required by the Animal Husbandry Department. Alja-Alja known as "Kudiari Masala", which contains lot of protein may be encouraged to be cultivated in the district to meet the fodder requirements of animals.

2.62. The number of animals slaughtered in the 7 approved slaughter houses in the district is 4,125 cattle, 3,343 buffaloes, 1,43,292 sheep and 1,17,068 goats. The number of animals slaughtered in the unregistered slaughter houses will be 50% of the animals slaughtered in the registered slaughter houses. The fallen animals may constitute about 5% of the total livestock population. Thus the total number of hides and skins available in the district is roughly about 0.17 lakh and 3.95 lakhs, respectively, per annum. There are 24 tanneries in the district utilising the skins and hides available in the district for the manufacture of tanned hides and skins. Of these tanneries, two units are reported to be manufacturing finished leather. Most of the tanned hides and skins are exported to other countries. There is scope for a few units for the manufacture of finished leather, leather footwear and leather goods in the district. There is also scope for wool processing units in Perambalur and Veppanthattai.

2.63. Poultry and poultry products at present do not offer much scope for industrial utilisation. It is understood that Tamil Nadu Poultry Development Corporation has units for dressing of chicken.

2.64. In this connection, it may be observed that Duck rearing is gaining momentum due to the fact that ducks lay about 40 - 50 eggs more than chicken and the eggs are also larger and are more in weight by 15 to 20 grams than hen's eggs. This will enable to increase the per capita consumption of eggs in the district.

V. MINERAL RESOURCES

2.65. The district is endowed with a variety of minerals of which limestone, gypsum, quartz, feldspar, china clay and fireclay are important ones. Other minerals that occur in the district are abrasive, like flint and chert, building stores magnesite and precious stones.

The details regarding the occurrences of major minerals are given below:

<u>Mineral</u>	<u>Area of concentration</u>	<u>Estimated reserve</u>	<u>Annual exploitation (1979) (tonne)</u>
China Clay	Perambalur taluk, Therani and Uttatur villages	6 lakh tonnes	4,521

contd..

<u>Mineral</u>	<u>Area of concentration</u>	<u>Estimated Reserve</u>	<u>Annual exploitation 1979 (tonne)</u>
Lime Stone	Lalgudi, Udayarpalayam, Perambalur, Kulithalai & Karur taluks	125.4 million tonnes	9.70 lakhs
Gypsum	Karai, Uttatur, South Chittalai, Odiyam, Maradathur, Sirukambur, Terani, Mambakurichi, Peruvallappur	15.3 "	9,572
Quartz	Kulithalai and Karur taluks	2 Lakh tonnes	4,051
Feldspar	Vadugapatti, Thulukkam-patti, Saltambadi, Nagambur, Ariyur, Kokattipalli, Aravkurichi	10.20 "	5,181
Fireclay	Terani	0.08 million tonnes	13,738

2.67. Limestone available near Ariyalur and Palayam are being utilised by M/s Dalmia Cements Ltd., Kallakudi, M/s Chettinad Cement Ltd., Karur and a Government unit at Ariyalur. The combined capacity of these units is about 13.35 lakh tonnes of cement. However, it is understood that there is possibility for another medium cement factory in Karur taluk.

2.68. China clay available in Perambalur taluk is being utilised in Ceramic industry. There is still scope for utilising this mineral for further industrial purposes in the district.

2.69. Fire clay available at Terani is utilised for the manufacture of stoneware pipes by M/s Dalmia Ceramics, in addition to that obtained from Panruti in South Arcot District.

2.70. Gypsum is also utilised by the Cement factories in the district and also sent to the cement factory at Madukkarai in Coimbatore district.

2.71. Quartz available in Kulithalai and Karur areas could be utilised for the manufacture of ceramics and glass industries. Ground quartz is used as filler in paints and a flux in smelting. It can also be used as an abrasive in sand paper.

2.72. Feldspar: Feldspar is utilised by M/s Dalmia Ceramics Ltd., in the manufacture of Ceramic items. However, there is scope for utilisation of this mineral in glass industry as well.

CHAPTER III

Industrial Climate and Economic Facilities

I. Infrastructure Facilities

3.1. Though the district is heading towards industrialisation, it is visible only in certain pockets of the district such as Tiruchirapalli and Karur. Other areas have not made any headway in the matter of industrialisation and retain only the rural characteristics. Therefore, it is very essential that the district should enlarge the area of industrialisation covering rural and semi-urban areas, by fully utilizing the resources available locally. The district has fairly developed infra-structures that can contribute to the development of industries in many of its areas. The infrastructure facilities available in the district are discussed in the following paragraphs.

Transport & Communication

i. Transport

3.2. By virtue of its location in the centre of the State of Tamil Nadu, the district has a fairly well-developed net-work of roads connecting all the important centres within the district and also the various commercial and industrial centres of the neighbouring districts of Madurai, Pudukottai, Thanjavur, Salem, Coimbatore and South Arcot. The total length of different categories of roads in the district is about 7,679 kms as per details given below, in 1976-77.

<u>Categories of road</u>	<u>Length in kms.</u>
1. National Highways	260.4
2. State Highways	1248.1
3. District Roads	1006.2
4. Panchayat Roads	5162.1
	<u>7676.8</u>

3.3. The length of road in the district has increased to 9,222 kms in 1977-78. The length of road under different categories of roads is indicated below:

<u>Category of road</u>	<u>Length in kms.</u>
1. Cement concrete	95
2. Bituminous	2722
3. Water bound macadam	1616
4. Unsurfaced roads	4789
	<u>9222</u>

3.4. The new bridge constructed across Cauvery has reduced the distance between Namakkal and Madurai and other commercial centres. Though all the important centres in the district are connected by motorable road some of the villages in Ariyalur, Udayarpalayam, Manapparai and Thuraiyur have yet to be linked by motorable road. In order to have a quick and easy access to the nearest towns, it is essential that all

the villages are connected by all-weather roads to the nearest towns by surfacing the unsurfaced roads.

3.5. Fairly adequate facilities exist for regular transport of passengers and freight within the district and the neighbouring districts. As on 31 3 1979, the total number of registered motor vehicles in the district was 4,193 comprising 540 stage carriages, 531 auto rickshaws, 235 taxis, 5 luxury coaches and omnibuses, 35 private transport vehicles, 2030 goods vehicles, 385 tractors and 424 other vehicles. There is scope for increasing the number of stage carriages and goods vehicles to meet the increasing demand for the movement of transport and freight, especially to and from rural areas.

ii. Railways

3.6. Tiruchirapalli is one of the important railway junctions in South India. The total length of railway lines passing through the district is 274 kms - broad gauge 98 km and metre gauge 176 kms. There are 57 railway stations in the district. The district is well connected by rail with all important places in the State as well as in the country.

iii. Airport

3.7. A civil airport is located at Sembattu on the outskirts of Tiruchirapalli town having air link with Madras, Madurai, Trivandrum, Cochin and Colombo.

iv. Communication

3.8. Postal and telegraph facilities are available in the district to the extent of about 1050 post offices and 155 telegraph offices as on 31 3 1979. There are also 6737 telephones and 249 public call offices. Direct trunk dialling facility is available to link major towns and cities in the country. The telex coaxial line connects Ceylon and Eastern countries and micro-wave telecommunication system connects Ceylon with Tiruchirapalli.

The Post & Telegraphs Department may take necessary steps for extending communication facilities to remote places in the district where they are inadequate.

v. Radio Station

3.9. A radio broad-casting station is functioning at Tiruchirapalli.

vi. Power Supply

3.10. The district gets its power supply from the State grid. Except in the cases of some hamlets all the panchayats and major villages are provided with power supply.

3.11. The total consumption of power by all categories of consumers in 1977-78 was about 4,021 lakh units and in 1978-79 was about 4,594 lakh units. The details regarding the category-wise consumption of electricity during these years are given below:

Category of consumption	Consumption in lakh units	
	1977-78	1978-79
1. Industrial	1912.27	2056.52
2. Agricultural	1114.18	1486.27
3. Domestic	337.52	404.88
4. Commercial	317.46	379.26
5. Public lighting	107.92	98.09
6. Others	232.09	169.18
Total	4021.44	4594.20

3.12. It may be observed from the above that consumption of power for industries tops the list with 44.76% of the total consumption and consumption for agricultural purposes comes next constituting about 32.35% during 1978-79.

3.13. The overall position of power supply in the district is satisfactory except for the occasional shortage of power during lean periods. It is understood from the Tamil Nadu Electricity Board that there will not be normally any problem in providing electricity to small scale units.

vii. Availability of water

3.14. River Cauvery runs through the middle of the district. Areas adjoining the Cauvery and other rivers are adequate in water supply. Areas lying farther away from the rivers have to depend on rainfed tanks and subsoil resources.

viii. Availability of technical skill

3.15. The district has adequate facilities for primary, secondary, higher secondary and collegiate education as well as technical education.

3.16. There is one Regional Engineering College and two Polytechnics at Tiruchirapalli. Besides, there are two Industrial Training Institutes one each at Tiruverumbur and Ariyalur.

Regional Engineering College, Tiruchirapalli

3.17. The Regional Engineering College, Tiruchirapalli, sponsored by the Government of India, was started in the academic year 1964-65, with the aim of promoting technical education and training of personnel to meet the technical needs of the country.

3.18. The college imparts training in under-graduate and post-graduate courses as detailed below:

Under-graduate courses

1. B.E. Degree (4 year - eight semesters course)
2. B.Tech Degree (4 year - eight semesters course in Chemical Engineering)
3. B.Arch Degree (5 year - ten semesters course)
4. B.E. Degree (3½ year - seven semesters - part-time course)

Post-graduate courses:

1. M.E. Degree (Two year - four semesters) course
N.B. Duration of this course will be three-years for part-time candidates.

2. M.Tech Degree (Two year - four semesters) Course

N.B. Duration of this course will be three years for part-time candidates.

3. M.Sc Degree (Two year - four semesters) course

4. M.Phil/Ph.D Degree

Continuing Education

3.19. The college also undertakes to offer short-term courses in various specialisations for the benefit of practising engineers as and when requests for such courses are made by the sponsoring industries or establishments.

3.20. The different engineering fields in which training is imparted are given in Appendix II.

3.21. The University of Madras with the approval of the University Grants Commission and the Government of Tamil Nadu had conferred the Autonomous status to this college in respect of post-graduate courses in the Engineering fields of Civil, Mechanical, Electrical and Electronics, and Communication, Metallurgical, Industrial, Chemical, Applied and Basic Science and Management Engineering. The University of Madras will confer the degree on the students passing the examination conducted by the college. The specialisation chosen are predominantly industry-oriented to enable inter-action with the industry and most of the specialisations are inter-disciplinary. Candidates sponsored by the industry/public and private undertakings will be given preference for admission.

Government Polytechnic, Tiruchirapalli

3.22. This polytechnic was started in the year 1963. The disciplines taught in the three year diploma courses are 1) Electrical; 2) Civil Engineering; 3) Mechanical Engineering and 4) Electronics Engineering. The sanctioned strength of the students is 180, fifty each for the first three disciplines and 30 for Electronics. The Electronics Engineering course is open exclusively for girl students.

3.23. In addition to these courses, post-diploma course of four-year duration in welding technology is also offered in collaboration with the Bharat Heavy Electricals Ltd.

3.24. There is also a part-time diploma course of 4 year duration for the benefit of unemployed people with the strength of 285, yearly intake being 75. This course is open to those who have passed SSLC and put in 3 years of service in any industrial unit.

3.25. Recently a higher secondary vocation stream course of two years duration has been introduced, taking 75 pupils every year. The subjects taught in the course are Mechanical and Electrical Engineering. After successfully completing the course the students can join the II year of the diploma course or the I year of Bachelor of Engineering course.

The Seshasayee Institute of Technology, Tiruchirapalli

3.26. This is one of the oldest technical institutions in the private sector. This Institute was started in the year 1952. This is the outcome

of the farsightedness and philanthropy of late Shri S. Sasayee, an industrialist, who long back realised the need for imparting technical training to students for meeting the requirements of technicians required by the industries in the State. At present this institution is offering instructions for the three-year diploma courses with nine semesters in Civil, Electrical and Mechanical engineering branches. This Institute also offers two year higher secondary course after 10 year SSLC in vocational stream.

3.27. The intake of students for the first year of the Diploma course is 180 and for the vocational course, 60.

Industrial Training Institutes

3.28. As stated earlier there are two Industrial Training Institutes in the district one at Tiruchirapalli and the other at Ariyalur. The duration of the course in some trades is one year and in certain other trades, 2 years.

The courses offered in these Institutes are the following:

1. Draughtsman (Mechanical)
2. Electrician
3. Fitter
4. Machinist
5. Machinist (Grinder)
6. Mechanic (Motor vehicle)
7. Mechanic (Instrument)
8. Pattern maker
9. Turner
10. Moulder
11. Mechanic (Diesel)
12. Sheet metal worker
13. Welder
14. Wireman
15. Mechanic (Tractor)

3.29. Apart from the above institutions the Boys Town at Manapparai imparts training to candidates in fitting, carpentry, blacksmithy, automobile engineering, etc..

3.30. Besides the BML Ltd., Tiruchirapalli, a leading public sector undertaking also gives training to its artisans, apprentices, supervisors, engineers and executives. The training centre is very well equipped with machinery and equipment. The latest methods of training are imparted incorporating classroom instructions with audiovisual techniques.

3.31. From the foregoing, it may be concluded that abundant supply of technicians are available from the technical institutions for employment in the existing and new industrial units. They can also turn themselves into technician-entrepreneur, when necessary financial and other required assistance are given by the promotional agencies.

Factory Space

3.32. There are 4 Government owned Industrial Estates, one each at Ariyamangalam, Karur, Tiruverumbur and Thuvakudi in the district. Of these 4 estates, the Estates at Ariyamangalam and Karur are conventional

types of industrial estates. The Estate at Tiruverumbur houses the units ancillary to Bharath Heavy Electricals Ltd., Trichy. The Estate at Thuvakudi is a functional industrial estate for Electrical and Electronics Industries. Details regarding these industrial estates are given below

Place of Industrial Estate	No. of sheds constructed	No. of sheds allotted
1. Ariyamangalam	33	33
2. Karur	6	6
3. <u>Tiruverumbur</u>		
a. Rental	10	10
b. Hire purchase	24	24
4. Thuvakudi	8	8

It may be observed that all the sheds allotted have been occupied.

Developed Plots

3.33. 366 Industrial Plots have been developed at Thuvakudi and 14 plots at Karur. These developed plots are given on hire purchase to entrepreneurs. So far 189 plots have been allotted at Thuvakudi and 10 at Karur.

3.34. Proposals are under way to establish Industrial Estates at Musiri, Ariyalur, and Manapparai for accommodating small scale units. The entrepreneurs coming forward to locate their units in these proposed Industrial Estates at Musiri and Ariyalur are likely to be provided financial assistance by Tamil Nadu Industrial Investment Corporation and Tamil Nadu Small Industries Development Corporation for the construction of sheds and for procurement of machinery to the extent of 75% of the cost of fixed assets. In addition, they will also be given a 15% State Subsidy over the cost of fixed assets. The entrepreneurs coming forward to locate the units in the proposed Industrial Estate at Manapparai are likely to be given financial assistance by TIIC and SIDCO for the construction of sheds and procurement of machinery to the extent of 75 to 85% of the cost of fixed assets. Potential entrepreneurs are being identified and suitable sites with the maximum locational advantages for establishing the Estates in these places are looked into.

3.35. There is also a proposal to establish an Industrial Estate to accommodate 6 units exclusively for women entrepreneurs in Trichy urban agglomeration.

TINY SECTOR ESTATES

3.36. In keeping with the current stress on introducing socio-economic welfare measures to the rural people, SIDCO has launched a programme to construct a number of tiny sector industrial estates, each consisting of a minimum of 10 sheds for allotment to rural artisans/entrepreneurs.

3.37. Three type designs are available for the tiny sheds with a covered area of 200 sq.ft. (Rs 10,000/-), 400 sq.ft. (Rs 18,000/-) and 600 sq.ft. (Rs 25,000/-). Financial assistance is extended to the tiny shed allottees for the purchase of shed, machinery and equipment, jointly by SIDCO, TIIC, Nationalised Banks, etc. In the district so far 75 tiny sheds (50 at Arumbavur, 15 at Musiri and 10 at Thattaiyagarpet) have been constructed. All these sheds have been allotted to entrepreneurs and they are being utilised by them gradually since March 1980.

3.38. Further under Phase II, 23 tiny sheds are under construction (10 at Padalur and 13 at Thuvakudi) for allotment to entrepreneurs.

3.39. Besides, 30 more tiny sheds have been taken up for construction at Thuvakudy. Efforts are under way to establish tiny sector sheds at Inamkulathur, Karur, Thuvaramkurichi, Thuraiyur and Jayamkondan.

3.40. Considering the programmes implemented, proposed and envisaged by the SIDCO, it is felt that there will not be any problem in the matter of getting factory accommodation in the urban as well as rural areas by the entrepreneurs in the District.

BANKING FACILITIES

3.41. The nationalised and other scheduled banks grant under the liberalised scheme, term loans and working capital loans to small scale units based on their actual needs. They also operate the qualified entrepreneur scheme under which loans upto Rs 2 lakhs are generally being granted for the acquisition of machinery, factory building and working capital requirements.

3.42. Banking facilities are available in the district from 195 branches of State Bank of India, nationalised banks and private scheduled banks spread out in all the blocks of the district, as on 31 12 1979. The population served per branch in the district is 19,950. However, certain blocks such as Andimadam, T Palur, Sendurai, Kadavur and Viyampatti are very much under-banked and the population served per branch in these centres is above 50,000. Aravakurichi, Thirumanur, Uppiliapuram and Alathur blocks also lack the required banking facilities. It is important that sufficient measures are taken to rectify this regional imbalance and ensure that bank branches are adequately opened in unbanked and under-banked centres.

3.43. The first credit plan for the district launched in early 1978 was terminated in December 1979 and a new plan has since been launched in 1980. During the First District Credit Plan of 21 months period, against the proportional target of Rs 44.05 crores (Rs 40.81 crores under agriculture, Rs 1.89 crores under industries and Rs 1.35 crores under service sector), the cumulative performance by the banking system was Rs 48.26 crores (Agriculture and allied activities Rs 37.78 crores, Industries Rs 4.15 crores and services Rs 6.33 crores). The overall achievement at 110% of the accepted shares was well above the 100% norm. It is heartening to note that the performance of banks with regard to industrial sector has far exceeded the targets in that the loan facilities extended to this sector was Rs 4.15 crores as against the target of Rs 1.89 crores.

3.44. The Lead Bank department of the Indian Overseas Bank has published a second credit plan for the district for the period 1980-82, with a view to uplift the economy of the district. It provides a sum of Rs 6,477.39 lakh rupees for financing the different sectors like agriculture, industries, services, etc. during this period. In the industrial field, the plan has earmarked a sum of Rs 845.54 lakhs - Rs 205.69 lakhs for rural and cottage industries - Rs 339.85 lakhs for small scale industries and Rs 300 lakhs towards additional credit requirements for existing industries. The plan anticipates to finance 20,580 new rural and cottage industries and 1,629 small scale units, besides financing the existing units.

OTHER CONCESSIONS

i. Capital Subsidy

3.45. The Government of Tamil Nadu has declared Musiri and Ariyalur taluks of the district as industrially backward and therefore units set up in these areas are eligible for 15% capital subsidy on total fixed capital investment, subject to a maximum of Rs 3 lakhs. During the year 1980-81, it has been planned to bring in 217 units with an investment in fixed assets of Rs 21,10,000 in Musiri Taluk and 140 units with an investment of Rs 13,06,000 in Ariyalur taluk. A sum of Rs 5,12,400 is estimated to be required for granting capital subsidy to the proposed units.

ii. Subsidy on power tariff

3.46. Government of Tamil Nadu has come forward with the sanction of graded subsidy on power tariff to the L T consumers. This scheme covers all the areas of the district excluding the urban agglomeration of Tiruchirapalli Town. The subsidy is available to all registered small scale units which consume L T power and commenced production from 1 1 1980.

3.47. The subsidy is extended to a period of three years from the commencement of production and is worked out at the rate of 30%, 20% and 10% of the actual energy charges paid by the unit in the first, second and third year respectively. The actual energy charges are inclusive of surcharge and other charges and exclusive of penalty, if any, levied.

iii. Interest-free sales tax loan

3.48. The Government of Tamil Nadu has introduced an interest free sales tax loan scheme to new small scale units. Under this scheme new small scale units to be set up in the district, except Tiruchirapalli agglomeration within 8 km belt area and which are likely for a levy of sales tax of not less than Rs 10,000 in a year will be eligible to get the loans.

Other important Government Agencies available for assistance to Small Scale Industries

3.49. The following are the other important Government agencies available in the State for rendering different types of assistance to small scale units noted under each of them.

a. State Government

1. Directorate of Industries & Commerce

1. Registration of small scale units.
2. Recommendation for and issue of Essentiality Certificate for the import of raw materials and recommendation for issue of indigenous scarce raw materials.
3. Grant of financial assistance under the State Aid to Industries Act.
4. Price preference to small scale units, supplies to Government, arranging for concessional power tariff, etc.

II. The Tamil Nadu Small Industries Development Corporation Limited

1. Supply of machinery under SIDCO-TIIC Consortium Scheme
2. Procurement and distribution of scarce raw materials.
3. Construction of industrial estates and allotment of Industrial sheds in these estates to entrepreneurs.
4. Built up sheds for the tiny sector in rural and backward areas.
5. Assistance to entrepreneurs for construction of workshops in their own lands or on plots developed by SIDCO and various growth centres.
6. Sanction of 15% capital investment subsidy in backward taluks.
7. Marketing assistance to small scale units.
8. Interest-free sales tax loan to small scale units.
9. Power subsidy to small scale industrial units consuming L T Power.
10. Stores purchase by Government Departments and Government organisations.
11. Sanction of margin money for rehabilitation of sick units.

