

DATA BASE
OF
KERALA ECONOMY

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PREFACE

The need and usefulness of statistical information have been amply made clear in our country especially in the context of the economic development plans. In spite of the fact that we have proceeded very far in providing the necessary information, there are still gaps which have to be filled in. The Directorate of Economics and Statistics which is the primary agency responsible for collection, processing and publication of statistics in the State has been engaged in this field for more than 33 years, considering its modest initiation in 1949 in the Department of Statistics of the University, then as Board of Statistics in the Government in 1950. Later in 1954 the Department of Statistics was formed as a Government Department. In 1957 a Bureau of Economic Studies was formed to undertake studies on the economic aspects and for purpose of evaluation of plan schemes. The two were integrated in 1963 and thereafter when the State Planning Board started functioning there was an integrated Bureau of Economics and Statistics and Planning Board to look after all the aspects of collection, processing, utilisation for purposes of planning, evaluation and publication. This set up was changed in 1973 when the State Planning Board began functioning separately. During these years a lot of information has been collected and results published. The lack of a system for preserving the historical data has been a stumbling block to researchers; even now, the attempts at preservation of old data have not been quite successful while the Department has been feeling that it cannot serve the consumers whose needs are varied. It is in this context that we met the officers in the Planning Board and the Centre for Development Studies and discussed the matter regarding the identification of gaps in statistics, time-lag in publications and ways and means of retrieval of data already collected for purposes of utilisation of interested researchers and institutions. The idea of the Seminar germinated thus. We could enlist the co-operation of all researchers and institutions in the State who are genuinely interested in making use of statistical information. This book is actually the product of the efforts of all these researchers from within the collaborating institutions and outside. I take this opportunity to thank one and all who have by contributing papers and/or by partaking in the discussions made the seminar an overwhelming success. The roles played by the Chairmen and the Rapporteurs have been widely appreciated.

The participants were fortunate to enjoy a dance performance, a Kalarippayattu and Kathaprasangom. I will be failing in my duties if I do not express my sincere thanks to those artists who could relieve very much the participants of the stress and strain from which they suffered consequent to the tight, tough technical sessions. All my colleagues including the members of the co-ordinating group from the State Planning Board and Centre for Development Studies deserve appreciation for the manner and level at which papers were presented and discussion took place.

Trivandrum,
28-2-1983.

Dr. R. S. KURUP,
Director.

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Director,
Institute of Regional Development
Studies, Kottayam.

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PART I
OVERVIEW AND CONCLUSIONS

1. THE ECONOMY OF KERALA: A STATISTICAL PROFILE

A bird's eye view of Kerala's economic performance in the past may facilitate better understanding of the many issues raised in the papers and discussions of the Seminar.

The State of Kerala was formed in 1956 by the integration of the princely States of Travancore (sans the four southern taluks of Thovala, Agastheeswaram, kalkulam and Vilavancode and the eastern taluk of Shenkottah) and Cochin, Malabar district (except Laccadive and Minicoy islands which now form union territory) and Kasargod and Hosdurg taluks of the South Canara district of the erstwhile Mysore State. Kerala lies between $8^{\circ} 17' 30''$ and $12^{\circ} 47' 40''$ north latitude and $74^{\circ} 51' 57''$ and $77^{\circ} 24' 47''$ east longitude. It has an area of 38854 Sq. km. While the length of the State is nearly 576 km. from north to south, the width varies from 11 km. to 120 km. from west to east. It is bounded by the Arabian sea on the west, Tamil Nadu in the south and east and Karnataka on the north and north-east. The western ghats and its forests protect the State from the dry winds of the eastern plateau, though some parts of the north-eastern district of Palghat are affected by these. It also helps Kerala to maintain a steady rainfall during the monsoon.

Topographically the State is divided into three natural regions the lowland skirting the Arabian sea, the highland verging on the border of the western ghats and the midland lying in between. Habitation in all these regions are continuous contrasted to the nucleus pattern seen elsewhere in India. Homesteads intersperse with the thick greenery of the crops and other vegetation continuously from one end of the State to the other.

There are two spells of rainfall in Kerala, the south west monsoon and the north west monsoon. The former is the most important and prevails from June to September while the latter extends from October to November. The State has an average rainfall of 30 cms. annually spread over about 126 rainy days. Kerala stands foremost among the Indian States in rainfall and number of rainy days. It is this rainfall which sustains the green vegetation in the State almost throughout the year. The 44 rivers, of which 41 run from east to west, are fed by the rains.

The State has rather an equable climate, though during the months of March and April the temperature rises very high even to 40°C in places like Palghat. The lowest temperature recorded is 17°C in February in Punaiur.

The soils in the State can be divided into sandy, alluvial, laterite, red, black, peaty and forest and hill soils (forest soil). All along the coast, sandy soil occurs as a narrow belt. The alluvial soils are transported automatically through the rivers and deposited in wet land areas of Kuttanad (Alleppé

District) and Kole lands of Trichur and Mukundapuram taluks (Trichur district). They are very fertile. The most important soil type is laterite which is found over the largest area of the State. This soil is used for preparing bricks for building purposes. Red Soils are found in parts of Trivandrum district, especially in Neyyattinkara taluk. This kind of soil is deficient in organic matter and low in all major plant foods. Peaty or Kari soil, occurs on the banks of backwaters. They are black in colour with a high acidic content and organic matter. These soils are noted for their poor fertility and low yields. About 24 per cent of the area of the State is occupied by forest and hill soil. They are rich in nitrogen but poor in bases due to heavy leaching. Plantation crops like tea, cardamom etc., grow in cleared forest soils. In Chittur and Palghat taluks black soil is found in a small area which is also deficient in all the major plant nutrients. Cotton is the main crop grown in these soils.

Minerals of great economic importance are found in the coastal region from Kayamkulam to Quilon. They contain ilmenite, monozite, zircon etc. In addition to these, chinaclay, mica, graphite, glass sands, shell limestone etc., are also found in the State. Low grade magnetic iron ore is available in the Malabar region. Quartz reefs containing minute quantities of gold occur in the Wynad taluk of Malabar. However, mining forms only a negligible part of the economic activity both in terms of share in State income and employment.

Population

Population of Kerala, which stood at 68 lakhs in 1901, increased to 169 lakhs in 1961, to 213 lakhs in 1971 and to 254 lakhs in 1981. The annual geometric rate of growth has increased from 1 per cent in the early decades of this century to nearly 2.24 per cent during 1951-71. It is noteworthy that the growth rate in population has shown tendencies of decline recently. The decadal growth rates were 24.76 during 1951-61, 26.29 during 1961-71 and 19.00 during 1971-81. The recent estimates of birth and death rates are 26 and 7 per 1,000 respectively. A very small percentage of net out-migration is one of the recent characteristics. A study conducted by the Department has revealed that at the beginning of 1980, there were 51 lakh persons working outside the State out of which 3.02 lakhs are within India. There is, however, no relief from the population pressure as density of population is very high in the State, about 654 per square km. as per 1981 census. The effect of improvement in the health facilities is further reflected in the high expectation of life at birth of about 62 years in Kerala as against about 50 in India.

The 1981 census showed the literacy rate as 69.17 per cent as against 60.42 during 1971. The percentage of population in urban area was 16.24% in 1971 and it rose to 18.78% in 1981.

The percentage of workers to population in 1971 was 29.79%. In 1981 the percentage of workers plus marginal workers comes to 30.9%.

The stock of technical personnel in the various occupations and the annual out-turn are shown in Table I along with the number of job seekers. It is seen that the number of job seekers exceeds the annual out-turn except in respect of agricultural graduates.

According to the 1981 census main workers constituted 26.54% of the population while marginal workers came to 4.36%. About 69.1% of the population were non-workers indicating a high level of dependency. The occupational distribution according to the available data from 1981 census shows that cultivators constituted 13.18%, agricultural labourers 28.19%, household industry workers 4.09% and other workers 54.54%. The corresponding figures in 1971 were: cultivators 17.8%, agricultural labourers 30.69%, household industry workers 4.28% and other workers 47.23%.