III. The Tamil Nadu Industrial Investment Corporation Ltd.

1. Granting of long and medium term loans to industrial concerns primarily for the purpose of acquiring fixed assets in the form of land, building and machinery.
2. Guaranteeing/counter guaranteeing deferred payment contracts entered into by industrial concerns for purchase of machinery.
3. Guaranteeing loans raised by industrial concerns from the banks/insurance companies/public borrowings, etc.
4. Under writing/subscribing to the issue of shares and/or debentures of industrial concerns.
5. Granting of bridge loans against Central Government subsidy and disbursement of subsidy.
6. Assistance for setting up new units, modernisation and diversification of existing units, etc.

b. Central Government

1. The National Small Industries Corporation Ltd.

1. Supply of machinery and equipment on hire purchase basis.
2. Assistance under Government Stores Purchase Programme.
3. Marketing assistance for certain small industries' products.

2. Small Industries Service Institute, Madras

- i. Assistance in identifying small scale industries, preparation and supply of schemes/project reports/project profiles.
- ii. Preparation of Area and Industry Survey Reports and other economic information service.
- iii. Guidance regarding processes of manufacture and suggestions regarding appropriate raw materials.

2. Small Industries Service Institute, Madras (contd.)

- iv. Provision of training facilities in Industrial Management, Export promotion, Screen printing, General Engineering, Leather finishing, Footwear manufacture, Glass Blowing etc. and training of Rural artisans and craftsmen in the use of simple modern machinery through mobile workshops.
- v. Development of Ancillaries.
- vi. Render technical assistance to small scale units in developing/manufacturing items required by large scale units and to furnish information regarding the requirement of large scale industries and to approach large industries for off-loading items, which could be manufactured by small scale industries.

3. Regional Testing Centre, Madras

- i. Testing and inspection of raw materials and finished products.
- ii. Provision of precision, gauging and inspection facilities.
- iii. Assistance in setting up testing facilities and offering of consultancy services therefor.
- iv. Calibration of precision instruments.
- v. Development of products.
- vi. Training of personnel in testing.

Entrepreneurship

3.50. The agriculturists in Tiruchirapalli, Lalgudi, Kulithalai, Musiri and Karur taluks with a sizeable investable surplus are understood to be interested in starting small scale industries. People engaged in industry, trade and commerce in the centres like Tiruchirapalli, Karur, etc. are expected to come forward to start new small scale industries having scope. The survey team during its discussion with the District Development Officers and the Commissioners of Panchayat Unions were given to understand that there will not be much difficulty in getting entrepreneurs for starting industries based on the local resources available in their areas. This is evidenced from the fact that the District Industries Centre, Tiruchirapalli, has issued provisional small scale industries registration certificates to 311 entrepreneurs in the district during 1978 and to 584 entrepreneurs during 1979. In addition to this, it is understood that a large number of technicians coming out of the technical institutions and educated unemployed graduates and undergraduates, when properly motivated may take to modern small scale industries.

3.51. The above are some of the healthy signs for the present and future development of industries in the district and no difficulty is likely to be experienced in getting entrepreneurs for starting new industries in the district.

3.52. The unutilised human talents and opportunities could be effectively utilised for industrialising the district by proper motivation and rendering all possible assistance to the entrepreneurs at all stages.

CHAPTER IV

Existing Industries

4.1. Industrial development in the district is confined mainly to certain pockets of urban areas. It has not spread evenly throughout the district and the rural and semi-urban areas still remain industrially very backward. The urban centres which have shown industrial development are Tiruchirapalli and surrounding areas and Karur.

a. Large-scale industries

4.2. There are about 45 large and medium industries in the district providing employment to about 38,500 persons. Main products manufactured by the large scale units with number of units are as follows:-

<u>Product</u>	<u>No. of units</u>
High Pressure Boilers	1
Seamless steel tube	1
Small arms	1
Meters	1
Goods wagons	1
Mild steel sections & structurals	7
Automobile body	1
Malleable iron casting	1
Hum pipe	1
Cement	3
Ceramic fire bricks	1
Industrial alcohol	1
Sugar	4
Hydrogenated vegetable oil	1
wheat products	1
Textile yarn	4
Modern rice mill	1
Tanned and finished leather	2

4.3. The remaining units are engaged in printing, tyre retreading, fertiliser, mixing, automobile repair and servicing, tractor repairing and servicing, railway locos repairing, etc.

4.4. Of the above large scale units, M/s Bharat Heavy Electricals Ltd., a public sector undertaking, manufacturing boilers is the most prestigious one. It provides employment directly to more than 10,000 workers. This large scale unit specialises in the manufacture of boilers for thermal and nuclear power stations of unit sizes upto 210 MW and 235 MW along with all related auxiliary equipment. It has also taken up the manufacture of 500 MW boilers. It also manufactures industrial process steam boilers of different sizes to meet the requirements of fertilisers, sugar mills, chemical factories and petro-chemical industries.

3.57. The production of BHEL as at the year ending March 1980 crossed Rs 1000 crores mark and reached Rs 1174 crores. In the export market, major landmarks have been achieved in having secured contract from Libya, Saudi Arabia and Malaysia.

4.5. This unit also has contributed to the development of ancillary units in the district in particular and the State in general. Over 350 small scale units are fabricating components as sub-contractors to this unit. Most of the ancillary units are housed in Thuvakudy, Thiruverumbur, and Ariyamangalam Industrial Estates providing employment for about 7,000 persons.

4.6. There is a proposal to set up a large scale unit at Pugalur for the manufacture of paper and boards by utilising the bagasse available from sugar mills.

Small Scale Industries

4.7. The number of small scale units permanently registered in the district as on 31 3 1980 was 1,052. The number of units registered during this period taluk-wise is as indicated below:

<u>Taluk</u>	<u>No. of units registered</u>
1. Tiruchirapalli	640
2. Karur	152
3. Manapparai	57
4. Ialgudi	55
5. Musiri	38
6. Ariyalur	34
7. Kulithalai	34
8. Thuraiyur	20
9. Perambalur	13
10. Udayarpalayam	9
	<u>1,052</u>

4.8. It may be seen from the above that more than 60% of the units registered in the district are in Tiruchirapalli taluk where the district headquarters is situated. The different categories of products produced in the taluk are 79 which are the highest when compared to other taluks in the district. Next in order comes Karur taluk accounting for about 14% of the registered units. The number of registered units in Udayarpalayam, Perambalur and Thuraiyur taluks is very low. Therefore, concerted efforts have to be made for bringing more and more small scale units in these taluks by motivating the entrepreneurs and giving them necessary guidance and incentives.

4.9. The main products manufactured in the district are synthetic diamonds, domestic utensils, structural metal products, agricultural hand tools, steel furniture, cement pipes, bricks, polythene bags, wooden articles, hosiery items, coir-fibre, tanned and finished leather etc. Details regarding the products manufactured by the registered small scale units during 1979-80, taluk-wise, are given in Appendix III.

4.10. Production of goods and services by 946 reporting units in the district during 1978-79 was of the order of Rs 2,468.10 lakhs as against the capacity of Rs 6,953.67 lakhs. These units provided employment to 8,827 persons.

4.11. The number of permanently registered small scale units in the district as on 30 6 1980 is 1,260. The break-up details of the units, industry-group wise are given below:

<u>Industry Group</u>	<u>Number of units</u>
1. Food products	134
2. Beverages and tobacco products	14
3. Cotton textiles	32
4. Wool, silk and synthetic fibre	7
5. Jute and hemp products	1
6. Textile products	47
7. Wooden products	54
8. Paper products	126
9. Leather products	16
10. Rubber and plastic products	58
11. Chemical products	75
12. Non-metallic mineral products	129
13. Basic metals and alloys	33
14. Metal products	324
15. Machine tools and parts	143
16. Electric machinery and appliances	21
17. Transport equipment	39
18. Other manufacturing industries	7
Total	<u>1,260</u>

4.12. It may be seen from the above that units engaged in the manufacture of paper products, non-metallic mineral products, basic metals and alloys, metal products, machine tools and parts and transport equipment alone account for 794 units constituting 63% of the total number of units registered.

There is therefore scope for widening the base of the existing industrial structure and setting up units in different new lines.

Synthetic Gem Cutting Industry

4.13. Since synthetic gem cutting industry is a major industry in the district, special attention has to be paid for its development. This industry is concentrated in Trichy Town and the surrounding places like Tiruvanaikoil, Srirangam, Woraiyur and Varaganeri and in the taluks of Lalgudi and Manapparai. This is a labour-oriented industry and it is understood that about 50,000 families are engaged in this industry. This industry consists of 4 operations, viz. cutting, coning, faceting and polishing. About 80 to 85% of the cost of production of synthetic gems is accounted for by labour cost.

4.14. The basic raw material used in this industry is Synthetic Corundum ("Dalan") produced by the only unit in the country, viz. M/s Indo-Swiss Synthetic Gem Manufacturing Co. Ltd. at Mettupalayam in Coimbatore district. The other raw materials used are Carborandum powder and Diamond borte.

4.15. It is understood that this industry very often faces problems due to inadequate and irregular supply of "Dalan", the basic raw material since the supply of this is under the monopoly of this company. Further, the sales tax levied by the Government of Tamil Nadu on this raw material

is reported to be as high as 15% as against the low rate of sales tax levied in Karnataka, where this large scale unit has got its Sales Depot. It is suggested that the Government of Tamil Nadu may consider the feasibility of bringing the sales tax rate on par with the rate levied in the neighbouring State of Karnataka so as to make the local units sell their products competitively.

4.16. Further, Tamil Nadu Small Scale Industries Development Corporation may consider the possibility of procuring this raw material in bulk from the large scale unit direct and supply to the units based on their actual requirements.

4.17. Synthetic gems find good market in the country and also abroad. It is used mainly in jewellery. Industrial types of gems are used as jewel bearings in watches, meters, electrical instruments, thread guides in textile industry and as semi-permanent gramophone needles.

4.18. Tiruchirapalli town is the main trading centre of synthetic diamond and it is understood that big merchants control this industry and trade. In order to safeguard the interests of the workers, industrial cooperative societies have been organised by the State Directorate of Industries in a few places in the district. The State Directorate of Industries may make efforts to bring all the workers in the district in this industry under the cooperative fold so that they can reap the entire benefit of their labour.

4.19. In view of the labour-oriented nature of this industry, providing employment to a large number of families, the State Directorate of Industries may go all out to lend a helping hand to this industry and place it on a sound footing.

6) Hand-loom and Powerloom Industry

1. Handloom Industry

4.20. Tiruchirapalli is one of the important districts for handloom industry, providing employment to about one lakh persons. Important weaving centres in the district are Woraiyur, Kulithalai, Toppamalai, Poovalur, Thuraiyur, Thathaiyanganarpot and Karur.

4.21. There are about 32,000 handlooms in the district of which about 50% are in the cooperative sector. Sarrees, bedsheets, lungies, towels, pillow covers and furnishing fabrics are the items produced in the district and they find good market.

4.22. There are 80 handloom cooperative societies and the production of goods by them during 1979-80 was of the order of about Rs 365.46 lakhs, whereas it was Rs 252.77 lakhs in 1977-78 and Rs 280.72 lakhs in 1978-79. Total production of handloom goods in the district including the looms outside the fold of cooperatives is roughly estimated at about Rs 730 lakhs in 1979-80.

4.23. The handloom industry, when all the weavers are brought into the cooperative fold and properly encouraged is expected to thrive successfully.

2. Powerloom Industry

4.24. Powerloom industry is another important industry of the district. The industry is concentrated in Karur taluk. There are about 450 powerlooms in the district providing employment for about 1,000 persons.

4.25 Dhoties, upper casements, furnishing fabrics, etc. are produced in powerlooms and they find good market in the State. Furnishing fabrics find international market as well.

D. Cottage and Village Industry

4.26. The district is noted for cottage and village industries such as carpentry, blacksmithy, pottery, cobblery, wood carving, mat weaving, basket making.

4.27. Carpenters, blacksmiths and potters are spread out in many villages in the district. The Khadi & Village Industries Board are helping to organise themselves into cooperatives. The Board has also organised tanners and cobblers' societies in Tiruchirapalli. These industrial cooperatives have produced Rs 2 lakhs worth of footwear and Rs 5 lakhs worth of tanned leather.

4.28. Apart from the above the Khadi and Village Industries Board has organised cooperative societies for bee keeping, village oil industries, woollen carpet weaving etc. This Board is also encouraging individual artisans by way of supply of modern tools and extending to them credit facilities.

4.29. The Khadi and Village Industries Board has also set up units for the manufacture of the following items:

<u>Name of the product</u>	<u>No. of units</u>	<u>Place of location</u>
1. Handmade Paper	1	Mahendra Mangalam in Thottiam Panchayat Union
2. Washing soap out of non-edible oil	1	Thottampatti in K Paramathy Panchayat Union
-do-	1	In Thuraiyur Panchayat Union
3. F I Tanning	1	Samayapuram
-do-	1	Adireddipalayam
4. Chrome Tanning	1	Samayapuram

4.30. It is also supplying power ghannis to entrepreneurs on credit. The Board is also taking steps to set up a unit for the manufacture of handmade paper at Krishnarayapuram and to open a training centre for fibre workers at Tharagampatti in Kadavur Panchayat Union.

CHAPTER V

NEW INDUSTRIAL POSSIBILITIES

5.1. As indicated earlier, industrial development in the district is concentrated only in a few pockets of the district such as Tiruchirapalli and surrounding areas, Karur, etc. Industries especially smallscale and cottage industries which can fully utilise the surplus local resources, have yet to come up in the rural and semi-urban areas of the district. As pointed out in Chapter II, the district is endowed with agricultural crops such as paddy, sugarcane, banana, mango, groundnut, gingelly, tapioca, jasmine, cashew, palmyrah, etc. which offer scope for industrial utilisation. Hides and skins available in the district are utilised in the tanneries. There is however scope for setting up units for the manufacture of finished leather, leather footwear and leather goods.

5.2. Though the district is not endowed with marine and forest resources, it is rich in mineral resources such as clay, limestone, quartz, feldspar, granite, etc. which offer scope for further utilisation for industrial purposes.

5.3. The existing large scale units such as cement factories, textile mills, Bharat Heavy Electricals Ltd., Meter manufacturing unit, etc. offer scope for starting units based on their requirements. There is also scope for setting up units based on their products/bye-products/waste products.

5.4. Scope also exists for units to cater to the requirements of handloom industry in the district.

5.5. Certain industries producing goods and offering services to meet the local requirements can also be set up.

5.6. A few medium/large scale industries found to have prima facie scope based on the available resources, have also been suggested for consideration.

A. Small Scale Industries

I. Agro based industries

i. Industries based on paddy

a. Rice bran oil

5.7. Paddy is the major crop cultivated in the district. Production of paddy in the district during 1978-79 was 3.86 lakh tonnes in terms of rice. Paddy is hulled in about 30 rice mills and one modern rice mill in the district. The traditional rice mills and the modern rice mill hull almost the entire paddy available in the district and also paddy obtained from the neighbouring district of Thanjavur. Huge quantities of rice bran available from these mills is utilised as cattle feed and also sent out to Thanjavur, Salem Districts and Andhra Pradesh for oil extraction. The bran available locally could be advantageously utilised for extraction of oil by solvent extraction process. In this connection, it may be pointed out that one rice bran oil unit was set up as early as 1962-63 at Trichy but it is not working due to internal reasons. It is strongly recommended that the Government of Tamil Nadu

may consider the possibility of reviving the unit by offering necessary assistance to the unit or advise the Tamil Nadu Civil Supplies Corporation to take over the unit so that the valuable raw material, viz. bran is put into effective use locally and the much needed oil is extracted out of it. A number of units for the manufacture of soap can come up in the district when rice bran oil is produced in the district.

b. Straw Board

5.8. Paddy straw available in the district to the extent of about 6.50 lakh tonnes is used as fodder for the cattle and also sent outside the district. It can be advantageously utilised for the manufacture of Straw Board. Straw Board is extensively used for packing textile products, binding of books, making of file covers, card board boxes, etc. There is no unit manufacturing board out of straw except for two units which manufacture board out of waste paper, one each at Karur and Peta-vaithalai. It is understood that the board manufactured by the unit at Karur finds good demand from Hosiery units in Tiruppur and fire works units in Sivakasi. To meet the ever-increasing demand for board, three straw board units are suggested, one each at Musiri, Karur, Pullambadi or Lalgudi, where straw and water are available in plenty.

c. Activated Carbon from Paddy Husk

5.9. Paddy husk is available from rice mill in huge quantities even after its use as fuel for the boilers. It could be utilised for the manufacture of Activated Carbon which is used as a Catalyst base for removal of colour, taste and odour in the manufacture of edible oils, foodstuffs and pharmaceuticals and for recovery and reclamation of various solvents. Two units, one each for the manufacture of this item may come up at Manachanallur and Lalgudi. The plant and equipment required for the manufacture of this item will be available indigenously.

d. Household Detergents based on Paddy Husk

5.10. The Regional Research Laboratory, Jor-hat has developed a process for making Detergent Powder based on Silica flour available from paddy husk. The raw materials required for the manufacture of Detergents are paddy husk, Soda Ash, Sodium tripoly phosphate, Borax and Alkylaryl sulphonate. More than 50% of the ingredients used for the manufacture of Detergent is silica flour which can be prepared locally from the paddy husk available from the rice mills. The rest of the raw materials are available indigenously.

5.11. Household detergents are getting increasingly popular in the country, and demand for this item has been going up with the increase in the standard of living and urbanisation. Therefore, there is good scope for units in this line in the district. Two units one each at Karur and Tiruchirapalli are suggested. The National Research Development Corporation of India, New Delhi has evolved a process for the manufacture of this item and the interested entrepreneurs may contact them for detailed process of manufacture, terms and conditions.

ii. Industries based on Groundnut

a. Refining of Groundnut oil

5.12. Groundnut to an extent of about 0.63 lakh tonnes was produced in the district during 1978-79. The major taluks where groundnut is

cultivated are Udayarpalayam, Karur, Perambalur, Manapparai and Ariyalur. Groundnut is crushed in a number of oil mills in the district, the area of concentration of these mills being Manachanallur. There is no oil refining unit in the district. Refined oil is preferred by the customers especially in the urban areas to the unrefined oil in view of the fact that bleached and decolourised oil will be much better for consumption since this oil will have its unsaturated contents intact and there will not be any possibility of Nichol contamination. The unit may be ideally located at Manachanallur since groundnut oil can be procured from the oil mills easily. This unit can also undertake refining of other vegetable oils such as Gingelly and Coconut oils.

b. Peanut Candies

5.13. Groundnut has rich protein contents and is highly nutritious. Peanut candy made of groundnut kernels and jaggery is tasty and has added nutritive value. Jaggery is also available in plenty in Tiruchirapalli. Therefore, there is good scope for setting up a number of units for the manufacture of peanut candies in the district. Quality candies manufactured hygienically and packed in attractive moisture-proof packing materials can find good export market, besides catering to the local market.

5.14. A unit each to produce 200 kg of peanut candies per shift of 8 hours can be set up at Ariyalur, Udayarpalayam, Karur, Perambalur and Manapparai.

iii. Industries based on Banana

a. Banana chips

5.15. Banana is cultivated in an area of about 0.12 lakh hectares and the annual yield of Banana is roughly estimated at 3.34 lakh tonnes. Poovan, Nendran and Monthan are the important varieties of Banana cultivated of which Nendran accounts for 25% of the total yield. There is good demand for banana chips in Tamil Nadu as well as in the neighbouring State of Kerala. It also finds export market. Therefore, it is suggested that four units, one each at Tiruchirapalli, Musiri, Kulithalai and Lalgudi may come up for the manufacture of chips out of Nendran variety.

b. Banana fibre and fancy articles out of banana fibre

5.16. Banana fibre extracted from banana stem is reported to be in many respects superior to jute fibre. It is suggested that four units one each in the taluks of Tiruchirapalli, Musiri, Kulithalai and Lalgudi may be set up for the manufacture of banana fibre. These units can also manufacture fancy articles out of banana fibre.

c. Packing bags from banana fibre

5.17. Banana fibre can also be utilised for the manufacture of packing bags; sacks woven out of banana fibre is understood to be lighter than sacks woven out of jute fibre. A unit may be set up at Tiruchirapalli for the manufacture of sacks out of banana fibre. This unit can procure banana fibre for the manufacture of sacks from fibre extraction units. This unit may preferably be set up by the Tamil Nadu Agro Industries Corporation Ltd.

d. Cushioning material out of Banana stems

5.18. The Central Food Technological Research Institute, Mysore has evolved a process for the manufacture of cushioning material from Banana stems, which can be used as a wrapper for Glass products and other fragile articles and also as a substitute for cardboard. It is suggested that four units, one each at Tiruchirapalli, Musiri, Kulithalai and Lalgudi may come up for the manufacture of cushioning material.

iv. Industries based on chillies

a. Oleo resin from chillies

5.19. Chillies are cultivated in an area of about 0.17 lakh hectares and the large area of its cultivation is in Perambalur taluk and the production of this crop is about 0.17 lakh tonnes per annum.

5.20. From chillies oleo-resin can be extracted by using industrial alcohol. Oleo-resin of chillies and other spices are preferred in developed countries like USA, UK, France and other continental countries to raw spices on account of the uniformity in the flavour of this oil, its amenability to storage and its micro-biological advantages. There are only a few units in the country which extract oleo-resins from spices including chillies. Therefore there is good scope for setting up an oleo-resin unit in the district mainly to meet the needs of export market. The Central Food Technological Research Institute, Mysore has developed a process for the extraction of oleo-resins from chillies. Intending entrepreneurs may contact them for further technical information and guidance in this regard.

5.21. Two units are suggested - one at Perambalur and the other at Ariyalur for the manufacture of this item.

b. Chilly powder and curry powder

5.22. Owing to the rapid improvement in the standard of living of the people and the modern way of life, people especially in the urban centres prefer chilly powder and other pre-mixed kitchen condiments. Therefore there is good scope for the manufacture of chilly powder and other curry powder in the district. Two units in this line may also come up one each at Perambalur and Ariyalur with a capacity of 500 kg per shift of 8 hours each.

v. Industry based on sugarcane

Wax from press mud available from the sugar mills

5.23. There are four sugar mills in the district and the filter-press mud available from them is estimated to be about 25,000 tonnes per annum. This at present is sold to farmers at a low price and this could be profitably used for the manufacture of wax.