Kerala has a very high level of unemployment particularly of its educated labour force. According to the 1980 survey on employment about 18% of the labour force numbering about 14 lakhs were chronically unemployed. This was besides various levels of under-employment. The qualitative nature of unemployment in Kerala viz., the incidence of large scale educated unemployment is a reflection of the high level of education in the State as also due to bottlenecks that prevent proper man power planning. Table I gives the data on stock of technical personnel, annual out-turn and job seekers.

TABLE I

STOCK OF TECHNICAL PERSONNEL, ANNUAL OUT-TURN AND UNEMPLOYED

Sl. No.	Category	No. of persons employed in Govt. Quasi Institutions in 1976-77	Out-turn in 1977-78	No. of Persons Seeking work (1979)
1.	Medical Graduates	2095	572	691
2.	Nurses and Midwives	6065	379	..
3.	Engineering Degree Holders	..	773	1395
4.	Engineering Diploma Holders	..	1078	5490
5.	Agricultural Graduates and Postgraduates	1689	123	62
6.	Veterinary Graduates	..	33	96
7.	Ayurveda Degree/Diploma Holders (including doctors, nurses and compounders)	1362	50	..
8.	Homoeo Diploma Holders (including doctors, nurses, compounders)	188	159	..
9.	Co-operation Diploma Holders (J.D.C. and H.D.C.)	..	1154	..

(..) Not available
 Source: 1. Bureau of Economics and Statistics, Trivandrum.
 2. Directorate of Employment and Training, Trivandrum.

State Income Perceptions

Changes in State Income reflect both quantitative and qualitative transformations experienced by an economy. In view of this some highlights of State income movements are given here.

Net State Domestic Product (N. S. D. P.) of Kerala did register an increase during the past. Thus at current prices it rose by about 394% during 1960-61 to 1975-76. But at constant prices the growth was only 61 per cent which is an indicator of the price gallop during the period. The per capita income, which is below the all India level, increased at constant prices by 15% only, while the N. S. D. P. growth was four times that, reflecting the effect of the population growth.

TABLE 2

STATE INCOME AND PER CAPITA INCOME

Year	Index number with 1960-61 as base									
	State Income (Rs. crores)		Per capita income (Rs.)		State Income		Per capita Income		All-India Per capita Income	
	At current Prices	At Constant	At Current Prices	At Constant	At Current Prices	At Constant	At Current Prices	At Constant	At Current Prices	At Constant
1960-61	432.2	432.2	259	259	100	100	100	100	906	306
1965-66	710.7	488.4	379	261	164.4	113	146	100.8	425	311
1970-71	1226.7	623.4	584	297	283.8	144.2	225.5	114.7	637	353
1975-76	2134.2	697.7	909	297	493.8	161.4	351.0	114.7	1008	366

The share of the primary sector has been declining from 56 per cent in 1960-61 to 51 per cent in 1975-76 at current prices and to 47 per cent at constant prices. The tertiary sector, on the other hand, showed increase from 29 per cent to 37 per cent at current prices and 37 per cent at constant prices. As regards the secondary sector, there was improvement, when constant prices are considered, from 15 per cent to 19 per cent.

The value of production in the primary sector increased by 365 per cent during the 14 years from 1960-61 as against 290 per cent in the secondary sector and 424 per cent in the tertiary sector at current prices. At constant prices the three sectors showed increases of 38 per cent, 106 per cent and 90 per cent respectively.

Cultivation

Cultivation of crops in Kerala is by and large influenced by the regional variation indicated already. However due to a large scale interspersing of crops, exact identification of the cropping pattern has not been possible in the past with the sampling techniques. This problem is solved to some extent with the recently introduced (since 1975-76) Timely Reporting Surveys which attempts at estimating the area under crops on the basis of complete enumeration of all the plots during a period of six years.