5.24. Wax finds use in the manufacture of boot polish and good quality wax in pharmaceutical industries. This wax is a good substitute for CARNEUBA WAX which is used for the manufacture of boot polish. There are no units manufacturing this item in the district and therefore one unit is suggested for manufacture in Kattur-Lalgudi area. The technical know-how for the manufacture of this item could be obtained from the National Research Development Council, New Delhi.

vi. Industries based on Coconut

a. Coir Ropes, mats and Mattings

5.25. Coconut is grown in about 0.04 lakh hectares and the important places where it is grown are Tiruchirapalli, Lalgudi, Kulithalai, Manapparai and Musiri accounting for 75% of the total area under coconut cultivation in the district. Coir yarn is extracted from the coconut husk by about a dozen units in the district and the fibre is mostly sent to Salem for the manufacture of Ropes. There is good scope for the units to utilise the available fibre locally for the manufacture of coir ropes, Coir mats and mattings. These products find wide internal and export markets. Five units, one each for the manufacture of Coir ropes and for the manufacture of mats and mattings in any suitable place may be set up in Kulithalai, Musiri, Manapparai, Tiruchirapalli and Lalgudi taluks.

b. Desiccated Coconut

5.26. Coconuts are available in plenty in the district. It can be profitably utilised for the manufacture of desiccated coconut which finds use in the manufacture of sweets, confectionery, bakery and scented betel nuts. Four units, one each at Tiruchirapalli, Lalgudi, Kulithalai and Musiri may be encouraged. These units can also manufacture activated carbon and shell powder from coconut shell and oil by utilising the scrappings of coconut kernels available from them. Coconut shell powder is being used as a filler in the manufacture of Phenol formaldehyde moulding powder and synthetic glues.

c. Particle board from Coconut Husk

5.27. Dry husks and the poor quality husk which could not be utilised for extraction of coir can be utilised for the manufacture of particle boards. Coconut husk unlike wool and bagasse has considerable self-bonding property. Experiments have shown that boards can be prepared from the husk using only 0.5% adhesive. This will contribute to reduction in the cost of production as compared to particle boards prepared from wood, bagasse, etc. Other important advantages of boards from husk are resistance to fire and decay.

5.28. Phenol Formaldehyde Resin is used as a binding material. Urea formaldehyde resin has also been found suitable for preparation of coconut husk. Central Building Research Institute, Roorkee, Uttar Pradesh has brought out a scheme for the manufacture of particle board out of coconut husk and the interested parties may approach them for detailed scheme and technical guidance. A unit for the manufacture of this item may come up at Tiruchirapalli.

d. Cement coconut pith concrete for Thermal Insulation

5.29. Huge quantities of coconut pith are available from the coir fibre units in the district. This does not find any industrial use at present and goes more or less a waste. This is very durable light weight material, having a very high Thermal Insulation value. Compared to the conventional insulating lime concrete, cement coconut pith concrete developed by the Central Building Research Institute, Roorkee, is much lighter, easier to apply and gives better thermal insulation. Also when compared to modern materials such as expanded polystyrene, the cost of pith coconut for equal thermal insulation value is only 1/2 to 2/3.

5.30. Therefore a unit for the manufacture of this item may come up at Tiruchirapalli. Interested parties may contact the Central Building Research Institute, Roorkee, Uttar Pradesh for technical guidance and detailed scheme.

vii. Industries based on cashew

a. Cashew Shell Liquid

5.31. Cashew is cultivated in about 0.24 lakh hectares mainly in Ariyalur and Udayarpalayam taluks. The production of cashewnut in the district is roughly estimated to be about 3,000 tonnes per annum and cashew apple at about 12,000 tonnes per annum.

5.32. There are five units at present for the processing of cashew nut, of which one is working at present and the remaining four also are expected to commence regular production shortly. The unit functioning at present, in addition to manufacture of cashew kernels is also manufacturing cashew shell liquid. Cashew shell liquid is mostly exported and is used in foundry, automobile, paints and varnishes industry and as an anti-corrosive coating for ships and boat-hulls. The liquid and its derivatives are also used in brake lining, clutch facing compositions, germicides, insecticides, pesticides, etc. Therefore there is good scope for setting up another unit for the manufacture of cashew shell liquid, when the remaining four units commence regular production of cashew kernels. This unit may be advantageously located at Jayamkondan, adjacent to the existing cashew processing units.

5.33. Commercially produced cashewnut shell liquid contains impurities and has high viscosity and to make the product conform to international standards, refining has to be done by a simple acid treatment.

b. Cashew apple syrups and jams

5.34. As stated earlier, the total availability of cashew apple in the district is about 12,000 tonnes per annum. Cashew apple which is part of the cashew fruit, is soft and juicy. The apple has an astringent and acid taste which will have to be removed before it is processed into syrup and jam. It is a rich source of vitamin-C. One tonne of cashew apple gives about 1/2 tonne of juice. Being a new product, it is suggested that to begin with, one unit can come up for the manufacture of 100 kg. of jams and 100 kg of syrup per shift of 8 hours after ascertaining the market potential of the products. This unit can also utilise other fruits like mangoes, tomatoes, etc. available in the district for the manufacture of jams and syrups. This unit also may be located at Jayamkondan.

c. Tanning from Cashew testa

5.35. Cashew testa, the thin brown skin covering the kernel is also an important by-product of the cashew processing units. It contains a condensed type of tannin (used for leather tanning) 45% of which can be extracted with water. The solid extract obtained contains about 61% tannin. The Central Leather Research Institute, Madras, has developed a process for this purpose and the interested entrepreneurs may contact them for technical details and scheme after ascertaining the adequate availability of cashew testa from the local units.

d. Salted and sweetened cashew nut

5.36. India is the largest producer of raw cashew nuts and had traditionally been exporting the processed cashew nuts. The salted and sweetened cashew nuts have a good market within the country and abroad. There is good scope for setting up a unit for the manufacture of salted and sweetened cashew nuts, with a capacity of 50 kg per day, adjacent to the cashew processing units at Jayamkondan.

viii. Industries based on Tapioca

a. Sago/Starch

5.37. Tapioca is cultivated in about 0.01 lakh hectares and the yield of tapioca tuber is about 0.37 lakh tonnes per annum. Though it is used by a few units for the manufacture of sago/starch there is still scope for a few more units in the district. Sago finds market outside the State particularly in West Bengal, Maharashtra and Orissa and starch is utilised by the textile mills for sizing purposes especially in Bombay and Ahmedabad. Two units, one each at Veppanthatti and Ariyalur may come up for manufacture of sago/starch.

b. Tapioca Chips

5.38. There is growing demand in the rural areas as well as in the urban centres for tapioca chips. At least one unit may come up in the district for the manufacture of this item which could be located at Ariyalur.

ix. Industry based on Jasmine

5.39. Jasmine oil: Jasmine, a flower crop, is cultivated in about 200 hectares mainly in Tiruchirapalli and Karur. Jasmine available in the district finds good market in the State for ornamental purposes and has not been put into any industrial use.

5.40. Jasmine contains oil and this could be extracted with a solvent namely Xexane. The recovery of essence will be about 3.83%. Jasmine oil is a highly priced one. There is scope for setting up a unit with a capacity of 1/2 kg per shift. One unit may preferably be located either in Trichy or Karur Taluk.

x. Industries based on Palmyrah

5.41. Palmyrah is grown in large areas in Perambalur, Karur and Manapparai taluks. The Government of Tamil Nadu have proposals to cultivate palmyrah trees in large areas. There is good scope for setting up organised units preferably on a cooperative basis for the manufacture of palm leaf articles like baskets, floor mats, packing mats, fancy articles, etc.

5.42. Palmyrah palm also gives a fibre which has special characteristics and is in demand in many foreign countries for the manufacture of brushes. Therefore there is good scope for setting up units for the extraction of fibre from the base of the palm leaf sheaths of young tree and for the manufacture of brushes out of fibre.

5.43. From Palmyrah juice (Neera) Palmgur, Palm Candy and Sugar could be manufactured. Palm cola, a soft beverage also can be manufactured out of Palmyrah Juice (Neera).

5.44. Therefore a unit each for the manufacture of the following products may be set up at Perambalur, Karur and Manapparai:

1. Palm leaf products
2. Palmyrah defibring and manufacture of brushes
3. Palngur, Candy, Sugar and Palm Cola.

II. Industries based on Livestock Resources

5.45. The livestock population of the district was about 25 lakhs consisting of 11.65 lakhs cattle and buffalo and 12.51 lakhs sheep and goats. It is roughly estimated about 7,500 hides and about 2.6 lakhs of goat and sheep skins are available from the approved slaughter houses. It is understood that 50% of the available hides and skins in rural areas could be procured where there are no approved slaughter houses.

Further, it is understood that 5% of the livestock population dies due to natural causes and at this rate hides and skins available from the will be 5,800 and goat and sheep skins amount to 6,200. Thus the total availability of hides and skins available in the district will be about 0.17 lakh and 3.96 lakhs respectively.

a. Common Facility Centre for Finished Leather

5.46. There are about 24 tanneries in the district engaged in leather tanning of which most of them produce F I tanned leather and a few, finished leather. There is good scope for converting almost the entire half-tanned leather into finished leather and setting up organised units for the manufacture of footwear and leather goods, which have not developed much in the district.

5.47. It is suggested that a common facility Service Centre for finished leather may be set up at Sembattu so that the small scale units get their half-tanned leather converted into finished leather on a job work basis from this Centre.

b. Leather Footwear and Leather Goods.

5.48. There are only a few organised units in the district manufacturing leather footwear. With the increasing availability of finished leather, there will be good scope for units for the manufacture of leather footwear and leather goods. Besides, it is gathered that cobblers are available in Tiruchirapalli, Kulivalam in Musiri block, Thuraiyur, Thirumanur, K.Paramathi etc. They may be given adequate training for the manufacture of modern leather footwear and leather goods and encouraged to set up units. Keeping this in view a training-cum-service centre for leather footwear and leather goods may be set up at Tiruchirapalli. This centre will provide training facilities to the artisans and also will provide service facilities to the small footwear and leather goods manufacturers. The trained artisans may be given encouragement to start small units for the manufacture of leather footwear and leather goods, one each in the following centres to start with:-

1. Tiruchirapalli
2. Kulivalam
3. Thirumanur
4. Thuraiyur
5. K. Paramathi

5.49. The District Industries Centre, Tiruchirapalli, in collaboration with the Tamil Nadu Small Industries Development Corporation may set up the training-cum-production centre, encourage the trained artisans to set up units and help them to market their products. Later on further small units in these lines may be encouraged in different parts of the district, where the cobblers are available, after giving them adequate training.

5.50. Apart from the footwear and leather goods units, one unit each for the manufacture of industrial washers, gloves and garments out of leather may be encouraged and these units may be located in and around Tiruchirapalli.

c. Steamed Bone Meal

5.51. There is one unit manufacturing bone meal in the district. It is suggested that one more unit for the manufacture of steamed bone meal may be set up at Sembattur, with a capacity of 2 tonnes per day, utilising the bone available in the district. Steamed bone meal finds good demand from the units manufacturing poultry feed.

III. Industries based on Mineral Resources

a. Industries based on Clay

Bricks and Tiles

5.52. Clay suitable for the manufacture of bricks and tiles is available in huge quantities in the district. This is being utilised for the manufacture of bricks at present and still there is scope for the expansion of this industry. Five more units, each with a capacity of 3.50 lakh quality bricks per month may be set up - one each at Manapparai, Karur, Manikandam, T. Palani and Thirumanur. Besides the brick units suggested above, two units, one each at Krishnarayapuram and Kulithalai may be set up for the manufacture of roofing tiles, each with a capacity of 22 lakh tiles per year. Quality bricks and tiles will find good demand in the district with the increasing construction activities in the district.

b. Industries based on Lime

1. Chemical grade lime

5.53. Limestone to the extent of about 125 million tonnes occur in Lalgudi, Udayarpalayam, Perambalur, Kulithalai and Karur taluks. Lime kilns are concentrated in Manachanallur and Ariyalur. It is gathered that there are about 50 lime kiln units in Manachanallur and 5 at Ariyalur. Burnt lime produced by these units are mostly used for construction purposes. There are 4 sugar mills in the district which require Chemical grade lime. There is good scope for setting up one or two units for the manufacture of chemical grade lime, depending on the availability of quality limestone. One unit each may be set up at Ariyalur and Manachanallur, after ascertaining the suitability of the limestone available in the district.

2. Precipitated Calcium Carbonate

5.54. Precipitated calcium carbonate can be manufactured out of high grade limestone. It is consumed mainly by the units manufacturing paints, distempers, cosmetics, crayons, rubber tyres, plastic items, etc. Therefore, a unit for the manufacture of this item may come up

in Manachanallur or Ariyalur. However, it is suggested that the suitability of available limestone may be tested and ascertained from the Government Analytical & Testing Laboratory, Guindy, Madras before taking up the venture.

3. Bleaching Powder

5.55. Stabilised and commercial grade bleaching powder is mostly used in textile industries for bleaching purposes. It is also used as disinfectant and insecticide. Besides, it is used in paper industry and for clarifying cane sugar. There is scope for starting one unit utilising the limestone available in the district and the unit may be located at Manachanallur, depending on the availability of quality lime.

c. Industries based on Gypsum

1. Plaster of Paris

5.56. About 15 million tonnes of gypsum deposits occur in the district. Gypsum available in the district is used at present by the cement factories. Gypsum can be used in the manufacture of plaster of paris which finds extensive use in interior decoration, preparation of models, etc. Therefore, one unit for the manufacture of this item is suggested and it can be located in a suitable place in Perambalur taluk.

2. Chalk Crayons

5.57. Gypsum can also be utilised for the manufacture of chalk crayons. In view of the increasing demand for chalk crayons, two units, one each at Ariyalur and Perambalur are suggested.

d. Industries based on quartz and feldspar

1. Glassware

5.58. Two lakh tonnes of quartz occur in the district. Ground quartz is used as filler in paints and as an abrasive in sand paper and as a flux in smelting. This is also used in the manufacture of ceramics, glass and in optical industries. Scope for setting up a unit for the manufacture of glass items may be explored after testing the quality of quartz available in the district. This unit may be set up at Manapparai.

5.59. About 10.20 lakh tonnes of feldspar occurs in the district. It is used at present by M/s Dalmia Ceramics Ltd. for the manufacture of Ceramic items. The possibility for the manufacture of glass items may be ascertained after testing the quality of feldspar available in the district. The unit suggested above at Manapparai may utilise this mineral for the manufacture of glass items.

2. Mineral Crushing Plant

5.60. As stated earlier, quartz and feldspar are available in large quantities in the district. It is suggested that a plant for crushing quartz and feldspar may be set up in Manapparai where these minerals are reported to occur, in the event of these minerals being found not suitable for the manufacture of glass items.

e. Industries based on granite stones

Stone crushing

5.61. Granite stones are available in different taluks of the district

and it is crushed into blue metal jelly by some units. In view of the ever increasing tempo in house construction and road formation activities there is scope for setting up more units in the line. Therefore 4 units, one each in Thuraiyur, Thanthoni, Perambalur and Karur blocks are suggested for stone crushing.

IV. Ancillary industries and industries to meet the requirements of medium/large scale units

1. Ancillary Industries to M/s Bharat Heavy Electricals Ltd., Tiruchirapalli

5.62. Of the large scale units in the district, M/s Bharat Heavy Electricals Ltd., a public sector undertaking, manufacturing boilers is the most prestigious one. It provides employment directly to more than 11,500 workers. This large scale unit specialises in the manufacture of boilers for thermal and nuclear power stations of unit sizes upto 210 M W and 235 M W along with all related ancillary equipment. It has also taken up the manufacture of 500 M W boilers. It also manufactures industrial process steam boilers of different sizes to meet the requirements of fertilizer factories, sugar mills, chemical factories and petrochemical industries.

5.63. The production of BHEL as at the year ending March 1980 crossed Rs 1,000 crore mark and reached Rs 1,174 crores. In the export market major land marks have been achieved in having secured contract from Libya, Saudi Arabia and Malaysia.

5.64. The unit also has contributed to the development of ancillary units in the district in particular and the State in general. Most of the ancillary units in the district are housed in Thuvakudy, Thiruverumbur and Ariyamangalam Industrial Estates.

5.65. 152 units in the district serve as ancillary to BHEL - 21 captive units, 71 fabrication units and 60 machining units in the district. Further scope for ancillary units and units to meet the requirements of BHEL is discussed below:-

1. Sophisticated Fabrication and Machining

5.66. It is gathered that there is scope for units for fabrication and machining of sophisticated nature. It is suggested that two units for fabrication and two units for machining may come up in the district. These units may advantageously be located in and near Thiruverumbur Industrial Estate.

5.67. Apart from the above ancillary units there is also good scope for establishing units for the manufacture of different consumer items, required by this unit as indicated below:

2. Paints and Rust preventing Fluid

5.68. BHEL is using about 1 lakh litres of paint - 0.80 lakh litres of zinc chromate and red oxide paint and 0.20 lakh litres of finishing paints of different colours per annum. Besides, it consumes rust preventive fluids to the extent of 0.30 lakh litres. These items valued at about Rs 16 lakhs are mostly obtained from other districts in the State such as Thanjavur, Madras, etc. Therefore, there is scope for setting up a unit locally for the manufacture of these items. This

unit may advantageously be set up near Thiruverumbur. This unit can also cater to the requirements of other large scale units such as Golden Rock Railway Workshop, M/s Simco Meters Ltd., etc.

3. Packing Cases

5.69. Packing cases made out of mango, silver oak and countrywood are consumed by this unit for packing boilers and other accessories. Deal wood cases are also used for this purpose. Packing cases are obtained mostly from Kerala and Deal-wood cases from Himachal Pradesh. The annual consumption of packing and deal-wood cases by this unit is roughly about Rs 100 lakhs, in terms of value. To start with, at least two units may come up for the manufacture of packing cases. These units also may be located at Thiruverumbur/Thuvakkudi. In view of the difficulty anticipated to be experienced by these units in procuring the required quantity of wood, it is suggested that the District Industries Centre may help these units for getting necessary allotment of wood from the State Forest Department.

4. Medicated Soap

5.70. BHFL supplies to its workers and staff carbolic soap and liquid soap for washing purposes. The unit consumes about 50,000 bars of carbolic soap valued at about Rs 2 lakhs and 3,000 litres of liquid soap valued at about Rs 12,000 per annum. These items are at present obtained from Kerala. These items are also required by other large scale industries in the district like Golden Rock Railway Workshop, M/s SIMCO Meters Ltd., Cement Factories, Textile Mills etc. Therefore a unit to manufacture Medicated Soap/Liquid Soap out of Non-edible oil may come up in the district. This unit may be located preferably at Tiruchirapalli.

5. Plastic Injection Moulded Items

5.71. Seamless Steel Tube Unit, a sister concern of BHFL consumes 'End Protectors' made of plastic. The annual requirement of this item is about Rs 6 lakhs. Plastic injection moulded items are also required by M/s SIMCO Meters Ltd., and the Textile Mills in the district. These items are reported to be obtained mostly from outside the district. Therefore there is scope for a unit to manufacture Industrial Plastic Items by Injection Moulding technique. This unit may be set up at Tiruchirapalli.

6. Junction Boxes

5.72. Junction boxes fabricated out of CRC sheet, of 12 G fitted with Terminal Block, Push Button etc. are required in huge quantities, valued at about Rs 75 lakhs per annum by BHFL. These items are mostly obtained from other places in the State as well as from other States. Therefore at least one unit may come up at Thiruverumbur for the manufacture of this item. Interested entrepreneurs may obtain necessary technical details, drawings etc. direct from BHFL.

7. End connectors

5.73. End connectors of different sizes made out of mild steel and cast aluminium are mostly imported by BHFL. The annual consumption of these items by this unit is about Rs 20 lakhs. BHFL is desirous of encouraging a unit locally for the manufacture of this item. Therefore,

a unit in this line may come up at Thiruverumbur. Necessary technical details, drawings, etc. may be obtained by the prospective entrepreneurs from BHFL.

8. Cable Trays

5.74. Cable Trays of 0.5 metre to 2.5 metre length made out of mild steel of 12 G/14 G fabricated and galvanised are purchased by this unit regularly to the value of Rs 25 lakhs per annum. These trays are obtained from the units at Bombay and Ahmedabad. Therefore, there is scope for the manufacture of this item locally and a unit may be encouraged at Thiruverumbur. Further, details can be had from BHFL by the intending entrepreneur.

9. P V C Sheets

5.75. PVC Sheets in white and black colour are required by BHFL to the value of Rs 5 lakhs per annum for packing purposes. These are obtained mostly from outside the District. Therefore, there is scope for a unit to manufacture PVC sheets locally. This unit can also manufacture poly-ethelene and alkathene sheets and bags required by the Spinning Mills in the district, the consumption of which is estimated to be about Rs 50,000 per annum. The unit may be located at Tiruchirapalli.

10. Metallic Name Plate

5.76. The annual requirement of various types and sizes of metallic name plates by BHFL is to the value of about Rs 3 lakhs. Name plates are also required by M/s SIMCO Meters Ltd. and the Golden Rock Railway Workshop etc. Metal name plates are mostly obtained from a unit at Madras. Therefore one unit to meet the local requirements may come up at Tiruchirapalli.

ii. Ancillary Industries to M/s SIMCO Meters Ltd., Tiruchirapalli

5.77. This unit was established in the year 1961 for the manufacture of electrical energy meters, maximum demand indicating meters and high energy batteries. The annual installed capacity and production of the unit in 1979 of these items were as follows:-

	Capacity	Production
1. Electrical energy meters	1.50 lakh Nos.	1.22 lakh Nos.
2. Maximum demand indicating meters	10,000 Nos.	3,152 Nos.
3. High energy battery	800 "	77 "

5.78. The unit provides employment to about 1,200 persons.

5.79. The total purchase of components, sub-assemblies, etc. of the unit was of the order of Rs 20 lakhs in 1979. It is understood that already 48 units are supplying components and sub-assemblies to this unit.

5.80. Based on the discussions with the unit the significant items which could still be taken up locally for manufacture, especially to meet the requirements of this unit are as follows:

1. Cold headed steel screws.
2. Shunt laminations
3. Bottom pivots and top bearing pins
4. Grab screws.

1. Cold headed steel screws

5.81. Cold headed steel screws of 2 BA, 4 BA and 6 BA sizes are used by the unit and the approximate quantity required per annum will be about 72 lakh Nos. Since this item is not produced locally, it is obtained from outside. Therefore, one unit for the manufacture of this item may come up, preferably nearer to the parent unit. This unit can also cater to the needs of other meter manufacturing units and other electrical and electronic industries in the country.

2. Shunt laminations:

5.82. Shunt laminations are used in the manufacture of meters. The requirement of this item is approximately 6 tonnes per month. As this item is not manufactured locally, the supply of the same is obtained from outside. One unit for the manufacture of this item may come up nearer to the parent unit. This unit can also take up the manufacture of sheet metal pressed components required by the parent unit.

3. Bottom pivots and top bearing pins

5.83. Bottom pivots and top bearing pins to the extent of 1.5 lakh Nos. each per annum are required by this unit and the supplies are met by imports. A unit for the manufacture of this item with a view to substitute imports may come up nearer to the parent unit and it can also cater to the requirements of other meter manufacturing units in the country.

4. Grub Screws

5.84. Grub screws to the extent of 3 lakh Nos. per annum are reported to be imported by this unit. Grub screws are required by the other meter manufacturing units and by some other engineering industries in the country. Therefore a unit for the manufacture of this item may also come up nearer to the parent unit.

iii. Ancillary Industries to Cement Factories

5.85. As stated earlier there are 3 cement factories one each at Dalmiapuram, Ariyalur and Karur. The requirement of ancillaries to these factories and the scope for setting up ancillary units are discussed below:

1. Chilpeps

5.86. Chilpep balls of 20 mm dia. to 100 mm dia. are used by the cement factories as grinding media. The annual requirement of the cement factories in the district is roughly estimated at about Rs 30 lakhs. Chilpeps are also used by the remaining 7 cement factories in the State. These are at present understood to be obtained from Calcutta, and Bangalore as there are no units in the State. Therefore, there is good scope for the manufacture of this item to meet the requirements of local cement factories as well as those in the State. In this connection, it is understood that a factory shed with a cupola is available with M/s Dalmia Cement Bharat Ltd. at Dalmiapuram which could be taken on rent by the prospective entrepreneur, and the required additional equipment could be installed in the shed. The prospective entrepreneur may contact this cement factory for further details in this regard.

2. Black bolt and nuts

5.87. Fasteners such as black bolts and nuts are consumed by the cement factories in huge quantities. They are also consumed by Golden Rock Railway Workshop, BHFL, etc. in Tiruchirapalli. Difficulty is reported to be experienced by the units in procuring good quality bolts and nuts from the vendors in the country. Therefore, it is suggested that a unit for the manufacture of these items may come up in the district, preferably at Tiruchirapalli.

3. Uniform for workers

5.88. Uniforms are supplied periodically to workers by the cement factories and some other large-scale units in the district. There is good scope for a unit to concentrate on the manufacture of uniforms required by these units. A unit, preferably at Ariyalur, may come up, mainly to cater to the requirements of uniforms of Tamil Nadu Cement Corporation Ltd., Ariyalur, which is expected to be about 1,300 pairs per annum. This unit can also cater to the requirements of the cement factory at Dalmiapuram, which is nearer to the Ariyalur cement factory. Spare capacity of the proposed unit, if any, could be utilised for the manufacture of ready-made garments to meet the requirements of rural areas.

4. Printing Press

5.89. The Tamil Nadu Cement Corporation Ltd., Ariyalur, expressed their desire to have a printing unit nearby the factory to execute the printing work required by them. At present they get the printing work, viz. printing of letter heads, cash bills, delivery chalang, gate passes, file covers, registers, etc. done from the printing presses at Tiruchirapalli. It is understood that they have to incur an expenditure of Rs 60,000/- per annum for printing these materials. Therefore, it is suggested that one small printing press may be set up at Ariyalur. This unit can also undertake printing of materials required by the nearby Cement Factory at Dalmiapuram.

iv. Ancillary industries to Textile Mills

1. Paper Cones

5.90. There are 4 textile mills in the district with a total spindlage of 65,600 Nos. The annual requirement of paper cones of these mills is roughly estimated at about 2 lakh Nos. and the supply is obtained from other districts in the State. A unit to meet the local requirement of this item may come up at Ramjeenagar near Tiruchirapalli. The unit can also manufacture paper tubes required by the mills.

2. P V C Bobbins

5.91. PVC bobbins, numbering more than a lakh per annum, is required by the spinning mills in the district and the supplies of this item are obtained from outside the district. Therefore a unit for the manufacture of this item may also come up at Ramjee Nagar.

v. Ancillary industries to Golden Rock Workshop of Southern Railway

5.92. The Railway workshop of Southern Railway at Golden Rock manufacturing wagons and overhauling steam and diesel locomotives and coaches, in addition to the requirements indicated under BHFL, require the

following items as well:

1. Ferrous and non-ferrous castings
2. Forgings

It is suggested one unit each on the above lines may come up at Golden Rock.

vi. Industries based on Demand

a. Mechanical Engineering Industries

1. Improved Agricultural implements

5.93. Agricultural Implements, especially the traditional items, have been occupying a prominent place in the agricultural operations in the district. Hand operated tools and implements such as Crow Boar, Shovels, Pick Axes and Sickles and Animal-drawn Ploughs are the important ones used in the district. In recent years Iron Ploughs, Shears etc. manufactured in Madurai district are also used replacing the traditional wooden ploughs. Tractors, oil engines, electric motors are also being increasingly used for agricultural operations.

5.94. Agricultural productivity can be increased substantially only by using more and more agricultural machinery and implements. Further, to meet the labour shortage during peak seasons, it becomes necessary to use improved implements.

5.95. Agricultural Implements are generally required for the following operations:

1. Tilling
2. Sowing
3. Plant Protection
4. Harvesting and threshing
5. Processing.

5.96. It is suggested, to start with, the following implements may be manufactured in the district:

1. Cultivator
2. Leveller
3. Bund Former
4. Paddy Weeder
5. Paddy Harvester
6. Seed Drill
7. Paddy Thresher
8. Paddy Pre-cleaner
9. Groundnut Stripper
10. Groundnut Decorticator
11. Chaff Cutter.

5.97. A unit for the manufacture of the above items may be set up at Thiruverumbur. Entrepreneurs who are interested in the manufacture of the above improved implements may contact the Tamil Nadu Agricultural University, Coimbatore for technical details. The Government Service Centre manufacturing farm implements at Tiruchirapalli may take up the manufacture of these items as well in case private entrepreneurs are not forthcoming to take up these items for manufacture.

2. Tool Room Shop

5.98. There are a large number of Engineering and Fabrication units in and around Tiruchirapalli. However, it is understood that there is no proper Tool Room Facility in the district. In view of the availability of skilled workers, a Tool Room may be set up either in the private or public sector in Tiruchirapalli. This unit can also take up the manufacture of gears required by different large scale industries in the district.

3. Animal-drawn Carts

5.99. With the increasing use of improved animal-drawn vehicles by the farmers for transporting manure and agricultural produce, there is good demand for such bullock carts. A unit for the manufacture of improved bullock carts with ball bearings and rubber tyres may be set up, preferably at Manapparai.

4. Rice Mill Parts

5.100. As stated earlier there are about 30 Rice Mills in the district, of which 20 are located in Manachanallur. Each mill on an average has two Hullers and the requirement of some of the Rice Mill Parts for a Huller will be as follows:

Cylinder	24 Nos.
Knives	24 " "
Huller screen	2 " "
Rubber Roller	Rs 40,000/- per mill.

5.101. As there is no unit for the manufacture of these items, they are obtained from other parts of the State and other States. Therefore, there is good scope for setting up units for the manufacture of these items. The units when set up, can cater to the requirements of the neighbouring districts as well. The proposed units may be set up in and around Tiruchirapalli.

5. Bullock Shoes

5.102. There is no unit manufacturing bullock shoes in the district, though there are some units manufacturing bullock shoe nails in Karur and Kulithalai. Therefore, one unit for the manufacture of bullock shoe may be set up, preferably at Karur.

6. Gobar Gas Plant

5.103. In view of recent hikes in the prices of Petroleum products and firewood, there is good scope for setting up Gobar Gas Plant for the production of cooking gas especially in the rural areas where animal dung is available. The plant roughly costs about Rs 5,000/- to Rs 8,000/- depending upon the capacity of the tank. The Khadi and Village Industries Commission has taken up the task of popularising Gobar Gas in areas where animal dung is available. The plant mainly consists of fabricated tank and hence any fabrication unit may undertake the production of this item. The unit may be advantageously set up at Thiruverumbur.

7. Automobile Body Building

5.104. There is a large scale unit at Karur engaged in the construction

of Automobile Bodies. Automobile Bodies constructed at Karur are known for their quality. A large number of skilled workers are available in this line at Karur. They may be organised into an Industrial Cooperative for the manufacture of Automobile Bodies, at Karur.

8. Common Facility Centre for Blacksmiths

5.105. It is understood that there is a concentration of blacksmiths in Kuppureddipatti in Kulithalai block. About 20 blacksmiths are engaged in the manufacture of Scythes and Sickles to the value of about Rs 1,000/- per day. The Scythes and Sickles produced by them find good demand. There is, however, scope for upgrading the quality of the products by supplying quality raw materials and providing forging and heat treatment facilities. It is desirable that the blacksmiths are provided with suitable factory accommodation. After ascertaining the actual number of factory sheds required by them, SIDCO may construct mini-sheds. A common facility centre may also be set up providing facilities for forging, heat treatment etc. so that the blacksmiths could produce quality scythes and sickles by utilising the services of this centre.

9. Brass and Copper Sheets and Circles

5.106. Artisans manufacturing brass, copper and bell metal utensils are concentrated in Jeyamkondan, Marungapuri and Thanthoni blocks. It is understood that adequate supply of brass sheets and circles will be of much help to them. Therefore, it is suggested a unit for the manufacture of brass and copper sheets and circles may be set up at Jeyamkondan. to cater to the requirements of local artisans as well as the artisans in other parts of the district. The District Industries Centre, Tiruchirapalli may assist the proposed unit in the procurement of necessary raw materials.

10. Steel and Wooden Furniture

5.107. Training is given to candidates in turning, fitting, carpentry, blacksmithy and automobile engineering by a technical institution in the Boys Town at Manapparai. Manapparai is also the Centre for blacksmiths and carpenters. Utilising the skill available in the area a well organised unit, preferably in the Cooperative Sector may be set up at Manapparai for the manufacture of steel and wooden furniture. The same unit can also think subsequently of opening a branch unit at Manapparai for automobile repair and servicing and tyre retreading to meet the requirements of large numbers of fleet which passes through that place.

b. ELECTRONICS AND ELECTRICAL INDUSTRIES

i. Electronic Industries

5.108. Electronic industry is one of the fast growing industries in the modern world. It is the nerve centre of present-day technology. There is no human activity which does not involve electronics and there is literally no limit to what electronics can do. The fantastic reach of electronics and its permeation into all spheres of our activities may very well convince a future historian to label the Twentieth century as the dawn of electronic revolution.

5.109. The electronic industry in India and especially in Tamil Nadu has not yet taken deep roots. There is considerable scope for the development of this industry and keeping this in view the Government

of Tamil Nadu has set up an Electronic Corporation and established an industrial estate for electrical and electronics at Tiruchirapalli and eight units have been set up in this estate. However, it is gathered that no significant achievement has been made further in establishing electronic industries in the district, considering the availability of technicians from the existing technical and technological institutions in the district.

5.110. Therefore there is great need for developing electronic industry in the district. In this connection it may be noted that setting up of an electronic unit needs approval of production programme, which in effect will be helpful for the unit for obtaining licences for importing raw materials and components, if necessary. Certain electronic units for which approval could be given by the State authorities are given in the Appendix IV. This is a basic list from which an initial start could be made by the entrepreneurs in the State. The capacity indicated against each item in this list is the maximum allowed if it is to be linked with imports for raw materials and components. Subsequently, vast potential for diversification in the same field exists beyond this list. For such diversification, however, approval of production programme will have to be obtained from the Department of Electronics, Ministry of Industry, Government of India, depending on the recommendations by the State Directorate of Industries, Government of Tamil Nadu.

5.111. Certain electronic items which have prima-facie scope for development in the district, in the initial stages, are given below:

<u>Product</u>	<u>Capacity per annum (Nos.)</u>
1. AM and AM/FM Radio	10,000
2. Mono/PA Amplifiers	2,000
3. Car Radios	2,000
4. Microphones (a) P A System	2,000
(b) For Tape Recorders	30,000
5. Wire Wound Resistors	1,00,000
6. Aerial/Antenna for Radio Receivers and T V Receivers	1,00,000
7. Electronic Fan Regulators	30,000
8. Electronic Gas Lighters/Cigarette Lighters	50,000
9. Electronic Emergency Lantern	10,000
10. Invertors/Convertors upto 500 volts amps	1,000
11. Electronic P H Meters	100
12. Electronic Industrial Timers	500
13. Battery Chargers/Float Chargers	100
14. Electronic Single Phasing Preventors	500
15. Transformers for Electronic application	5,000

Entrepreneurs may select suitable product for manufacture after ascertaining the market potential for these products.

5.112. It may be noted that the approval of the Production Programme of the above items are to be obtained from the State Level Technical Committee consisting of the Director of Industries and Small Industries Service Institute, Madras, so as to enable the units to procure the imported raw materials/components. The prospective entrepreneurs

therefore may consult the State Directorate of Industries/Small Industries Service Institute, Madras for preparing the detailed technical schemes on the products selected.

16. Repairing and servicing of Electronic equipment

5.113. Besides, it is suggested that a unit for repairing and servicing of electronic equipment may also be set up to meet the local requirements.

5.114. All these above units may be accommodated in the Electrical and Electronic Industrial estates, Thuvakudi, depending on the availability of space.

ii. ELECTRICAL INDUSTRIES

5.115. The demand for electrical equipment is closely related to the availability of power and addition to power generation capacity. As far as Tamil Nadu is concerned the installed capacity for power has increased very steeply from 156 MW in 1950-51 to 1909 MW in 1978-79. During this period, the consumption of electricity by industries have also shown a marked increase from 187 M units in 1950-51 to 4,139 M units in 1978-79.

5.116. The Government of Tamil Nadu is giving top priority for the generation of additional power and to increase the capacity for power considerably during the VI Plan period. Increased generation of electricity, naturally warrants electrical equipment and accessories for conveying power and lighting equipment and fittings required by the different categories of consumers. The equipment, accessories, fittings, etc. that have scope for development in the district are listed below categorywise.

I. Transformers and Line materials

1. Distribution transformers (2) Potential transformers (3) Current transformers (4) Transmission line hardware.

II. Wiring Accessories

1. Bakelite Switches and sockets; 2. Link clips; 3. Wooden electrical accessories.

III. Light Fittings

(1) Fluorescent tube light fittings (2) decorative light fittings; (3) Industrial light fittings; (4) Street light fittings; (4) Tube light chokes and starters.

5.117. A unit each for the manufacture of the above items may come up in the district in or near Electrical and Electronic Industrial Estate at Thuvakudi.

IV. Domestic Electrical Appliances

5.118. Apart from the above items there will be good scope for units for the manufacture of domestic electrical appliances which are considered as a boon to the house-wives, especially for working women as labour saving devices in the household activities.

5.119. Twenty-two items of domestic electrical appliances are reserved by the Government of India for exclusive development in the small scale sector, the list of which is given in Appendix V. However, it is considered that the following appliances have prima-facie scope for

development in the district at present.

1. Mixies/Grinders
2. Hot plates
3. Cooking ranges
4. Bread Toasters
5. Electric irons.

5.120. Three units, one each for the manufacture of (1) Mixies and grinders (2) Hot plates, cooking ranges and bread toasters (3) Electric iron may come up in the district.

Interested entrepreneurs may select suitable products and approach the SISI for technical details. It is suggested that the units forthcoming for the manufacture of the electrical items may be provided factory accommodation in a compact area in or near the Electrical and Electronic Industrial Estate at Thuvakudi.

5.121. It has to be borne in mind that Government of India have brought into force a quality control order for the manufacture of domestic electrical appliances according to which the products must conform to ISI specification and test, failing which no manufacture or sale of such items will be allowed.

V. Electric Motor Repairing and Rewinding of coils

5.122. Of the total area irrigated in the district, 25% is accounted for by wells. There are about 1.38 lakh Nos. of masonry and tube wells in the district of which about 0.55 lakh Nos. are connected with electrical pumpsets and 0.12 lakh Nos. with oil engines. Government of Tamil Nadu is giving necessary encouragement to the agriculturists to instal pumpsets in their irrigation wells.

5.123. Therefore there is good scope for setting up some more units for rewinding of coils and repairing of electric motors. Six well equipped units, one each in the taluks of Perambalur, Thuraiyur, Karur, Manapparai, Musiri and Kulithalai can be set up where large numbers of wells are connected with pumpsets and still there are many to be connected with pumpsets.

c. CHEMICAL INDUSTRIES

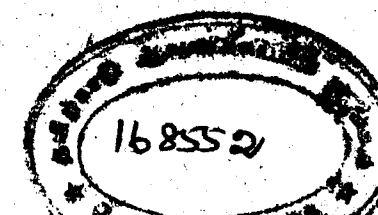
1. Modified Amyl Alcohol

5.124. M/s Trichy Distilleries, a large-scale unit, are manufacturing the following products utilising molasses:

1. Rectified spirit
2. Carbon-di-oxide
3. Acetic acid
4. Acitol Dehyde and
5. Fuse oil.

5.125. Production of fuse oil by the unit is 40 litres per day. It is understood that it can be utilised for the manufacture of Modified Amyl Alcohol which will be useful to find out the fat content in milk. This item may be required by the dairy farms in the State. Entrepreneurs interested in the manufacture of this item may contact the Tamil Nadu Dairy Development Corporation, ascertain their demand for this item and if considered viable, may set up a unit at Tiruchirapalli.

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2. Polythene bags

per day

5.126 Polythene bags to the extent of 5,000 to 6,000/are reported to be used by the Dressed Chicken unit at Tiruchirapalli run by the Tamil Nadu Poultry Development Corporation Ltd. Polythene bags are also used in the district for different packing purposes. Therefore, a unit for the manufacture of polythene bags may be set up in Tiruchirapalli.

3. Plastic vials

5.127 This unit can also consider the possibility of equipping itself for the manufacture of plastic vials of 1.5 ml capacity for storing semen used for artificial insemination of cattle. It is understood from the Animal Husbandry Department that the Intensive Cattle Development Centres and key village centres in the district alone require about 1 lakh vials per month. The unit may, however, satisfy itself about the possible off-take of this item by the Animal Husbandry Department, before installing the required machines.

4. PVC Pipes

5.128. PVC pipes are mainly used for transmission of potable water and as electrical conduits. The provision of safe drinking water in the rural and urban areas in Tamil Nadu is given important position among welfare schemes. Hence there is good scope for the manufacture of PVC rigid pipes to meet the present and potential requirements. A unit for the manufacture of this item can come up in Tiruchirapalli. The Indian Standards Institution has laid down standards for rigid PVC pipes, which can be followed by the proposed unit.

It is advisable for this unit to manufacture pipes along with fittings such as T joints, bonds, straight connections, etc.

5. Pencil Lead

5.129. M/s Vijaya Mineral Corporation at Samayapuram are processing graphite. The production of graphite is about 10 to 12 tonnes per month. Processed graphite is understood to be sent outside the district for the manufacture of pencil lead and crucibles. It is also understood that graphite is exported to Japan through an exporter based at Bombay. There is good scope for the manufacture of pencil lead locally. Pencil lead is manufactured with a mixture of graphite, clay and antimony sulphide, baked at a temperature between 1093°C and 1815°C.

5.130. A unit engaged in the manufacture of pencil at Musiri can utilize the lead and it can be also utilised by other pencil manufacturing units in Tamil Nadu. Hence, a unit for the manufacture of pencil lead may be set up at Samayapuram.

5.131. Since only a few varieties of graphite possessing the necessary depth of colour, softness and purity can be made use of in the manufacture of pencil lead, the prospective entrepreneur may test and find out the suitability of graphite available from the unit for the manufacture of pencil lead, before setting up the unit.

6. Safety Matches

5.132. Match is another industry which has great potential for development in the district based on the climatic condition and availability

of labour. Three service societies have been registered one each at Musiri, Andimadam and Jayamkondan. These service societies put together will have 300 match units which could provide employment opportunities for about 5000 persons.

5.133. It is suggested that the District Industries Centre may organise at least seven more service societies at the rate of one service society at each taluk where there are no such service societies, having 100 match units each. It is advisable that all the service societies are affiliated to one Apex service society at the district level. The Apex service society can co-ordinate the activities of different individual co-operative societies, undertake the procurement and distribution of raw materials to member societies. The matches produced by the member societies could be marketed by the Apex society under one brand name. This will help the individual member societies to concentrate on the effective implementation of the production programme and for the avoidance of selling their products under different brand names in a highly competitive market.

7. Splints and Veneers

5.134. The district level Apex Service Society can also set up at least 7 units for the manufacture of splints and veneers required by the member co-operative service societies. These units could be located at Central points, one each for a taluk, from which the constituent service societies could procure the raw materials quickly and with low transport cost. The District Service Society can purchase in bulk the soft wood required by the units and supply to them for processing. The splints and veneers produced by these units will be distributed by the District Service Society to the constituent service societies based on their requirements.

8. Dye-stuff and Dye-stuff intermediates

5.135. Trichy is one of the important districts for handloom industry. The industry provides employment to about 1 lakh persons. The important weaving centres are Woriyur, Kulithalai, Toppamalai, Poovalur, Thuraiyur, Thathaiyangarpet and Karur.

5.136. There are over 32,000 handlooms in the district, of which about 50% are in the co-operative sector. Sarees, bed sheets, lungies, towels, pillow covers and furnishing fabrics are the items produced in the district. Woriyur sarees and bed spreads and towels produced in Karur have earned a high reputation.

5.137. The requirement of dyes by the handloom industry is met by supplies from other districts and States. The important colours consumed by the handloom industry are (1) Novatic olive; (2) Sulphur blue (3) Rhodamine (4) Victoria blue and (5) Olive green.