TABLE 3
CROPPING PATTERN OF KERALA
1980-81

Name of Crop	Area (Hectares)
Rice	801699
Jowar	1880
Ragi	1471
Other Cereals & Millets	2761
Total Cereals and Millets	807811
Pulses including Tur	33859
Sugarcane	8011
Palmyra	12949
Pepper	108073
Chillies	1167
Ginger	12662

TABLE 4
PRODUCTIVITY OF CROPS

Sl. No.	Crops		Productivity during the year (Per Hectares)					Percentage Change from 1960-61	
			1960-61	1965-66	1970-71	1975-76	1978-79	In 15 years	In 18 years
1.	Rice	Kg	1371	1243	1484	1520	1589	+11	+16
2.	Sugarcane	"	4163	4156	4919	3824	5700	-8	+37
3.	Tapioca	"	6949	11220*	15729	16490	14579	+26	+137
4.	Coconut	nuts	6130	5616	5536	1963	4531	23	30
5.	Cashewnut	Kg	1558	1122	1122	1099	668	-29	-57
6.	Tea	"	1073	992	1103	1215	1309	+13	+22
7.	Coffee	"	441	119	398	420	420	5	-5
8.	Rubber	"	188	314	439	611	577	+225	+207
9.	Cardamom	"	45	56	26	38	56	-16	+24
10.	Groundnut	"	861	1460	1095	1322	976	+54	+13
11.	Areca nut	nuts	142591	150140	148427	148617	168383	+4	+18
12.	Pepper	Kg.	271	218	214	236	232	13	-14

*Difference due to methodology adopted for yield estimation of tapioca.

Source: Bureau of Economics and Statistics, Trivandrum Statistics for Planning State Planning Board, Trivandrum, Economic Review-1979.

Name of Crop	Area (Hectares)
Turmeric	3270
Cardamom	54044
Betelnut	61242
Banana	14318
Cashewnut	141277
Tapioca	244990
Tubers	34189
Coconut	651370
Betal leaves	1153
Tea	36164
Coffee	57949
Rubber	237769
Cocoa	23506
Other non-food crops	47381
Total non-food crops	1106839
Total cropped area	2084840
Net area sown	2179590

Crop Yield

There was a steady increase in net area sown from 1839000 hectares in 1957-58 to 2208000 hectares in 1974-75. The net area sown in 1980-81 is 2179590 hectares. The difference is probably due to differences in the methodology adopted. In 1980-81 about 32 per cent of the net area was sown more than once. It is interesting to note that 56 per cent of the area of the State is under cultivation. About 3 per cent of the area falls under cultivable waste and 0.6 per cent under 'other fallows'.

The increase in area under cultivation has largely been contributed by the increase in area under paddy and other cereals and cereal substitutes like tapioca. In 1975-76 1.3 million tonnes of rice was produced in the State. Though production of rice in 1978-79 shows a slight decline compared to 1975-76 by about 60,000 tonnes, there has been overall increase of nearly 25 per cent from the start of the Third Five Year Plan. In 1980-81 rice production was 1.25 million tonnes. Changes in productivity per hectare of important crops given in Table 5 reveal that rubber and tapioca stand foremost. Though the total production of coffee showed an increase, the average yield declined. Similar is the case with cashewnut and coconut. In fact, coconut has of late shown decrease in total production as the trees have been affected by diseases.

The cultivation scene has undergone significant changes during the plan period. There was expansion both on the extensive and intensive margins, facilitated by irrigation and better input use.

Irrigation facilities improved considerably. From about 2.6 lakhs hectares under irrigation in 1957-58 there was a steady increase to 4.6 lakh hectares in 1974-75. The share of Government canals was nearly 50 per cent and the area covered was about 2.3 lakh hectares in 1974-75. The total area irrigated increased by 77 per cent from 1957-58 to 1974-75. By 1976-77, the Government owned irrigation system could cover a gross area of 3.3 lakh hectares forming nearly 9 per cent of the total cropped area. Nearly 20 per cent of the total cropped area in the State was irrigated in 1974-75. The per hectare capital expenditure of the major irrigation projects works out to about Rs. 128. Minor irrigation projects contributed to irrigating 2077 hectares (gross) and lift irrigation 1432 hectares according to 1977-78 estimates. By this period intensive paddy development units (Ela scheme) could cover 2145 hectares. In all, spending an amount of Rs. 442 lakhs, 5654 hectares of land have been irrigated.