5.138. There is good scope for setting up at least one unit in the district for the manufacture of Vat/Naphthol dyestuff. The unit may be organised on a cooperative basis mainly to cater to the requirements of handlooms coming under the fold of co-operatives. It may be advantageously located at Tiruchirapalli or Karur.

9. Modern Dye house

5.139. As stated earlier, handloom industry is concentrated in different centres. There are a few modern dye houses. It is understood that there are proposals to set up a modern dye house at Thiruvanaikoil. It

is suggested that another dye house may be set up at Thathaiyangarpet, which is also a main handloom centre.

10. Drugs & Pharmaceuticals

5.140. While the formulation industry like the manufacture of syrups, tablets, mixtures, tonics, etc. has shown a remarkable progress, the basic drug and pharmaceutical industry has not shown much progress and hence offers scope for development in the State. A few items which have scope for development in the near future is given in Appendix VI. Certain items found in the list are reserved for production in public sector only. However, there are many items in the list which the small scale units can easily take up. Some of the basic chemicals required will have to be imported and the units at present may find it easy to import them in view of the present policy of the Government to allow liberal imports by small scale units. A unit for the manufacture of at least a few items may come up at Tiruchirapalli, preferably on a co-operative basis. The intending entrepreneur may contact the Ministry of Chemicals and Fertilisers, Ministry of Health, Government of India, New Delhi, for detailed information in the matter.

11. Phenyl

5.141. Phenyl is required by municipalities, town panchayats, hospitals and also by households. A unit for the manufacture of phenyl is suggested for Tiruchirapalli. This unit can also take up the manufacture of cleaning powder used for cleaning utensils.

d. Other Industries

1. Mechanised Korai Mat Weaving

5.142. There are more than 1600 mat weavers in the district and mat weaving is one of the most important traditional industries carried out in parts of Musiri, Lalgudi, Manapparai and Karur taluks. There are a few mechanised korai mat weaving units in the district. There is good scope for setting up a few more mechanised korai mat weaving units in the district for catering to the requirements of the country and abroad. One unit each in the taluks of Musiri, Lalgudi, Manapparai and Karur may be set up.

2. Fibre extraction and rope making out of Aloe

5.143. For weaving the korai mats lot of warps is required. Also leaves found in plenty in the district may be fully utilised for extraction of fibre and making warps. Two units for extraction of fibre and manufacture of ropes have scope in the district. These units may be located at Kadavur block where skilled workers in this line are concentrated. These units may also manufacture fancy utility articles out of aloe fibre.

3. Low count yarn

5.144. There are 4 spinning mills in the district, 2 each at Tiruchirapalli and Karur with a total spindlage of 0.77 lakhs - 0.66 lakh single spindles and 0.11 lakh of doubling spindles. The cotton waste available from these units could be utilised for the manufacture of low count yarn. Low count yarn is used for the manufacture of carpets, blankets, cotton ropes, stove wicks, webbings, etc. and finds good market. There is already a unit for the manufacture of low count yarn at Karur and another

unit can come up at Tiruchirapalli. The unit can get cotton waste from the mills in the neighbouring districts of Madurai and Coimbatore if the local supply is not adequate.

4. Silk reeling

5.145. Sericulture is being developed in the district and the taluks where this industry is concentrated are Manapparai, Karur and Kulithalai. Since there is no reeling unit in the district the silk yarn is sent outside the district to Salem and Bangalore. Therefore, it is suggested a silk reeling unit one each in Manapparai, Karur and Kulithalai taluks may be set up.

5. Inland Fishing nets

5.146. The district has no marine resources and hence fishing operations are confined to rivers, tanks, wells etc. There are about 300 tanks where fish is reared. There are nine fishermen Cooperative Societies in the district. The important taluks where the fishing centres are Lalgudi, Tiruchirapalli, Kulithalai, Karur and Musiri. There are about 20 inland fishing centres in these taluks. For the improvement of inland fishing a scheme has been launched by the Fisheries Department. Under this programme 200 hectares have been taken to fishing in ponds in Lalgudi and Manachanallur areas and fish farmers are trained in fish farming and harvesting.

5.147. There is good scope for setting up a unit for the manufacture of fishing nets, suitable for inland fishing and the unit can be organised by the Fish Farmers Development Agency on a cooperative basis, preferably at Krishnarayapuram where there are large number of fish farmers.

6. Poultry & Cattle feed

5.148. There is good demand for quality cattle and poultry feed in the district in view of the encouragement given by the Animal Husbandry Department for cattle and poultry development. Cattle and Poultry feeds made by mixing various ingredients to give protein, fat, carbo-hydrates etc. which are essentially required for animal and poultry health. A unit for the manufacture of 2 tonnes of cattle feed and 5 tonnes of poultry feed may come up in the district. The unit may be set up at Lalgudi or Karur. This unit can also manufacture nutrient components by mixing minerals such as Calcium, Phosphorous, Magnesium, Sodium, Manganese and trace elements required for the healthy growth of cattle.

7. Bakery and Biscuits

5.149. The consumption of bread and bakery products is on the increase in urban and semi-urban areas, due to the modern way of living. In view of the expanding market for the bakery products a unit each for a Panchayat Union may come up, where there are no bakery units at present.

B. Large Scale Industries

5.150. While analysing the data collected in connection with the survey of the district, it is found that the following medium/large scale industries have prima facie scope for development in the district.

1. Particle Boards from Groundnut shell

5.151. Groundnut is a major commercial crop cultivated in the district. During 1978-79, it was cultivated in an area of about 0.63 lakh hectares

and the yield of unshelled groundnut was about 0.63 lakh tonnes. Groundnut available in the district is crushed in a number of oil mills and oil is extracted. Groundnut shell could be utilised for the manufacture of particle board. A unit for the manufacture of this item can be set up as a joint sector unit with the participation of the Tamil Nadu Industrial Development Corporation Ltd. or by the Tamil Nadu Agro Industries Corporation Ltd. after ascertaining the feasibility of the project, preferably at Manachanallur.

2. Sugar Mill

5.152. Sugar cane is cultivated in an area of about 0.12 lakh hectares in 1978-79. The total yield of sugarcane in the district is 1.53 lakh tonnes per annum in terms of gur. The main taluks of cultivation of sugarcane in the district are Ariyalur, Karur, Lalgudi, Perambalur and Kuli-thalai. There are four sugar mills in the district, one each at Pettavaithalai, Kattur, Perambalur and Karur. There is scope for extending the area of cultivation under sugarcane and starting another sugar mill in the district. The scope for setting up one more sugar mill in Pugalur or in the backward taluk of Musiri may be explored. This unit also can supply the bagasse available from it to the proposed large scale unit at Pugalur for the manufacture of paper and board. This unit may preferably be organised on a cooperative basis.

3. Mini Cement Plant

5.153. The reserves of lime stone and gypsum available in the district are estimated to be about 125 million tonnes and 15 million tonnes respectively. These minerals are utilised by 3 cement factories in the district. It is gathered that one more mini-cement plant may be set up utilising the available raw materials in the district. It is suggested that the Tamil Nadu Industrial Development Corporation Ltd. may conduct in-depth studies for exploring the possibility of setting up such a unit in the district preferably in Karur taluk.

4. Steel Castings

5.154. The cement factories in the district require manganese steel castings for liner plates, steel hammers, steel plates, etc. The requirement of different alloy steel castings by these cement factories is roughly estimated to be of the order of Rs 30 lakhs per annum. Besides steel castings are understood to be required by the Golden Rock Railway Workshop as well.

5.155. The requirements for steel castings at present are met by supplies from large scale units outside the district in the State and from Calcutta. Therefore, there is good scope for establishing a medium scale steel casting unit in the district.

5.156. The unit may be set up preferably at Tiruchirapalli.

APPENDIX I

Basic statistics relating to Panchayat Unions in Tiruchirapalli District

S. No.	Name of the Block/ Taluk	Area (Hectares)	Population (1971)	% of workers to total popula- tion	Net area cultiva- ted as % to total area	% of net area irriga- ted	Livestock population	Total length of roads (KMs)
1.	2.	3.	4.	5.	6.	7.	8.	9.
Perambalur								
1.	Veppanthattai	53,420	92,741	43.5	48.6	51.2	70,816	77
2.	Perambalur	39,697	79,553	84.2	56.5	47.0	56,816	93
3.	Veppur	46,591	92,765	57.0	63.8	18.2	60,597	69
4.	Alathur	20,682	75,247	40.0	70.8	34.0	1,32,162	74
Udavarpalayam								
5.	Andimadan	25,950	81,339	23.7	76.0	11.0	87,955	234
6.	Jayankondam	32,520	1,08,526	34.2	72.2	13.7	1,80,764	217
7.	T. Palur	26,188	74,446	33.3	64.3	24.0	1,06,116	62
Ariyalur								
8.	Sendurai	28,785	77,770	49.2	78.8	8.9	19,671	95
9.	Ariyalur	34,888	83,763	34.2	64.7	17.6	35,595	55
10.	Thirumanur	33,297	86,009	56.7	58.5	57.1	78,337	344
Lalgudi								
11.	Manachanallur	34,897	1,10,634	37.7	75.0	35.9	59,709	124
12.	Pullambadi	34,799	83,465	52.8	57.4	66.6	74,336	149
13.	Lalgudi	17,294	1,11,193	56.7	87.3	83.5	35,728	368

1.	2.	3.	4.	5.	6.	7.	8.	9.
<u>Thuraiyur</u>								
14.	Uppiliapuram	23,904	84,699	34.0	56.0	63.5	97,644	186
15.	Thuraiyur	37,920	85,282	44.1	53.7	35.0	69,196	280
<u>Musiri</u>								
16.	Thathiengarpet	31,022	79,476	42.7	55.9	26.9	42,300	127
17.	Thottiam	25,887	98,467	39.4	67.7	72.2	57,921	169
18.	Musiri	34,879	90,457	36.9	57.7	27.0	33,283	93
<u>Karur</u>								
19.	K. Paramathy	58,712	81,485	48.0	49.2	29.2	54,654	284
20.	Karur	24,214	92,294	41.0	57.2	31.4	58,273	382
21.	Thanthoni	35,659	81,761	47.2	73.4	29.4	2,52,810	70
22.	Aravakurichi	42,163	75,061	42.0	45.5	23.8	24,355	175
<u>Kulithalai</u>								
23.	Krishmareyapuram	40,844	92,245	44.7	59.1	30.6	51,340	145
24.	Kulithalai	48,512	1,33,305	54.5	48.0	70.3	1,88,087	169
25.	Kadarur	38,355	65,289	53.7	58.3	28.6	75,850	238
<u>Manapparai</u>								
26.	Vaiyampatti	26,667	61,689	36.8	28.5	34.4	11,757	252
27.	Manaparai	28,006	63,372	33.5	48.9 ^m	28.1	12,092	52
28.	Marungapuri	43,968	77,150	48.0	97.4	34.3	44,244	828
<u>Tiruchirapalli</u>								
29.	Andanallur	12,152	67,001	34.0	92.3	65.1	63,949	214
30.	Manikandam	22,191	63,769	31.2	59.3	88.9	56,022	76
31.	Thiruve Rambur	29,522	1,72,400	35.0	42.9	86.7	62,066	183
SC.								

	No. of post offices	No. of Bank branches	No. of Secondary H. School	No. of registered small-scale units	Registered factories No.	Employment
10.	11.	12.	13.	14.	15.	
1.	21	5	13			
2.	24	4	..	13	3	1,040
3.	35	3	..			
4.	42	3	4			
5.	30	2	..			
6.	37	6	7	9	1	500
7.	22	1	..			
8.	35	2	..			
9.	39	4	5	34	5	390
10.	36	3	6			
11.	38	5	10			
12.	28	3	7	55	44	6,590
13.	31	10	6			

APPENDIX II

Course of study in the Regional Engineering College,
Tiruchirappalli.

Under-Graduate Courses:

1. B.E.Degree(Four year - Eight Semesters) Courses

- Civil Engineering
- Mechanical Engineering
- Electrical and Electronics Engineering
- Electronics and Communication Engineering
- Metallurgical Engineering
- Industrial Engineering
- Production Engineering.

2. B.Tech.Degree(Four year - Eight Semesters)Course
Chemical Engineering

3. B.Arch.Degree(Five year - Ten Semesters)Course.

4. B.E.Degree(Three and half year -Seven Semesters)
part-time courses.

- Civil Engineering
- Mechanical Engineering
- Electrical and Electronics Engineering.

Post-Graduate Courses:

1. M.E.Degree (two year - Four Semesters)Courses.

- Transportation Engineering and Management &
- Fluid Machines
- Power Systems
- Communication Systems
- Computer Technology
- Design and Production of Thermal Power Equipment.
- Operation and Maintenance of Thermal Power Stations
- Industrial Metallurgy
- Welding Engineering
- Engineering Management

Duration of these courses will be three years for
part-time ~~XXXXX~~ candidates.

2. M.Tech Degree(Two year: Four Semesters)Courses:

- Plant Design
- Energy Engineering
- Environmental Engineering.

Duration of these courses will be three years for part-
time candidates:

(3) M.Sc.Degree(Two year - semesters courses.

- Operation Research
- Applied Electronics
- Pharmaceutical chemistry.

	10.	11.	12.	13.	14.	15.
14.	12	3	4	20	..	..
15.	42	5	8	..	..	..
16.	29	4	10	38	5	390
17.	20	6	8	..	..	..
18.	33	8	4	..	..	..
19.	30	5	..	152	58	6,320
20.	23	17	..	..	..	..
21.	24	3	5	..	..	..
22.	37	3	6	..	..	..
23.	25	4	..	34	1	20
24.	23	10	11	..	..	..
25.	21	1	4	..	..	..
26.	18	2	5	57	10	1,240
27.	21	5	8	..	..	..
28.	31	5	11	..	..	..
29.	26	8	..	640	302	43,470
30.	18	3	2	..	..	..
31.	28	14	7	..	..	..
32.	..	..	..	..	..	..

M.Phil./Ph.D.Degree programme

- a) Civil Engineering
- b) Mechanical Engineering
- c) Electrical and Electronics Engineering
- d) Chemical Engineering
- e) Electronics and Communication Engineering.
- f) Chemical Engineering
- g) Metallurgical Equipment
- h) Mathematics
- i) Physicas
- j) Chemistry

APPENDIX III

No. of small scale units permanently registered during 1979-80 in Tiruchirappalli District (Taluk Wise and productwise)

TIRUCHI

S.No.	Products manufactured	Total No. of units registered.
1.	2.	3.
1	Ice Cream	2
2	Supari	1
3	Bakery Products	6
4	Confectionery	3
5	White Ice	2
6	Cattle Feed	5
7	Appalam	1
8	Dhall Milling Fried Grams etc	3
9	Other food products	9
10	Aerated Drinks	4
11	Dyeing of yarn and cloth	2
12	Cotton Tapes	5
13	Readymade garments	7
14	Sawing of wood	1
15	Wooden articles	14
16	Paper Bags	2
17	Card Boards & Paper	1
18	Job Printing, Note Books, journals etc.	69
19	Leather Tanning	10
20	Tyre Retreading	9
21	Rubber Products	4
22	Polythene Bags	17
23	Candles	6
24	Petroleum Products	2
25	Chemicals	5
26	Zinc Sulphate	1
27	Insecticides	2
28	Varnish	2
29	Allopathic Medicines	4
30	Washing Soap	6

31	Talcum Powder	1
32	Camphor Tablets	9
33	Safety matches	3
34	Fire Bricks & Other Bricks	2
35	Mosaic Tiles	1
36	Scientific Apparatus	1
37	Line	2
38	Stone Jally	5
39	Cement Pipes	9
40	Steel casting & Forging	6
41	Steel Rolling Mills	2
42	Basic Metal	2
43	Aluminium circles	7
44	Lamp Shades	1
45	Battery Leads	2
46	Steel Furniture	14
47	Steel Trunks	2
48	Iron Articles for Domestic purposes	13
49	Structurals	32
50	Agricultural Hand tools	18
51	Hardwares	2
52	Wire Nails	1
53	Electroplating	2
54	Metal Utensils	66
55	Type Casting	2
56	Machinery Parts	10
57	Engg. Job works	130
58	Welding Transformers	4
59	Switch Boards	1
60	Battery Plates	2
61	Electrical Appliances	5
62	Electronic Trainer	1
63	Electrical Accessories	2
64	Automobile Servicing & Repairing	16
65	Cycle Accessories	2
66	Bullock Carts	1
67	Beam Scales	1
68	Advertisement Slides	5

69	Synthetic Gem Cutting	174
70	Stone Slates	1
71	Bonemeal	1
72	Dry cleaning	1
73	Coconut Coir	6
74	Rice Milling	7
75	Beedies	1
76	Edible oils	4
77	Tobacco & Tobacco Products	4
78	Textiles	5
79	Coffee Powder	8
		640

Z. KARUR

1	Ice Candy	1
2	Bread	1
3	Appalam	1
4	Vermicelli	1
5	Dyeing of yarn	1
6	Hosiery products	9
7	Paper Board	1
8	Note Books Job Printing	10
9	Tire Retreading	1
10	Nylon Nets	5
11	Polythene Bags	3
12	Candles	1
13	Safety Matches	4
14	Bleaching Liquids	1
15	Cement Pipes, tubs etc.	58
16	Casting and Forgings	2
17	Aluminium Circles	1
18	Metal Furniture	3
19	Metal Products	2
20	Structurals	7
21	Agricultural Hand tools	1
22	Bullock shoe nails	2
23	Utensils	2
24	Sheet Metal Work	1
25	Person weighing machine	1

26	Engineering Job work	6
27	Electrical Accessories	4
28	Automobile Servicing & Repairing	3
29	Bicycle chains	2
30	Synthetic gems	2
31	Rice Milling & Others	7
32	Cotton Yarn dyeing of Yarns etc	7
33	Coffee Powder	1
		152

3. MANAPPARAI:

1	Food Products	3
2	Ice	1
3	Aerated Water	1
4	Readymade garments	1
5	Wooden Articles	4
6	Job Printing	3
7	Cosmetics	2
8	Safety matches	3
9	Chamber Bricks	1
10	Cement Tubs	1
11	Structurals	3
12	Agricultural Hand tools	23
13	Household articles	1
14	Hardwares	1
15	Synthetic Gem	6
16	Rice Hulling	3
		57

4. LALGUDI:

1	Ice	1
2	Readymade Garments	1
3	Wood sawing	1
4	Job Printing	4
5	Candle	1
6	Safety matches	1
7	Bricks	9
8	Line	1

9	Cement Products	3
10	Bell Metal Articles	1
11	Agricultural Hand Tools	3
12	Utensils	5
13	Engg. Job works	1
14	Synthetic Gems	16
15	Chalks	1
16	Coconut fibres	2
17	Rice Milling	3
18	Coffee Powder	1
		55

5. MUSIRI:

1	Poultry Chick	1
2	Aerated Drinks	1
3	Wooden Articles	12
4	Job Printing	6
5	Polythene tubes	1
6	Safety matches	6
7	Bricks	1
8	Agricultural Hand tools	1
9	Engineering Job Works	5
10	Synthetic Gem	2
11	Lead Pencils	1
12	Coconut fibres	1
		38

6. ARIYALUR

1	Food Products	6
2	Ice	1
3	Vermicelli	1
4	Readymade garments	3
5	Wooden materials	6
6	Printing	2
7	Asbestos fittings	2
8	Chalk, Plaster of paris	2
9	Engineering	4

10	Structurals	1
11	Agricultural tools	6
		<u>34</u>

7. KULITHALAI :

1	Food Products	3
2	Wooden Articles	2
3	Book Binding	1
4	Cycle Side Box	1
5	Cement Pipes	1
6	Steel Trunks	2
7	Agricultural Hand tools	10
8	Bullock Shoe Nails	2
9	Synthetic Gems	12
		<u>34</u>

8. THURAIYUR :

1	Wood Sawing	1
2	Job printing	2
3	Candle	1
4	Stone Jelly	1
5	Agricultural Hand tools	1
6	Utensils	2
7	Engg. Job works	9
8	Synthetic Gem	1
9	Flour Mill	1
10	Wooden Furniture	1
		<u>20</u>

9. PERAMBALUR :

1.	Wooden Articles	2
2	Job Printing	1
3	Polythene Bags	1
4	Cement Pipes	1
5	Agricultural Hand tools	5
6	Utensils	1
7	Engg. Job work	2
		<u>13</u>

10. UDAYARPALAYAM :

1	Bakery Products	1
2	Cashew Processing	1
3	Wooden Furniture	1
4	Cement Pipes	1
5	Agricultural Implements	2
6	Utensils	1
7	Engineering job work	1
8	Textiles	1
		<u>9</u>

Grand total of the units
registered in all Taluks

1052

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APPENDIX IV

List of electronic items which are to be approved by the State Level Technical Committee of Director of Industries and Small Industries Service Institute in the State and Import assistance given in vogue.

S.No.	Description of the product	Max. capacity to be approved p.a.
1.	Audio Tape Recorder/Telephone Answering Machines/Dictaphones Car cassette Players and Combination thereof with radio	5,000 Nos (Five thousand)
2.	Audito Cassette/Pre-recorded Cassette	1 lac. Nos (One lakh)
3.	AM and AM/PM Radio	10,000 Nos p.a. (Ten Thousand)
4.	Mono/P.A. Amplifiers	2,000 p.a. (Two thousand)
5.	Car Radios	2,000 p.a. (Two thousand)
6.	Microphones a) For P System b) For Tape recorders	2,000 Nos (Two thousand) 30,000 Nos (Thirty thousand)
7.	Loud Speakers	1 Lakh Nos (One lakh.)
8.	RF/IFT's & Tuning coils	5 lakhs Nos (Five lakhs)
9.	Hearing Aids	5,000 Nos (Five thousand)
10.	Electronic Flash gun	2,000 Nos (Two thousand)
11.	Wire wound resistors	1 lac Nos (One lakh)
12.	TV Booster amplifier	5,000 Nos (Five thousand)
13.	Record Players/Changers	5,000 Nos (Five thousand)
14.	Aerials/antennas for radio receivers and TV receivers	1 lac Nos (One lakh)
15.	Electronic Fan regulator	30,000 Nos (Thirty thousand)
16.	Electronic light dimmers	10,000 Nos (Ten thousand)
17.	Electronic Gas lighters/Cigarette lighters	50,000 Nos (Fifty thousand)
18.	Electronic Emergency lantern	10,000 Nos (Ten thousand)
19.	DC Power supplies both regulated and otherwise	1,000 Nos (One thousand)
20.	Battery eliminators	10,000 Nos (Ten thousand)
21.	TV tuners	10,000 Nos (Ten thousand)
22.	Printed circuit boards	5,000 sq.metres (Five thousand sq.metres)
23.	TV pattern generators	100 Nos (one hundred)
24.	TV games Monochrome (without mono meter)	5,000 Nos (five thousand)

25. Electro-Mechanical components for Electronic applications:	
a) Switches other than Reed switches	1 lac Nos (One lakh)
b) Relays other than reed relays	1 lac Nos (One lakh)
26. Inverters and converters upto 500 volts amps	1000 Nos (one thousand)
27. Electronic multimeters/volt-meters	250 Nos (Two hundred and fifty)
28. Oscilloscopes upto 15 MM	100 Nos (One thousand)
29. Audio Generators/Oscillators	100 Nos (One hundred)
30. Digital Panel meters	1000 Nos (One thousand)
31. Electronic pH meters	100 Nos (one hundred)
32. Electronic Industrial Timers	500 Nos (Five hundred)
33. Battery charger/Float chargers	100 Nos (One hundred)
34. Electronic Single phasing preventers	500 Nos (five hundred)
35. Electronic line frequency meters	500 Nos (five hundred)
36. Transformers for electronic application	5000 Nos (five thousand)
37. Electronic Techometer	200 Nos (Two hundred)
38. TV sets Monochrome	2500 Nos (Two thousand and five hundred)
39. Electronic Calculators (Excluding programmable types)	5000 Nos (Five thousand)
40. Inter com system (other than radio wave system)	
41. Solid State Voltage Stabilizers	1000 Nos (one thousand)
42. Vidco Games with Monitor Monochrome	100 Nos (Hundred Nos.)
43. Electronic Ignition system for automobile	10,000 Nos (Ten thousand)
44. Pick up cartridges/Stylus	30000 Nos (Thirty thousand)
45. Electronic Temperature indicator	500 Nos (Five hundred)
46. Electronic Teaching Aids (not involving use of Computer)	500 Nos (Five hundred)
47. TV Deflection components	30,000 Nos (Thirty thousand)
48. Electronic Fire Burglar Alarms	200 Nos (Two hundred)

Item	Specification
1. Cooking ranges	Upto 4 hot plates/boiler plates with /without baking case upto 4 kw.
2. Storage Water Heaters/geysers	a) upto 100 litres cap. b) upto 3 kw.
3. Washing machines with/without spin Drivers	a) upto 8 lbs. cap. dry clothes b) upto 3 kw.
4. Hot plates/boiler plates	a) upto 3 Nos. b) upto 3 kw.
5. Bread Toasters Ordy. Auto/Semi Suto	Upto cap. 3slices
6. Hot cases	
7. Electric Iron (Ordy-Auto-Steam)	Upto 4 cubic feet Upto 8 lbs. weight upto 2 KW.
8. Hot Air Blowers/Heat Covectors	a) upto Fan size 10" b) Upto blower size 8" x 2.5" dia.
9. Mixers/Grinders with/without:	a) Cap. of Jar 1 litre max. Accessories such Meat Mincer, All Purpose Beater Espresso Coffee Maker, Centrifugal Juicer, Citrus Fruit Juice Extractor etc. b) upto 600 watts 30 minutes rating
10. Ice Cream Makers	Cap. 1 litre (for use with domestic refrigerators)
11. Room Heaters	Upto 3 k.w.
12. Egg Boilers	Upto 1/2 doz.eggs.
13. Espresso Coffee makers	Upto cap. 3 pints.
14. Water Boilers	Upto 100 litres cap.
15. Coffee Percolators	Upto 3 pints
16. Electric Kettles (Sauce Pan/Ring types)	Upto 3 pints
17. Electric Stoves	Upto 3 K.W.
18. Immersion Water Heaters	Upto 3 KW.
19. Hair Driers	All Types
20. Food Warmer Trays	Upto 500 Watts.
21. Baking Ovens, with/without provision for roasting/grilling	Upto 2 cubic ft. 1 KW
22. Electric Auto	

Appendix VI

Pharmaceutical items having scope for development

S.No.	Item	Unit	Estimated demand 1982-83	Capacity approved (covered by existing letter of intent/ industrial licence)	Addl. capacity to be approved for 1982-83 targets
1.	2.	3.	4.	5.	6.
<u>I. Antibiotics</u>					
1.	Penicillin	MMU	700	575	125
2.	Ampicillin	MT	120	85	35
3.	Tetracycline	"	460	246.5	213.5
4.	Oxytetracycline	"	215	83.5	131.5
5.	Doxycycline	"	17	7.5	9.5
6.	Rifampicin	"	6	1	5
7.	Neomycin	"	10.5	5	5.5
8.	Framycetin	"	2.0	..	2.0
9.	Polymixin	"	0.7	..	..
10.	Polymixin	BU	1,500	..	1,500
10.	Griseofulvin	MT	25	10	15
<u>II. SULPHONAMIDES</u>					
11.	Sulphasomidine	"	320	190	140
12.	Sulphamoxole	"	165	21.6	143.4
13.	Sulphamethoxazole	"	80	34	46
14.	Sulphacetamide	"	150	104	46
15.	Orthothyl Sulphathiazole	"	175	153.5	21.5
<u>III. VITAMINS</u>					
16.	Vitamin A	MMU	130	110	20
17.	Vitamin B1	MT	180	120	60
18.	Vitamin B2	MT	50	24	26
19.	Vitamin B12	Kgs	380	238.2	141.8
20.	Vitamin C	MT	1,600	1,280	320
<u>IV. Anti-Dysentery Drugs</u>					
21.	Furazolidone	MT	32	16	16
<u>V. Anti-Diabetic drugs</u>					
22.	Insulin	MU	2,100	1,500	600
<u>VI. Anti-TB drugs:</u>					
23.	Rethambutol	MT	90	51	39

.... Contd ..

1.	2.	3.	4.	5.	6.
<u>VII. Anthelmintics:</u>					
24. Piperazine and its salts	MT	320	165	155	
25. Bephenium Hydroxynaphthoate	"	22	5	17	
26. Pyrental Pamoate	"	20	..	20	
27. Morental Tartarate	"	15	..	15	
<u>VIII. Anti-Malarials</u>					
28. Chloroquin	MT				
29. Primaquin	Kgs	4,000	1,050	2,950	
30. Mepacrine	Kgs	8,000	..	8,000	
<u>IX. ANALGESICS/ANTI-PYRETICS/ ANTI/RHUMATICS/ANTI GOUTS:</u>					
31. Analgin	MT	1,000	500	500	
32. Amidopyrin	"	75	40	..	
<u>X. ANAESTHETICS:</u>					
33. Procaine Hal	MT				
<u>XI. TRANQUILLIZERS AND SEDATIVES AND ANTI-DEPRESSANTS:</u>					
34. Chlorpromazine	"	14	2.5	11.5	
35. Phenobarbitone	"	70	50	20	
36. Imipramine	Kgs.	5,000	3,000	2,000	
37. Amitriptyline	"	1,500	200	1,300	
38. Phenothiazines including Tri- fluoperazine & Trifluopro- mazine	MT	16	0.6	15.4	
39. Diazepam and other Benzo- diazepines	Kgs.	10,000	5,700	4,300	
40. Thioridazine	"	4,000	..	4,000	
<u>XII. Anti-Histamings</u>					
41. Pheniramine Maleate	MT	15	9	6	
42. Chlorpheniramine Maleate	"	14	7	7	
<u>XIII. Cardio Vascular Drugs</u>					
43. Methyl Dopa	"	45	22	23	
44. Prenylamide Lactate	Kgs.	2,000	1,300	700	
45. Digoxine	"	21	15.8	5.2	
<u>XIV. DIURETICS</u>					
46. Furosemide	MT	15	11.2	3.8	
<u>XV. ANTI-ASTHMATICS</u>					
47. Salbutamol	Kgs	500	260	240	
48. Phenyl Ephedrine	"	2,000	50	1,950	

.... Contd ..

1.	2.	3.	4.	5.	6.
<u>XVI. STEROIDS AND HORMONES:</u>					
49. Dexamethasone	Kgs.	520	233	287	
50. Betamethasone	"	715	320	395	
51. Prednisolone	"	3,500	1,220	2,280	
52. Norethisterone	"	220	..	220	
53. Norgestrel	"	51	..	51	
54. Nandrolone & Esters	"	255	70	185	
55. Oxytocin	MT	1,200	250	950	
<u>XVII. ANTI-EPILEPTICS</u>					
56. Diphenyl Hydantoin Sodium	MT	20	11.8	7.2	
<u>XVIII. ANTI-BACTERIALS OTHER THAN ANTIBIOTICS AND SULFONAMIDES:</u>					
57. Trimethoprim	MT	20	12.2	7.8	
<u>XIX. Anti-cancer drugs:</u>					
58. Cyclo Phosphamide	Kgs.	500	..	500	

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SC. (Some of the above items are reserved for production in public sector only, which details may be obtained from the Ministry of Chemicals and Fertilizers, Ministry of Health and DGTD, New Delhi).

(SOURCE: GUIDELINES TO INDUSTRIES - 1979-80)

PART II

PROJECT PROFILES

C O N T E N T S

LIST OF PROJECT PROFILES

<u>S1.</u> <u>No.</u>	<u>Name of the Project Profile</u>	<u>Page</u> <u>No.</u>
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2.	REFINING OF GROUNDNUT OIL	2
3.	PEANUT CANDY	3
4.	OLEORESIN FROM CHILLIES	4
5.	GROUND AND PROCESSED SPICES	5
6.	COIR AND COIR PRODUCTS	6
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8.	ACTIVATED CARBON FROM COCONUT SHELL	8
9.	COCONUT SHELL POWDER	9
10.	CASHEWNUT PROCESSING AND CASHEW SHELL LIQUID	10
11.	CASHEW APPLE AND OTHER FRUIT PRODUCTS	11
12.	SALTED AND SWEETENED CASHEWNUTS	12
13.	JASMINE OIL EXTRACTION	13
14.	PALMYRAH DEFIBRING	14
15.	PALMYRAH BRUSHES	15
16.	LEATHER FOOTWEAR	16
17.	LEATHER GOODS	17
18.	BONE MEAL	18
19.	LIME KILN	19
20.	TABLE MOULDED BUILDING BRICKS	20
21.	ROOFING TILES	21
22.	PLASTER OF PARIS	22
23.	CHALK CRAYONS	23
24.	GRANITE ROAD METAL - BLUE METAL JELLY	24
25.	PACKING CASES	25
26.	PRINTING PRESS	26
27.	READYMADE GARMENTS	27
28.	STRUCTURAL BOLTS, NUTS AND WASHERS	28
29.	PAPER CONES, TUBES, CORE TUBES	29
30.	FERROUS AND NON-FERROUS CASTINGS	30
31.	IMPROVED AGRICULTURAL IMPLEMENTS	31

(PTO)

S1. No.	Name of the Project Profile	Page No.
32.	TOOL ROOM	32
33.	HORSE AND BULLOCK SHOES AND NAILS	33
34.	GOBAR GAS PLANT	34
35.	AUTOMOBILE BODY BUILDING	35
36.	COMMON FACILITY CENTRE FOR BLACKSMITHS	36
37.	STEEL FURNITURE	37
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39.	BAKELITE ELECTRICAL ACCESSORIES	39
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41.	FLUORESCENT TUBE FITTINGS	41
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43.	RIGID PVC PIPES	43
44.	MATCHES	44
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46.	DYESTUFF & DYESTUFF INTERMEDIATES	46
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48.	PHENYL	48
49.	FIBRE EXTRACTION AND ROPE MAKING OUT OF ALOE AND PINE APPLE	49
50.	LOW COUNT COTTON YARN	50
51.	CATTLE FEEDS	51
52.	POULTRY FEEDS	52
53.	BAKERY UNIT	53

NOTE

These project profiles are only indicative. The costs and returns of the projects given in the above profiles are only approximate and need updating to changes in the market prices of machinery and equipment, raw materials, labour and other inputs and also of the finished products.

Prospective entrepreneurs who intend taking up the above projects and also the projects for which profiles are not given, may therefore get detailed schemes prepared, wherever necessary, in consultation with the Technical Officers of Small Industries Service Institute/District Industries Centres.

1. PROJECT PROFILE ON RICE BRAN OIL

Product	Rice Bran Oil
Scope	Rice bran of good quality obtained from modern rice mills contains from 15 to 20% oil which can be recovered by extraction with a solvent. Presently only about 17% of the total bran out-put in the country is utilised for oil recovery and the remaining being used as cattle feed. The utilisation of bran for oil extraction not only improves the oil supply position within the country, but also improves the quality of the deoiled bran in its nutritional value as cattle feed and its storage stability.
	The rice bran oil finds ready market for soap manufacture, as carrier of insecticide etc. If refined, it can also be used as a cooking medium
Capacity	20 Metric tonnes of rice bran/day of 3 shifts.
Process	The extraction of oil is carried out by circulating the solvent hexane through the bed of bran whereby the oil goes into solution in the solvent. The oil is later freed of the solvent by evaporation of the latter by heating. The solvent vapours are condensed - and used again for the extraction of oil from the bran.
Investment	Land and Building (covered area 1000 sq.metres) Rs 3,00,000 Machinery and equipment: Boiler, solvent extraction plant, Trucks, workshop Rs 9,50,000 Working capital for 2 months Rs 5,50,000
Employment	22 persons
Raw materials	Rice bran, Hexane
Water	25 kilo litres/day
Power	300 KWH/day
Break-even Point	56%
Return on Investment	16%

2. REFINING OF GROUNDNUT OIL

1. Product	Refined Groundnut oil
2. Scope	Refining of Edible Oil eliminates the undesirable elements such as fatty acids, gums and pigments and thereby enhances their keeping quality. People are also gradually realising the advantages for cooking purposes of Refined Oils over the un-refined oils and switching over their preferences for the former. The demand for Refined Oils is therefore bound to rise in days to come.
3. Capacity	5 Tonnes of Groundnut oil/day of 24 hrs.
4. Process	The process of refining the oils, in brief, consists of treatment with caustic soda to neutralise the free fatty acids, filtration to separate the soap particles formed, washing the neutralized oil with water, bleaching the washed oil with Activated Carbon to get rid of the undesirable pigments and finally deodorizing the steaming to eliminate the volatile odorous compounds.
5. Investment	Land and Building (covered area 350 sq. mtrs) Machinery and equipment: Boiler Centrifugal pumps Oil storage tanks Filter press Refining tank Bleaching and deodorising plant Rs 5,60,000 Working capital for 3 months Rs 8,20,000
6. Employment	26 persons
7. Raw materials	Ground nut oil, caustic soda, bleaching earth, activated carbon, packing tins of 16.5 kg capacity, etc.
8. Water	10 kilo litres/day
9. Power	450 KWH/day
10. Break-even point	53%
11. Return on investment	24%
12. Remarks	Nil

3. PROJECT PROFILE ON PEANUT CANDY

1. Product	: Peanut candy
2. Scope	: Peanut candy is getting popular nowadays both within the country and abroad. Presently the industry is mostly confined to cottage scale and to meet the demand especially from abroad more units can be set up. With standard quality and hygienic product these markets can also be expanded considerably.
3. Capacity	200 Kgs/shift of 8 hrs
4. Process in brief	Good quality groundnuts (6-8% moisture content) are roasted in an electrical roaster and decuticled, cleaned and stored. Golden yellow hard crystalline jaggery is dissolved in just enough quantity of water, heated and filtered to obtain jaggery syrup. The nuts are added to the hot jaggery syrup and mixed. The hot mix is spread on wooden boards, by wooden steel lined rollers and when still hot are cut into slabs by roller cutter. The slabs are cooled, weighed and packed.
5. Investment	Land & Building (Covered Area : 100 Sq.Mts) - Rented Machinery & Equipment: (Electrical roaster, sieve-cum-grader, Blancher, wooden boards, steel lined roller cutter, heat sealer etc). - Rs.18,000/- Working capital for 3 months-Rs.75,000/-
6. Employment	18 persons
7. Raw materials	Groundnuts, jaggery, chemicals, packing materials
8. Water	5 Kilolitre/day
9. Power	15 Kwh/day
10. Break-even level	52%
11. Return on investment	30%
12. Remarks	NIL

4. PROJECT PROFILE ON OLEORESIN FROM CHILLIES

1. Product	Chilly Oleoresin
2. Scilpe	It is a semi-solid mixture of resin and essential oil derived from chillies. It has the pungent taste and peculiar odour of the chilly. These oleoresins have wide application in the food processing industries. There is a good demand for these oleoresins in export markets.
3. Capacity	5 kg of oleoresin/shift of 8 hours.
4. Process	The oleoresin is to be solvent extracted with alcohol. The basic steps are cleaning the dry chillies of foreign matter by screening, crushing into powder, feeding to an extractor, oleoresin collected with the solvent is distilled and the solvent is separated from the oleoresin.
5. Investment	Land and Building (covered area 170 sq mtr) Machinery and Equipment: Boiler Disintegrator Percolators Vacuum Distillation Still Laboratory Equipment etc. Rs 1,80,000 Working Capital for 3 months Rs 2,50,000
6. Employment	22 Persons
7. Raw Materials	Chillies, Rectified Spirit and Containers
8. Water	10 kilo litres/day
9. Power	10 KW per day
10. Breakeven point	45% of capacity
11. Return on investment	21%
12. Remarks	Nil

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5. PROJECT PROFILE ON GROUND AND PROCESSED SPICES

1. Product	Ground and processed spices (chilly powder, curry powder etc.)
2. Scope	Spices play an important role in enhancing the flavour and taste of our food. They are also used in the indigenous system of medicine in India because of their carminative, stimulating and digestive properties. India has been traditionally exporting spices in the whole form. Of late, there has been good demand from abroad for the processed spice products such as curry powders, spice powders, essential oils and oleo-resins; and the performance of these products on the export front has registered a marked improvement during the recent years. Processed spice products, in addition, also find a ready market within the country.
3. Capacity	500 kgs/shift of 8 hours.
4. Process	The processing of coarse and fine spice and curry powders involves the following operations in sequence: a. Selection b. Cleaning c. Drying d. Powdering e. Sifting f. Testing & g. Packing
5. Investment	Land and Building (covered area 250 sq mtrs) Rented Machinery and Equipment: Cabinet Model Electrically operated Drier Disintegrator with Motor and other accessories Micro-pulveriser Weighing Machines Laboratory Equipment Rs 74,000 Working Capital (for 3 months) Rs 3,50,000
6. Employment	9 Persons
7. Raw Materials	Turmeric, Chillies, Spices and Condiments, Polythene Bags and Cartons.
8. Water	5 kilo litres/day
9. Power	100 KWH/day
10. Breakeven level	51%
11. Return on investment	25%
12. Remarks	Nil

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6. PROJECT PROFILE ON COIR AND COIR PRODUCTS

1. Product	: Coir fibre extraction and rope making
2. Scope	: Demand for coir fibres is increasing day by day for manufacture of coir products such as coir mattress, rubberised coir mattress and cushions, ropes, door mats, carpets etc.
3. Capacity	: 1200 Kgs. of fibre per day of 16 hours
4. Process of manufacture	: The ripe and dried coconut husks are first beaten with mallet and soaked in saline water in pits for 3 months. During the process of soaking a care should be taken so that the husks remain always under water. After the husks are taken out from the water, they should be washed in a defibring machine, shifter and fibre cleaning machine and fibres thus obtained are worked in spinning wheel or frame for production of rope. The yarns are subsequently connected into coconut fibre articles, either on a power loom or hand loom.
5. Investment	Land & Building 100 Sq.Mtrs.covered & 500 Sq.Mtrs. Open } Rented Machinery & Equipment Rs. 2.5 lakhs Working capital for 3 months Rs. 1 lakh
6. Employment	50 persons
7. Raw material	Coconut husks brine and jute yarn
8. Water	2 k.l/day for washing purposes only
9. Power	10 H.P
10. Break even point	52%
11. Return on investment	23%
12. Remarks	NIL

7. PROJECT PROFILE ON DESICCATED COCONUT

1. Product	Desiccated Coconut
2. Scope	Desiccated coconut is widely used in confectionery, as an ingredient in the pan mixture etc. and of late, there have been some enquiries for this item from abroad.
3. Capacity	400 kgs per shift of 8 hours
4. Process	Fully mature coconuts are steamed 3kg/cm ² for 10 minutes and opened with a hatchet. The outer brown tissue of the kernel is scrapped off and the pared kernels are washed two or three times in fresh water. The kernels are then shredded in a slicing machine and dried at 60-80°C in a drier to a moisture content of not more than 2%. The desiccated coconut is graded and packed in grease and moisture proof containers.
5. Investment	Land and Building (covered area 200 sq mtrs) Rented. Machinery and Equipment: Hot Air Drier Multi-Mill Mechanical Sifter with Accessories Baby Oil Expeller Cobra Cutter Veshpa Boiler Filter Press Platform Weighing Machine Self Indicating Counter Scale Rs. 96,000 Working Capital (for 3 months) Rs. 1,72,000
6. Employment	15 Persons
7. Raw Materials	Coconuts, Chemicals, Packaging Materials such as Polythene Pouches and Tins.
8. Water	10 kilo litres per day
9. Power	100 KWH per day
10. Breakeven point	54%
11. Return on investment	23%
12. Remarks	Coconut oil from the parings and oil cakes are the by-products.

8. PROJECT PROFILE ON ACTIVATED CARBON FROM COCONUT SHELL

1. Product : Activated Carbon from Coconut shell
2. Scope : For supply to vegetable oil refineries Varanasi and other chemical industries
3. Capacity : 500 kgs per day
4. Process : Activated Carbon are extensively used as agents for purifying, refining and bleaching of vegetable oils and chemical products. They also find use for absorption of gases. The principle behind the manufacture is burning coconut shell out of contact with air so as to obtain maximum carbon content.
5. Investment:
 - a. Land : 1 acre
 - b. Covered area: 3,000 sq. ft.
 - c. Machinery & Equipment : 1 lakh
 - d. Working capital : Rs 40,000
6. Employment : 25
7. Raw material : Coconut shell/chemicals
8. Water
9. Power : 25 HP
10. Net profit : 20%

N.B.: Indian Standard Specification on Activated Carbon is available. Patented process available with the Secretary, National Research Development Corporation, 61 Ring Road, Jajpat Nagar III, New Delhi 24.