The main problem with the major irrigation projects is the enormous time lag involved in their completion. The minor irrigation schemes could not make much headway because of the failure to channel the water properly. Problems of draining away unnecessary water to prevent water-logging have also been felt. A region which is particularly affected by this problem is Kuttanad.

Perhaps the most important drawback in this respect is that there has not been an approach from the point of view of scientific water management. There has not been adequate tapping of the ground water and conservation of rain water. It is felt that through many small schemes the available water resources could be put to better use and in a manner conducive to ecological balance and devoid of water pollution.

In the case of implements, however, traditional implements have still a dominant role. Replacement of traditional implements with modern implements is rather slow. However, the process of replacement has gathered some momentum in recent years; iron ploughs are substituted for wooden ploughs, power operated sugarcane crushers are on the increase, oil engines and electric pumps have substantially increased in number, use of power sprayer has spread, tractors and power tillers are increasingly being used. Power tillers almost doubled in number between 1972 and 1977.

Among the better input practices special mention is to be made about the High Yielding varieties of paddy, tapioca, coconut and pepper. The introduction of High Yielding Variety in the cultivation of these crops has achieved growth in productivity. As regards paddy, the mean yield of High Yielding Variety was 3081 Kg. per hectare in the autumn of 1977 compared

to 2443 Kg. in the previous year. According to provisional estimates this was 3160 Kg. in 1981. A total of 2.94 lakh hectares was under High Yielding Varieties in 1977-78.

Fertiliser use also has gone up considerably. They were applied to nearly 2 per cent of area in 1965-66 and 3 per cent in 1975-76. By 1979-80 the index of fertiliser application with 1957-58 as base was 2046. Pesticide use has also increased significantly to counter the attacks from hoppers, worms, termites, beetles, flies, rats and aphids.

Credit for Farming

Credit availability to farmers has also increased through co-operative and other special schemes like small Farmers Development Agency. Credit is offered both in kind and cash.

Land Reforms

This is one area where Kerala has taken a lead over other states in India. Land reform measures have eliminated middlemen and absentee land lordism, and have secured ownership of land to hutment dwellers of their dwelling plots (Kudikidappu).

Livestock

A steady increase in livestock number has been noted in the State from 1951 onwards—from 36 lakhs to 53 lakhs: The number of cattle increased from 22 lakhs to 30 lakhs. Per 100 hectares there were 224 heads of livestock and per 100 persons there were 22 heads of livestock in 1977. Milk production was estimated at 8 lakh tons in 1978-79 with 86 grams per capita availability. Total egg production was 965 millions in 1978-79. The setting up of the Kerala Livestock Development and Milk Marketing Board is a landmark and a turning point in the development of animal husbandry sector in the State.

Fishery

About 41 per cent of fish landings in India has been in Kerala. Nearly 2.7 per cent of the total population is estimated as depending on fisheries. The marine fish landings in 1965 stood at 3,39,000 tonnes, as against 8,33,000 in India as a whole. This increased to 4,48,000 tonnes in 1973, but declined later to 3,31,000 tonnes in 1976. The 1978 estimate stood at 3,73,000 tonnes showing 27 per cent of the total Indian fish landings. Inland fish production stood at 24,512 tonnes in 1978-79. Export of fish and fish products has shown an increase in quantity as well as value over the years.

Forestry

The contribution of forests to the State's income was Rs. 42.11 crores in 1977-78 at current prices. There were 1.32 lakh hectares of forest plantations in 1978, this increased to 1.36 lakhs in 1979. These plantations occupy

14.5 per cent of the area of the forests in the State. Teak, eucalyptus and softwood are the major types of species grown here. In 1978-79 the total sale proceeds of forest products stood at Rs. 31.8 crores. The Kerala Forest Development Corporation and the Kerala Forest Research Institute have been in operation for five years.