- 9 - 9. PROJECT PROFILE ON COCONUT SHELL POWDER

1. Product : Coconut Shell Flour
2. Scope : Coconut shell flour is used as a filler in the manufacture of phenol-formaldehyde moulding powder used in plastic industry. Much of the value of technical usage of the coconut shell flour depends on the structural characteristics of the material. When used as a filler for moulding powders 80 to 100 mesh is generally employed, while in synthetic resin glues the powder should normally pass through 200 to 300 mesh sieve. In view of the great potential that exists for the development of plastic industry, the need for increased quantities of phenol-formaldehyde moulding powders, the demand for coconut shell flour is bound to rise and this necessitates the setting up of more units for the manufacture of the same.
3. Capacity : 1 metric tonne/shift.
4. Process : Mature coconut shells, free from contamination, are selected and passed through a disintegrator. The disintegrated shells are next pulverised and sifted to the particle size required. The flour is finally packed in tins and sealed.
5. Investment : Land & Building (covered area = 150 sq. meters)

Machinery and equipment:
Disintegrator
Pulveriser with cyclone separator
Flat-form weighing machine, 34,000 etc.
Working capital for 3 months 40,000
6. Employment : 14 persons
7. Raw materials : Coconut shells, polythene lined gunny bags.
8. Water : 1 kilo litre per day
9. Power : 80 KWH per day
10. Break-even Point : 57%
11. Return on Investment : 17.6%
12. Remarks : -

12. Project Profile on Salted and Sweetened Cashewnuts

1. Product	Salted and sweetened cashewnuts
2. Scope	India is the largest producer of raw cashew nuts and has traditionally been exporting the processed cashewnuts. The salted and sweetened cashewnuts have a good market both within the country and from abroad, and to meet this demand more units can take up the manufacture of these items.
3. Capacity	50 kg of salted cashewnuts and 50 kg of sweetened cashewnuts per shift of 8 hrs.
4. Process	Salted cashew kernels: The fresh and whole cashew kernels are deep fried in hydrogenated oil at 160°C to 180°C for about 60-90 seconds. Excess oil is drained and the nuts are mixed with about 1-2% powdered salt and then packed in polythene pouches. Sweetened cashewnuts: Good quality cashewnuts are roasted slightly and split. The sugar is dissolved in a little water and made into a thick syrup by heating. The roasted and split cashew kernels are added to the syrup, mixed well and transferred hot to a flat table with a layer of starch sprinkled already and spread by wooden steel lined rollers. When still hot it is cut into slabs with roller cutters. After cooling to room temperature, the slabs are weighed and packed.
5. Investment	Land and Building (covered area 100 sq. mtrs) (rent) Machinery and equipment: Electrical roaster, Tin vacuumiser, Tin Sealing machine, Working tables, Aluminium Vessels, wooden steel lined rollers, weighing machines, Laboratory Equipment etc. Rs 49,000 Working capital for 3 months: Rs 2,80,000
6. Employment	10 persons
7. Raw materials	Cashew kernels, Hydrogenated oil, sugar, salt, Chemicals, Tin containers and Polythene pouches.
8. Water	10 kilo litres per day
9. Power	100 KWH/day
10. Break-even point	48%
11. Return on investment	31%
12. Remarks	Nil

13. PROJECT PROFILE ON JASMINE OIL EXTRACTION

1. Product	Jasmine Oil
2. Scope	Jasmine oil is much sought after for use in perfumery industry both within the country and abroad. It is a highly priced oil and fetches a premium value. Even though jasmine flowers are available in abundance, they are mostly used for ornamental purposes, but not for oil extraction. There is thus a good case for the extraction of oil from jasmine flowers.
3. Capacity	½ kg/shift.
4. Process	The freshly opened flowers are extracted with a solvent, hexane in a rotary. The extract is taken into an evaporator where ¾ of the solvent is evaporated and condensed for reuse. The jasmine oil with ¼ of the solvent still present is then vacuum distilled to separate the solvent whereby a semi-solid wax like brown substance will be left and this is known as jasmine concrete in which form it can be sold.
5. Investment	Land and Building (Covered area 60 sq mtrs) Machinery and Equipment: Rotary Extractor Evaporator, Condenser Vacuum Still etc. Rs 4.6 lakhs Working Capital for 3 months Rs 2.5 lakhs
6. Employment	15 Persons
7. Raw Materials	Jasmine Flowers, Hexane
8. Water	5 kilo litres/day
9. Power	180 KWH/day
10. Break-even point	53%
11. Return on investment	28%
12. Remarks	Foreign collaboration for technical know-how if necessary has to be sought.

14. PROJECT PROFILE ON PALMYRAH DEFIBRING

1. Product: Palmyrah defibring unit
2. Scope: Palmyrah fibre is used in the manufacture of ~~scrubbing brushes~~ which are in great demand
3. Capacity (Qty) 3 tonnes per day
4. Process: Self explanatory
5. Investment:
 - a) Land & Building 100 sq. metres
 - b) Plant & Machinery Rs 20,000
 - c) Working capital Rs 25,000
6. Employment 20 persons
- ~~7. Raw material Palmyrah palm leaf base~~
8. Water 2000 litres per day
9. Power
10. Breakeven level (%) 40%
11. Return on investment 20%
12. Remarks Nil

15. Project profile on Palmyrah brushes

1. Product Palmyrah fibre brushes
2. Scope Palmyrah fibre brushes are reported to be having good demand. These brushes are required in huge quantity by Railways besides household consumption
3. Capacity (Quantity) 300 brushes per day
4. Process Palmyrah fibre is cleaned, dressed and made into bundles according to thickness and length. Bristle fibres are fixed on wooden base having perforations, stitched with steel wires and fitted to wooden handles
5. Investment
 - a. Land and building 100 sq. mt
 - b. Plant & Machinery Rs 30,000
 - c. Working capital Rs 50,000
6. Employment 20 persons
7. Raw materials: Palmyrah fibres either dyed or natural, timber etc.
8. Water 600 litres per day
9. Power 5 H.P.
10. Breakeven level (%) 40%
11. Return on investment 20%
12. Remarks Nil

16. PROJECT PROFILE ON LEATHER FOOTWEAR

1. Product	Leather Footwear
2. Scope	Leather footwear's demand is increasing even in rural areas and in view of the increasing standard of living of the people the demand for leather footwear is found to be on increase.
3. Capacity (Qty)	20 pairs per day
4. Process	Process of manufacturing leather footwear is very simple and it does not involve any sophisticated machinery. Use of quality raw materials such as leather, adhesives etc. will give fillip to this industry.
5. Investment:	
a. Land & Building=	30 sq. mtrs (covered area)
b. Plant & Machinery	Rs 7,000/-
c. Working capital	Rs 8,000/- (for 3 months)
6. Employment	11 persons
7. Raw material	Tanned leather, glue, nails etc.
8. Water	Negligible
9. Power	Negligible
10. Breakeven level (%)	40%
11. Return on investment	20%
12. Remarks	No import of main raw material/ machinery is involved

17. PROJECT PROFILE ON LEATHER GOODS

1. Product	Leather Goods
2. Scope	Leather goods such as suitcases, attaches, belts, zipolio cases, money purses, wallets etc. are good in demand in domestic market as well as the foreign countries
3. Capacity (Qty)	40 Nos per day
4. Process	Finished leather is cut into different sizes according to requirement and then stitched as per design. A skilled hand in the line is preferred.
5. Investment:	
a. Land and building	120 sq. mtrs covered area
b. Plant & Machinery	Rs 20,000/-
c. Working capital	Rs 62,000/-
6. Employment	13 persons
7. Raw material	Leather, dyestuff, metal zip, fittings etc.
8. Water	Negligible
9. Power	Negligible
10. Breakeven level (%)	45%
11. Return on investment	25%
12. Remarks	No import of main raw material, machinery is involved

18. PROJECT PROFILE ON BONE MEAL

1. Product : Steamed bone meal and raw bone meal
2. Scope : For supplying the needs of fertilizer mixing units, fertilizer factories and industries manufacturing poultry feed.
3. Capacity : 2 tonnes of steamed and raw bone meal/day
4. Process of manufacture: Raw bones are washed free of extraneous matter like dirt and washed and sun dried bones are disintegrated into small pieces, loaded in a steam digester and kept under pressure of steam for a few hours. The bones become soft, crumbles to powder and inspected and packed in polythene lined gunny bags. It contains Nitrogen and phosphorous nutritive elements viz., nitrogen and phosphorous.
5. Investment : Land .. 250 sq. metre
Covered Area .. 180 sq. metre

Plant and Machinery:
1. Bone digester for steaming bones.
2. Disintegrator for powdering the bones.
3. 7.5 HP motor and starter for driving disintegrators.
4. Platform scale.
5. Installation, service connection etc.
6. Hammers, baskets, trays and similar items .. Rs.40,000/-
Working Capital .. Rs.25,000/-
6. Employment : Direct .. 20
Indirect .. 20
7. Raw materials : a) Bones from slaughter houses
b) Jute lined polythene bags for packing.
8. Power : 25 H.P.
9. Net Profit : 25%
10. Remarks : Machinery, Technology and know-how are indigenously available. More attention has to be paid on collection of bones from various slaughter houses. Good net-work of labour force for collecting bones is essential. Item has good market. Indian Standard Specification is available for this product.

19. PROJECT PROFILE ON LIME KILN

1. Product : Hydrated Lime
2. Scope : Hydrated lime is finding increasing demand in industries like Paper, Leather Tanning, Sugar, Refineries, Fertilisers etc.
3. Capacity - Qty : 5 tonnes per day
4. Processin brief : Lime obtained direct from the earth and calcined to 1050 to 1100°C in kilns is called quick lime. To convert it into hydrated lime, water has to be sprayed in required quantity under controlled conditions byusing well designed hydrator. The product obtained from the hydrator is almost in a dry state.
5. Investment : a) Land and building 120 sq mt. covered area
b) Plant & Machinery (including Testing Equipment) Rs 80,000
c) Working Capital Rs 1,26,000 (period to be specified) (3 months)
6. Employment : 20 Persons
7. Raw Material : Quick Lime
8. Water : 20 kilo litres per day
9. Power : 5 to 7 HP
10. Break-even level % : 39%
11. Return on investment (approximate) : 21%
12. Remarks : Skill and raw material are available locally.

20. PROJECT PROFILE ON TABLE MOULDED BUILDING BRICKS

1. Product: : Building bricks
2. Scope : With the increase in buildings activity, the demand for building brick is ever on the increase.
3. Capacity : 350,000 bricks per month
4. Process (in brief) : Mechanised process is not recommended in this type of hand made bricks to reduce the expenditure on investment. The raw clay after mixing with water has to be shaped into bricks and after drying they are baked in chamber kiln. Coal is used as the main fuel.
5. Investment: : a. Land and Building 700 sq. mt.
b. Plant and machinery Rs.85,000
c. Working Capital 3 months 94,800
6. Employment : 60 persons
7. Raw materials (annum): 1. Clay
2. Sand
3. Coal & Firewood
8. Water : 1.4 kilo litres per day minimum
9. Power : Nil (only used for lighting purposes)
10. Break even level : 56%
11. Return on investment : 26%
12. Remarks : No import of main raw material/ machinery is involved.

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21. PROJECT PROFILE ON ROOFING-TILES

1. Product : Roofing Tiles (Mangalore pattern)
2. Scope : With the steady increase of building construction activity in the State, good scope is envisaged for starting this industry.
3. Capacity (Qty.) : 22 lakhs Nos. per year
4. Process: : The process of manufacture is simple. The clay is mixed with sand in the required proportion and pressed. Afterwards, it is heated to the suitable temperature.
5. Investment: : a) Land & Building 600 sq. mt.
b) Plant & Machinery Rs.3 lakhs
c) Working Capital Rs.1 lakh
6. Employment : 75 persons
7. Raw material : Clay, sand, coal or firewood.
8. Water : 10,000 litres per day
9. Power : 5 H.P.
10. Breakeven Level (%) : 45%
11. Return on investment : 10%
12. Remarks : Nil

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22. PROJECT PROFILE ON PLASTER OF PARIS

1. Product : Plaster of Paris
2. Scope : This material is required for ceramic industries, chalk industries, plaster boards, and other interior decorations. There is good scope for this product. Surgical plaster also can be made by gypsum.
3. Capacity : 1000 tonnes per year
4. Process (in brief) : Mineral gypsum or Marine gypsum is heated to a temperature of 120°C to 140°C. When it loses 3 parts of molecular water at that temperature it becomes plaster of paris. The material is to be packed in air tight bags. Electric ovens can be used for calcination.
5. Investment:
 - a) Land and Building : Rented Rs.600 pm
 - b) Plant and Machinery (including testing machines) Rs.22000
 - c) Workingcapital 3 months Rs.91200
6. Employment : 10
7. Raw materials per month : Gypsum, HDPE/Woven bags with 150 gauge
8. water per month :
9. Power per month : Rs.500
10. Break even level : 22%
11. Return on investment : 58%
12. Remarks : Nil

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23. PROJECT PROFILE ON CHALK CRAYONS

1. Product : Chalk crayons
2. Scope : Chalk crayons are required in schools and colleges. The demand is increasing every year with the increased number of educational institutions.
3. Capacity (Quantity) : 2500 boxes per month
4. Process (in brief) : Chalk crayons are the products of plaster of paris. Plaster of Paris is manufactured by calcining gypsum powder at 125°C to 140°C. Required quantity of water is added to the plaster of paris to make it into slip form and this slip is poured into gun metal moulds. After 20 to 30 minutes the material sets hard into 1/2 or 1 gross pieces depending on the capacity of mould. After drying, the chalk pieces are packed.
5. Investment
 - a. Land & Building. Rented building with floor area about 80 sq.mt.
 - b. Plant & Machinery (including testing equipments) Rs.4,000/-
 - c. Working capital (3 months) Rs. 3,700/-
6. Employment : 3 persons
7. Raw materials (per month) : Plaster of Paris, Metal moulds etc.
8. Water : 3 K.litre per day
9. Power : Only for lighting purpose
10. Break even level. : 34%
11. Return on investment (approx) : 46%
12. Remarks : Skill and raw materials are available locally

24. PROJECT PROFILE ON GRANITE ROAD METAL-BLUE METAL JELLY

1. Product : Blue metal jelly
2. Scope : with the building activity, construction of roads, bridges and dams etc. the demand for granite blue metal jelly is increasing. The granite is available in plenty in Tamil Nadu and there is good scope.
3. Capacity : Quantity - 2,99,500 cft. per annum.
4. Process : The Granite stone boulders are cut from the hillocks and further crushed manually into 3" to 4" size. Jaw crushers and granulators are used for further crushing the stones into 3/4", 1/2" and 1/4" sizes. Rotary screens are also used to get materials in different sizes.
5. Investment :

a. Land & Building	200 Sq.mt. covered area.
b. Plant & Machinery (including testing equipment)	Rs. 1,05,250/-
c. Working capital (period to be specified).	Rs. 63,090/- (3 months).
6. Employment : 36 persons
7. Raw materials : Granite Stone Boulders
8. Water : Negligible
9. Power : 5 H.P.
10. Break even ~~point~~ level : 52.5%
11. Return on investment : 32%
12. Remarks : Skill & machinery are available locally.

25. PROJECT PROFILE

1. Product : Packing cases
2. Scope : With the rapid industriliasation and increased production of consumer goods, the demand for packing cases is increasing. The cases are more used for packing heavy and light engineering machinery parts, ceramics, glass ware, medicine etc.
3. Capacity : To produce for about 60000 Nos boxes per annum
4. Process of manufacture: Plaining - cutting - joining
After joining the ends of the planks are fitted with wooden bottom. These pieces are then assembled and nailed to form the desired size of the packing case.
5. Investment:

Land	1/4 acre
Covered area	450 sq. metres
Plant & machinery	Rs 75,000
Working capital (3 months)	Rs 1,35,000
6. Employment : 20 $\frac{1}{2}$ persons
7. Raw materials required: Soft wood, wire nails
8. Water requirement per day : 200 litres
9. Power requirements (HP) : 30
10. Break even level(%) : 55
11. Return on investment(%) : 25
12. Remarks : -

27. PROJECT PROFILE ON READYMADE GARMENTS

1. Product: Readymade Garments
2. Scope: This industry provides excellent opportunity for the young entrepreneurs with bright ideas. Besides export market, readymade garments are becoming popular in home market also.
3. Capacity: 500 garments per day of 8 hours.
4. Process of Manufacture: Usually some samples are made before the final production is undertaken to evaluate whether it is worthwhile to go into full production. While producing the sample, it may be evaluated as to how best the results can be achieved. For example, the sketch is carefully examined to decide the style line specification of the garment with respect to fitting and drape. The fabric selected to be examined for the correct construction and finish and to see whether the fabric is suitable for the type of garment to be produced. Careful selection for embellishments e.g. sewing thread, buttons, zippers, linings etc. are to be made.
5. Investment:
 - a) Land and building 1000 sq.mtrs.
 - b) Machinery & equipment Rs 2 lakhs
 - c). Working capital (for 3 months) Rs 7 lakhs
6. Employment: 80 Persons.
7. Raw material: Handloom or mill made cloth, sewing threads, buttons, linings, zippers, etc.
8. Water: 2 kilo litres per day of 8 hours.
9. Power: 15 HP
10. Break-even level: 52%
11. Return of investment: 20%

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26. PROJECT PROFILE

1. Product Printing Press.
2. Scope The Project Profile envisages printing of multicolour magazine and calenders. The importance of printing and allied industries need no over emphasis especially where there is rapid development in all spheres in general and particularly in industrial and commercial fields. Though there are a quite number of units engaged in printing, the growth demand is such that these units may not be in a position to cater the entire need. Hence it is obvious that there is ample scope for more number of units to come up in this line.
3. Capacity Rs 5,58,000 per annum/shift.
4. Process of manufacture --
5. Investment

Land	--
Covered area	400 sq mtr
Plant & Machinery	Rs 3,92,700
Working Capital (for 3 months)	Rs 71,700
6. Employment 13
7. Raw Materials required This unit works on parties raw material.
8. Water requirement per day 150 litres
9. Power requirement (HP) 10
10. Break-even level (%) 52.1
11. Return on investment (%) 33%
12. Remarks --

28. PROJECT PROFILE ON STRUCTURAL BOLTS, NUTS
AND WASHERS

- 28 -

1. Product : Structural Bolts, Nuts, and Washers.
2. Scope : In view of the rapid industrialisation and increase in construction activities, these products have good demand in the domestic market. There is demand for these items in the export market also.
3. Capacity (Qty.) : 12.5 M.Tonnes per month
4. Process : Drawing, Pointing, cold heading, Head trimming, Thread rolling, Forming, Tapping, Assembling, Finishing, Packing etc.
5. Investment : a) Land and Building
- Covered : 250 sq. met.
area
b) Plant and Machinery Rs.2 lakhs
c) Working Capital Rs.1.82 lakhs
(For 3 months)
6. Employment : 21 persons.
7. Raw materials : Bright steel bars etc.
8. Water : Negligible
9. Power : 50 H.P.
10. Break even level : 40%
11. Return on investment : 25%
12. Remarks : -

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29. PROJECT PROFILE ON PAPER CONES, TUBES, CORE TUBES

1. Product : Paper cones, Tubes, core tubes, etc.
2. Scope : There is good demand for these items by the spinning mills in the District.
3. Capacity : 20,000 paper cones and tubes per day per shift.
4. Process : Paper cones and tubes are essentially made of paper board and kraft paper on a specially designed cone forming or tube winding machine. Kraft paper is pasted over the tubes with suitable adhesive. Trimming of the product completes the finishing operation.
5. Investment : a. Land & Building - 200 sq. meter covered area
b. Plant & machinery: Rs.50,000
c. Working capital : Rs.30,000/-
(3 months)
6. Employment : 8 persons
7. Raw materials : Chip board, kraft paper, adhesive, etc.
8. Water : Negligible
9. Power : 20 H P
10. Break-even level : 43%
11. Return on investment : 41%
12. Remarks : -

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30. PROJECT PROFILE

1. Product	Ferrous and Non-ferrous castings
2. Scope	
3. Capacity	600 M.T. per annum/shift
4. Process of manufacture	-
5. Investment:	
Land	-
Covered area	800 sq. metres
Plant & Machinery	Rs 2,10,000
Working capital (for 3 months)	Rs 4,50,000
6. Employment	45
7. Raw materials required	Pig iron, scrap, coke, coal, lime stone, brass, aluminium copper scraps, ingots etc.
8. Water requirement per day	500 litres
9. Power requirement(HP)	35
10. Break even level (%)	54
11. Return on investment(%)	28
12. Remarks	-

31. PROJECT PROFILE ON IMPROVED AGRICULTURAL IMPLEMENTS

1. Product	Iron mould board ploughs and plough shears is a primary tillage implement used for mechanical manipulation of soil and is drawn by animals.
2. Scope	Good scope exists for the product conforms to I.S. Standards
3. Capacity (qty)	Ploughs - 500 Nos } per month on single Shears - 500 Nos } working shift
4. Process	Involves forging - heat treatment- assembly machining - final assembly casting - Machining - Assembly
5. Investment	a) Land & building: covered area 400 sq.metres b) Plant & Machinery Rs 60,000 c) Working capital Rs 1,08,000
6. Employment	16 persons
7. Raw material	Pig iron, steel grade C-75, I.S. 1570 M.S. Angles, Rounds, seasoned wood etc.
8. Water	5000 litres
9. Power	20 h.p.
10. Breakeven level	55%
11. Return on investment	About 25%
12. Remarks	Nil

32. PROJECT PROFILE

1. Product	Tool Room
2. Scope	
3. Capacity	Press Tools and Moulds Rs 24,86,500 per annum/shift.
4. Process of Manufacture	Precision Turning - Shaping Milling, Grinding, Heat-Treatment
5. Investment	
	Land --
	Covered area 500 sq mtrs
	Plant & Machinery Rs 7,89,100
	Working Capital for 3 months Rs 3,96,300
6. Employment	28
7. Raw materials required	Die Steels, Carbon Steels, Mild Steels.
8. Water requirement per day	300 litres
9. Power requirement (HP)	60
10. Break-even Level (%)	45
11. Return on investment (%)	37
12. Remarks	--

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33. PROJECT PROFILE ON HORSE AND BULLOCK SHOES AND NAILS

1. Product	: Horse and Bullock Shoes and Nails
2. Scope	: This is a demand oriented industry having scope for development in the district.
3. Capacity (Qty)	2 M.T. per month
4. Process	Flatening, fabricating, wire drawing Polishing etc.
5. Investment	a. Land & Building Covered area .. 150 Sq.mt. Open space .. 75 Sq.mt. b. Plant & Machinery .. Rs.66,000/- c. Working capital .. Rs.50,000/- (for 3 months)
6. Employment	13 persons
7. Raw material	High Bright M.S.Wire, Flats etc.
8. Water requirement	Negligible
9. Power	10 H.P.
10. Break Even Level	45%
11. Return on investment	28%
12. Remarks	

34. PROJECT PROFILE ON GOBAR GAS PLANT

1. Project	Fabrication of Gobar Gas Plant.
2. Scope	Large quantities of Cattle dung available in the district can be used as fuel as well as manure if it is put through the Gobar Gas Plant instead of wasting it as domestic fuel.
3. Capacity (Qty)	120 Gobar Gas Plants per annum.
4. Process	It is a fabrication job. It involves cutting of M.S. sheets, Plates, Angles and M.S. Pipes, Bending of M.S. sheets, Iron Angle to shape, welding of parts, and Final Assembly.
5. Investment	a) Land & Building: 150 sq. metres of covered area. b) Plant & Machinery: Rs. 20,000 c) Working capital: Rs. 45,000/- (3 months)
6. Employment	15 persons
7. Raw materials	M.S. sheets, Plates and Pipes.
8. Water	25 litres per day
9. Power	10 H.P.
10. Break-even level	45%
11. Return on Investment	42%
12. Remarks	Raw Material and skill are available indigenously.