Industrial Production

Kerala is an industrially backward State. Large industries are few. Kerala had nearly 2,400 registered factories (under Factories Act) in 1960. This increased to 6,317 in 1975. Of these 46 per cent have 9 or less workers. Nearly 10.6 per cent have 100 or more workers. About 42 per cent work for 300 days or more. Table 5 gives the value added by manufacture in 11 major industries for the period 1962 to 1974-75.

Total industrial production in the State has increased by 468 per cent in 12 years. As this is the value of production the contribution of price increase is significant to a large extent. Production of fertilizers increased by 2,200 per cent. Coir, tile and saw mills experienced the least increase. The tile industry had to decline in the earlier decade. The coir industry cannot be said to have been completely salvaged from the slump brought about by lack of raw materials and demand. The steps taken for production of rubberised coir might be a relief to some extent.

Power

Kerala enjoys the facility of rather high level of hydel power which constitutes a relatively cheap form of energy. As a result it has made significant progress in the field of power generation and distribution. All its villages are electrified. Table 6 gives the growth of the Kerala Power System.

Table 5

VALUE ADDED BY MANUFACTURE 1962 to 1974-75

Sl. No.	Name of industry	Years							
		1962		1965		1970		1974-75	
		Value	Index	Value	Index	Value	Index	Value	Index
1	Cashewnut Processing	380.73	100	635.97	167	695.54	189	1619.37	425
2	Tea Manufacturing	153.41	100	310.37	202	375.59	245	704.48	459
3	Cotton Textiles	236.96	100	269.61	114	443.30	187	950.78	401
4	Production of Fertilizers	62.35	100	112.16	180	107.71	654	1447.34	2319
5	Files Production	167.64	100	154.25	92	164.22	98	423.97	253
6	Coir Manufacturing	118.50	100	163.31	138	106.17	90	139.54	118
7	Production of Soaps and Glycerine	116.10	100	121.33	105	281.80	246	630.59	543
8	Printing and Binding works	55.46	100	92.91	168	152.65	275	295.10	532
9	Plywood Industry	49.65	100	53.63	108	199.61	402	248.10	500
10	Repair of Motor Vehicles	37.09	100	N.A.	..	100.16	170	169.35	457
11	Saw Mills	50.35	100	31.73	63	59.71	119	132.37	263
12	Other Industries	985.03	100	1529.37	155	3075.91	312	6940.90	705
13	Total	2413.27	100	3474.64	144	6065.37	251	13701.89	568

Source:—Bureau of Economics and Statistics, "Statistics for Planning", Trivandrum, 1977.

Table 6

GROWTH OF KERALA POWER SYSTEM

Sl.No.	Item	The position as on						
		1-4-51	1-4-56	1-4-61	1-4-66	1-4-69	1-4-74	1-4-80
1	Installed capacity (MW)	36.0	85.5	132.5	192.5	546.5	621.5	1011.5
	Index	100	238	368	535	1518	1726	2810
2	Maximum Demand (MW)							
	(a) System (MW)	24.4	62.9	116.3	173.7	352.7	500.2	854.2
	(Internal (MW))	24.4	62.9	116.3	173.7	277.7	434.4	620.2
3	Generation per annum (MW)	151.40	350.0	591.0	841.9	1623.0	2510.0	5118.6
	Index	100	232	391	558	1075	1662	3390
4	Import (MW)	16.9	1.5	56.8	116.0	19.0	1.2	49.7
5	Export (MW)	..	..	11.6	..	28.2	317.8	1933.1
6	Sales (MW)	140.0	274.0	517.2	749.7	1366.2	2105.1	4506.5
	Index	100	196	369	536	976	1504	3219
7	Energy Losses as Availability for Sale	14.3	19.7	17.9	20.2	15.9	15.4	11.3*
8	Percapita Consumption	13.0	18.5	30.0	40.0	66.0	79.1	96.0*
	Index	100	142	231	308	508	609	739
9	Number of Consumers	28119	78575	174994	325663	439681	777030	314878
	Index	100	279	622	1158	1564	2763	4676
10	Number of Irrigation pump-sets	191	893	4615	7007	13909	37611	78296
	Index	100	468	2416	3669	7282	19692	40993
11	Total Revenue per annum (Rs. lakhs)	58.4	140.7	311.7	706.8	1165.1	2379.1	8421.8*
	Index	100	241	534	1210	1995	4074	14421