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35. PROJECT PROFILE

1. Product	Automobile Body Building
2. Scope	There is enough scope for body building activities with the increasing goods and passenger traffic and to meet the regular requirement of building new bodies on the road vehicles.
3. Capacity	120 Nos. of wooden bodies on standard chassis per annum.
4. Process of manufacture	The process of manufacturing is carried on in different sections namely carpentry, smithy, assembly, painting and upholstery section. This project profile will not be dealing in upholstery section. It can be sub-contracted.
5. Investment	Land 0.5 acres Covered area 800 sq mtrs Plant & Machinery Rs 76,500 Working Capital Rs 3,78,600 (3 months).
6. Employment	46 Persons
7. Raw Materials required	1. Teak wood 750 cft 2. MS Sheet 16 SWG 4 M.T. 3. Hardware items 4. Painting materials
8. Water requirement per day	250 litres
9. Power requirement (HP)	10
10. Break-even level (%)	50.3
11. Return on investment (%)	33
12. Remarks	--

- : -

36. PROJECT PROFILE

1. Product	Common Facility Centre for Blacksmiths
2. Scope	-
3. Capacity	24 M.T. per annum/shift
4. Process of Manufacture	
5. Investment	
Land	
Covered area	200 sq. metres
Plant & Machinery	Rs. 52,000/-
Working Capital (for 3 months)	Rs. 35,000/-
6. Employment	10
7. Raw material required	M.S. Rods, Squares, Flats etc.
8. Water requirement per day	100 litres.
9. Power requirement (HP)	10
10. Break-even level (%)	58
11. Return on Investment (%)	25
12. Remarks	-

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37. PROJECT PROFILE

1. Product	Steel Furniture
2. Scope	-
3. Capacity	Almirahs : 360 Nos. Racks : 600 Nos. per annum Tables : 480 Nos. per shift Chairs : 960 Nos.
4. Process of Manufacture	Cutting - Bending - Welding Assembling - Painting etc.
5. Investment:	
Land	-
Covered area	150 sq. metres
Plant & Machinery	Rs. 1,19,200
Working Capital (for 3 months)	Rs. 1,63,800
6. Employment	15
7. Raw materials required	M.S. Sheets, Tubes, Screws, Nuts Washers, Rubber Ring, Handles, lable etc.
8. Water requirement per day	150 ltrs.
9. Power requirement (HP)	20.
10. Break-even level (%)	52
11. Return on investment (%)	26
12. Remarks	-

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MSSI

38. PROJECT PROFILE

1. Product: Wooden furniture
2. Scope: Furniture is in great demand in almost all the Government Departments as well as in private business concerns, hospitals, educational institutions and in every house. As this item does not get deformed it gives a fairly good life.
3. Capacity: 590 office chairs, 190 office tables per month
4. Process of manufacture: The sizes are cut from logs and planks on machines and the parts are formed in three or four operations. Then they are assembled to the given design by manual labour. Then they are finished to exhibit the natural grains and mirror like glaze by means of french polish.
5. Investment:
 - Land: -
 - Covered area: 700 sq. metres
 - Plant & Machinery: Rs 1,20,000
 - Working capital (for 3 months): Rs 6,00,000
6. Employment: 41 persons
7. Raw materials required: Teak wood, rose wood, jack wood, hardwares such as nails, screws, nuts, bolts, hinges, hasps, staples.
8. Water requirements: 500 litres
9. Power requirement: 35 HP
10. Break even level: 60%
11. Return on investment: 25%
12. Remarks: -

39. PROJECT PROFILE ON BAKELITE ELECTRICAL ACCESSORIES.

1. Product: Bakelite electrical accessories.
2. Scope: Bakelite accessories is another electrical item which will find increasing demand with speedy electrification of rural areas.
3. Capacity: 33,000 Nos. per month.
4. Process: Bakelite powder is put into the mould and the mould is heated by steam/electricity for a definite time at a definite temperature. Afterwards mould is opened and the moulded bakelite finished product is taken out.
5. Investment:
 - a) Land & building: 240 sq. meter covered area
 - b) Machinery & Equipment: Rs.2.18 lakhs
 - c) Working capital - Rs.1.43 lakhs (3 months)
6. Employment: 25 persons.
7. Raw materials: Urea formal dehyde moulding powder
Phenolic moulding powder
Brass Rods and sheets
MS sheet
Ceramic blocks MS screws
Brass screws etc.
8. Water: 15,000 litres per day
9. Power: 40 H P
10. Break-even level: 45%
11. Return on investment: 20%
12. Remarks:

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41. PROJECT PROFILE ON FLUORESCENT TUBE FITTINGS

1. Product	Fluorescent Tube Fittings (Chokes, Patties)
2. Scope	There is good scope for the development of this industry in view of the increasing demand for tube lights in various sectors like domestic and industry etc.
3. Capacity (Qty)	2000 fittings per month
4. Process	The manufacture of Fluorescent Tube Fittings involves different operations depending on the things. An experienced hand is essential to manufacture the items and finally assemble them.
5. Investment	a) Land and Building 150 sq mtrs. b) Plant and Machine Rs 85,000 c) Working Capital Rs 2,00,000
6. Employment	21 Persons
7. Raw Material	MS Sheet, Electrical Laminations, Enamelled Copper Wire etc.
8. Water	--
9. Power	15 HP
10. Break-even level %	54%
11. Return on investment	24%
12. Remarks	--

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40. PROJECT PROFILE ON COOKING RANGES AND OVENS (DOMESTIC)

1. Product	Cooking Ranges and Ovens (Domestic)
2. Scope	Hot Plates, Cooking Ranges and Baking Ovens are useful domestic Electrical Appliances as kitchen gadgets. By and large they are labour saving devices, requiring lesser attention as they have many automatic controls incorporated in them. These appliances are fast becoming popular with the urban elite.
3. Capacity (Qty)	1. Single Hot Plates - 500 Nos pm 2. Double Hot Plates - 250 Nos pm 3. Cooking Range with Single Hot Plate - 20 Nos pm 4. Cooking Range with three Hot Plates - 10 Nos pm 5. Baking Ovens - 50 Nos pm
4. Process	This industry is assembly-oriented one and the items are assembled manually and involves sheet metal work, pressing, shearing etc.
5. Investment	a) Land and Building 300 sq mtrs. b) Machinery & Equipment Rs 1.70 lakhs c) Working Capital (3 months) Rs 2.49 lakhs
6. Employment	32 Persons
7. Raw Materials	MS Sheets and Rods etc.
8. Water	200 litres per day
9. Power	50 HP
10. Break-even level	52.4%
11. Return on investment	41%
12. Remarks	--

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42. PROJECT PROFILE ON ELECTRIC MOTOR REPAIRING & REWINDING OF COILS

1. Product Electric motor repairing and rewinding of coils
2. Scope Servicing industry having good scope
3. Capacity: (Quantity) 15 motors on an average per month
4. Process It is more or less a job work
5. Investment:
 - a. Band and Building 200 sq. meters
 - b. Plant and machinery Rs 15,500/-
 - c. Working capital (for 3 months) Rs 16,800/-
6. Employment 6 persons
7. Raw material Enamel wire, insulating varnish etc.
8. Water Negligible quantity of water is required
9. Power 3.5 H.P.
10. Breakeven level (%) 45%
11. Return on investment 20%
12. Remarks Nil

43. PROJECT PROFILE ON RIGID PVC PIPES

1. Product Rigid PVC Pipes
2. Scope For supply to Electricity Board and domestic consumers
3. Capacity 5 Tons per month
4. Process PVC granules are fed into the extruder where materials get melted and get extruded as pipes which are cooled and cut to proper sizes. Pipes of different colours can be manufactured using suitable coloured PVC compounds.
5. Investment

Land and Building:

Covered Building 30 x 30 metres
900 sq. metres @ Rs 2.50 per mtr.

Machinery & equipment:

 1. PVC Extruder 2½" with cater pillar hand operated with automatic cutter complete plant and vacuum sizing unit - complete with all accessories - Rs 1½ lakhs
6. Employment 20
7. Raw material PVC compound of different colours
8. Power 20 HP
9. Net profit 20%

NB: Machinery, know-how and raw materials are indigenously available. PVC compound are available with firms like M/s Chemicals and Plastics Ltd., Mount Road, Madras 2. Indian Standard Specifications available.

44. PROJECT PROFILE ON MATCHES

1. Product : Matches
2. Scope : There is very good demand in the country. This is a labour-oriented scheme and more suitable for setting up in rural areas.
3. Capacity (Qty) : 10,400 Gross or 75 million match sticks per day
4. Process : The process of matches consists of following stages:
 - a. Selection of raw materials
 - b. Box filling of splints
 - c. Dipping the splints in chemical mix
 - d. Drying the dipped sticks
 - e. Inspection and packing
5. Investment
 - a. Land & Building 150 sq. mt.
 - b. Plant & Machinery Rs. 5,000
 - c. working Capital Rs. 8,000
6. Employment : 5 persons
7. Raw material : Potassium Chlorate, Sulphur, Phosphorous, splints and veneers, matchwax, blue match paper and other chemicals.
8. Water : Negligible
9. Power : 7.5 H.P.
10. Breakeven level (%) : 46%
11. Return on investment : 20%
12. Remarks : Machinery, raw material and technology, are all indigenous. High priority is given to set up match units under the village industries sector.

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45. PROJECT PROFILE ON SPLINTS & VENEERS

1. Product : Splints & Veneers.
2. Scope : Splints and Veneers are required in large quantity by the units manufacturing Matches in the State.
3. Capacity (Quantity) : Splints : 1 metric ton per day
Veneers : 2000 gross per day
4. Process : (1) Splints: Cutting of wood peeling of sheets of wood and splints forming.
(2) Veneers: Cutting of wood, peeling and deep scoring on the sheets peeled.
5. Investment : a) Land & Building: 1000 sq. metres covered area and 500 sq. metres uncovered area.
b) Machinery & Equipment Rs. 75,000/-
c) Working Capital Rs. 60,000/-
3 months
6. Employment : 10 persons
7. Raw materials : Soft wood
8. Water : Nil
9. Power : 30 H.P.
10. Breakeven level : 45%
11. Return on investment : 25%
12. Remarks : -

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46. PROJECT PROFILE ON DYESTUFF & DYESTUFF INTERMEDIATES

1. Product : Dyestuff and dyestuff intermediates
2. Scope : Demand for the items is immense from handloom industry and textile mills.
3. Capacity : 300 kgs. per day (Naphthols etc.)
4. Process: There are several items under the vast categories of dyestuffs and process varies from item to item.
5. Investment : a) Land & Building 0.40 hectares
250 sq.mt.
(covered area)
b) Plant & Machinery Rs.1 lakh
c) Working Capital Rs.0.50 lakh
6. Employment : 20 persons
7. Raw materials : 1) Sodium nitrate
2) Sodium acetate
3) Caustic Soda, Soda ash
4) Hydrochloric acid etc.
8. Water : Water supply essential
9. Power : 30 HP
10. Break-even Level : 48%
11. Net profit : 20%
12. Remarks : Machinery, technology and know-how are indigenous. Most of the raw materials required by the industry are available in the country. Other raw materials are also admissible under the import policy.

A chemistry graduate with experience in dyestuff industry has to be employed.

47. PROJECT PROFILE ON DRUGS & PHARMACEUTICALS

1. Product : Drugs & pharmaceuticals (Tablets, syrups & tonics)
2. Scope : Pharmaceutical (formulations) Products have good demand in the State. With the increase in the economic and social conditions of the people there has been a remarkable increase in the usage of allopathic drugs.
3. Capacity (Qty) : Tablets - 100000 per month
Liquids - 2500 Ltrs per month
4. Process : The process involves generally mixing of various basic chemicals and convert them into tablets or syrups, However this involves specific standards and comes under the Drugs Act.
5. Investment : a. Land & Building 500 sq.m.
b. Plant & machinery Rs 1,20,000
c. Working capital Rs 50,000
6. Employment : 15
7. Raw material : Fine chemicals, fillers, packaging materials etc.
8. Water : 12,500 litres per day
9. Power : 25 H.P.
10. Breakeven level (%) : 30%
11. Return on investment : 22%
22. Remarks : The industry comes under the Drugs Act and has to follow the rules specified therein

48. PROJECT PROFILE ON PHENYLE

1. Product : Phenyle
2. Scope : For supply to Municipalities, Corporations and Domestic consumers.
3. Capacity : 400 litres per day
4. Process of manufacture : Rosin soap is manufactured utilising Caster Oil and Rosin and Caustic Soda. Cresote oil is separately heated and the hot cresote oil is added slowly in stages to the rosin soap.
The resulting product is an emulsion (phynyle).

The product should be stable and for this purpose a few chemical additives are added.
5. Investment : a) Land and building Shed - 1500 sq. m^{tr.}
b) Plant and machinery - Drums and Brick oven
Rs.5,000/-
c) Working Capital 3 months Rs.10,000/-
6. Employment : 10 persons
7. Raw material : Rosin, caustic soda cresote oil, perfumes.
8. Water : 5000 litres per dsy.
9. Power : Only for Lighting purpose
10. Break even level : 45%
11. Return on investment : 20%
12. Remarks : Indian standards specification on PHENYLE is available. Drug licence must be obtained from the office of the Drugs Controller for starting this industry.

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49. PROJECT PROFILE ON FIBRE EXTRACTION AND ROPE MAKING OUT OF ALOE AND PINE APPLE

1. Product : Pineapple and Aloe fibre extraction
2. Scope : The fibre extracted from pineapple leaves and aloe leaves are used in rope making. The ropes manufactured out of these fibres are prized for its strength, pliability and durability. Various handicraft products like bags, dolls, etc. made out of these fibres have good export market.
3. Capacity : 500 kgs of leaves of each of the above varieties/day of 8 hrs. or approximately 50 kgs. of fibre of each variety.
4. Process : First the leaves have to be crushed with the help of a Crusher Machine having two rollers one soft and the other hard. The crushed leaves then be treated with 0.5% to 2% hot solution of Cu SO₄ or Zn SO₄ at 65°C to 80°C for 30 to 60 minutes. Thoroughly washed in cold water and allow the half finished fibre bunches to remain under plain stagnant water for a period of 5-7 days or till the remaining piths are completely decomposed. Take out the bundles and wash thoroughly in running water - sun dry. The above treatment should be done carefully so that the fibres are not entangled and thereby offers no problem for the next process i.e. spinning.
5. Investment : a) Land and Building 250 sq.mtrs.
Covered area 40 sq.mtrs.
b) Equipments Rs 10,000
c) Working capital for 3 months Rs 12,000
6. Employment : 10 Persons
7. Raw Materials : Pina and aloe leaves of matured look and chemicals.
8. Water : 20 kilo litres/day
9. Power : G.L.S. only
10. Breakeven Level : 55%
11. Return on investment : 18%
12. Remarks : Apart from the extraction of fibre, manufacture of various handicrafts products can also be taken up. All India Handicrafts Board may be contacted for further guidance and assistance.

50. PROJECT PROFILE ON LOW COUNT COTTON YARN

1. Product : Low count cotton yarn
2. Scope : Low count cotton yarn is used in the manufacture of durries, duster cloth cotton ropes, webbings, tape newars cordages, wicks and many other items.
3. Capacity : 400 Kgs. per day (1200 spindles)
4. Process of Manufacture : Raw cotton of staple length varying from 3/8" to 1/2" are first to be opened passed through beaters, scutchers, carding drawing frames shubbings and finally to the Rings for spinning.
5. Investment : a. Land & Building - 1000 Sq.mt.
b. Plant & Machinery. Rs. 9 lakhs
c. Working Capital (for 3 months) .. Rs. 4 lakhs
6. Employment : 25 persons
7. Raw material : Cotton of low staple length and soft waste from cotton mills.
8. Water : 2 K1/day
9. Power : 70 H.P.
10. Break even point : 49%
11. Return on Investment : 18%
12. Remarks :

51. PROJECT PROFILE ON CATTLE FEEDS

1. Product : Cattle Feed
2. Scope : In view of the present programmes under Operation Flood (white revolution) for augmented supplies of milk to the population in the country, intensive cattle development programme have been taken on hand by many State Govts. with the intention of evolving high yielding strains of milch cattle and popularising the same among the cattle breeders. The overall nutritional status of the cattle population and the success of the developmental projects involving high yielding evolved strains of cattle depend to a great extent on the availability of well balanced cattle feeds; and herein lies a vast potential for exploitation by the cattle feed industry.
3. Capacity : 5 M.Tonnes/Shift of 8 hours.
4. Process : The ingredients are pulverised, blended and passed through a Gyratory sifter to correct the particle size. The product is then packed in gunny bags.
5. Investment : a) Land and Building (covered area - 450 sq.meters) rented.
b) Machinery & equipment
Disintegrator, Ribbon blender, Gyratory sifter, Platform weighing machine Rs.60,000
c) Working Capital: Rs. 3,20,000 (3 months)
6. Employment : 20 persons.
7. Raw materials : Tapioca, groundnut cake, molasses, rice bran tamarind seed flour, common salt, bone meal, vitamin mix, gunny bags.
8. Water : 5 kilo litres per day
9. Power : 120 KWH per day
10. Break-even-Point : 50%
11. Return on investment : 21%
12. Remarks :

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52. PROJECT PROFILE ON POULTRY FEED

1. Product Poultry Feed
2. Scope Through the annual production of eggs has registered a fourfold increase during the last 15 years, the pace has yet to be accelerated to attain the target fixed to meet the nutritional requirements of the people. The Govt. of India has fixed the target for annual production of eggs by 1982-83 at 1600 crores (from the present 990 crores of eggs) and 350 lakh boilers with a view to ensuring availability of eggs and boilers to more people. With this projected development of poultry farming, there is a vast scope for the poultry feed industry.
3. Capacity 5 Metric Tonnes/shift of 8 hours.
4. Process The ingredients are pulverised in a Pulveriser to the required mesh size. The product is mixed and meshed in a Vibrating Screen to correct the particle size. The product is then packed in gunny bags.
5. Investment
 - a) Land and Building (covered area 250 sq.mtrs) Rented.
 - b) Machinery and Equipment
 - Pulveriser
 - Ribbon Blender
 - Platform Weighing Machine Rs 44,000
 - c) Working Capital for 3 months Rs 4,00,000
6. Employment 20 Persons
7. Raw Materials Cereals, Wheat Bran, Rice Bran, Groundnut Cke, Fish Meal, Molasses, Ground Lime Stone, Bone Meal, Mineral Mix, Vitamin Mix, Gunny Bags.
8. Water 5 kilo litres/day
9. Power 120 KWH/day
10. Breakeven Level 46%
11. Return on investment 39%
12. Remarks Nil

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53. PROJECT PROFILE ON BAKERY UNIT

1. Product Bakery and Biscuits
2. Scope The consumption of bread and other bakery items is on the increase as corroborated by a recent survey conducted by the Society of Indian Bakers. The bread has become a daily food for many - both in the cities and in semi-urban areas. With the rapid industrialization in the country and the resultant urbanization the need for readymade food is becoming a necessity and the demand is fast increasing. With the Government encouraging the bakery industry both in urban and rural areas and the expanding market for bakery products, the industry has a good potential for further growth.
3. Capacity 650 loaves of bread of 400 g. each and 25 kg. of cookies/shift of 8 hours.
4. Process Dough is prepared by kneading all the ingredients together in the Kneading Machine. The dough pieces are panned/put in the moulding for getting the required size.
5. Investment
 - a) Land and Building (covered area 60 sq.mtrs) Rented.
 - b) Machinery and Equipment:
 - Bread Kneading Machine
 - Slicing Machine
 - Electric Oven
 - Electric Hot Plate
 - Biscuit and Bread Moulds
 - Working Tables, other Equipment
 - Office Equipment
 - Box Cycles Rs 37,500
 - c) Working Capital for 1 month: Rs 17,350
6. Employment 9 Persons
7. Raw Materials Wheat Flour, Sugar, Fat, Fermenting Agent, Milk Powder, Chemicals and Wrapping Materials.
8. Water 10 kilo litres/day
9. Power 30 KWH/day
10. Breakeven Level 63%
11. Return on investment 35%
12. Remarks

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