Source: Kerala State Electricity Board: Power System Statistics as on 31-3-1980, Trivandrum, 1980.

* These figures relate to 1-4-1979.

In 1979-80 power was generated from 9 projects. A total of 5119 million kwh. of power at 60 per cent load factor was generated in 1979-80 as against an installed capacity of 1011.5 mw. From April 1969 onwards the State has been exporting power to neighbouring states. It is expected that the projects scheduled for completion in the course of next ten years would give 600 m.kw. additional power generation capacity. The hydel power potential of the State is estimated at 300 mw. at 60 per cent load factor.

Per capita consumption of electricity of the State was 96 units in 1979-80. According to 1976-77 estimates the distribution of consumption of electricity for various purposes was as follows; domestic consumption 10 per cent, industrial use 72.5 per cent, commercial use 5.6 per cent and for irrigation 4.8 per cent.

Though the State has enough hydro-electric power, not much is used in agriculture. Although a large chunk of electricity is used for industrial use it has not provided any special impetus to wide-

spread industrialisation in the State. The transport sector does not use much power. There is a backlog of transmission and distribution work, as in earlier years there was more emphasis on generation. Though all villages are electrified, large tracts of them still remain without power.

The future demand for power is expected to touch 1933 mw by 1988-89 with an annual internal energy requirement of 82.60 million units, according to the report of the 10th Annual Power Survey Committee. On the basis of this efforts are afoot to install a capacity level of 2411.50 mw. and energy of 8647 million units by 1988-89. The Sixth Plan transmission project report as approved by the Central Electricity Authority and the Planning Commission for Rs. 47.75 crores, envisages strengthening of the transmission system. Plans for supplying power as per requirement are also being evolved.

Education

The State had been in the forefront as regards education even in early days. In 1978-79 there

were 11,389 schools for general education, 6,970 Lower Primary Schools, 2,739 Upper Primary Schools and 1,680 High Schools as against 6,745 Lower Primary Schools, 1,985 Upper Primary Schools and 929 High Schools during 1961-62. This marks only 18 per cent increase over the 17 years. At the same time, the enrolment in the Primary and Secondary stages of education indicates 60 per cent increase, 43 per cent in Primary Stage and 183 per cent in Secondary Stage as compared to the enrolment during the year 1961-62. The number of teachers increased by 60 per cent from 1960-61 to 1978-79.

At present 167 colleges are functioning under four Universities viz. Kerala University, Cochin University, Trichur University and Calicut University. The number of colleges has more than doubled (204 per cent) when compared to the year 1961-62. The number of teachers increased by 239 per cent from 1960-61 to 1974-75.

In the field of technical education there was considerable expansion in the second and third plans. The enrolment in Engineering Colleges and Polytechnics increased to such an extent that there is excess supply of trained personnel. In spite of this, admission to colleges in engineering, medicine, agriculture, veterinary science etc. have either been increased or at least kept at the same level. Post-graduate education and research are encouraged through scholarships, apprenticeships etc. The newly created Science and Technology Committee in the Planning Department encourages research by financing schemes submitted by individuals and institutions.

The expenditure on general education went up from Rs. 16.83 crores during 1961-62 to Rs. 134.14 crores during 1978-79, the percentage increase being 697. This is evident from Table 7.

TABLE 7

PROGRESS OF EXPENDITURE ON GENERAL EDUCATION - KERALA

Year	Expenditure (Rs. in crores)	Index of Increase
1961-62	16.83	100
1962-63	17.11	102
1963-64	18.46	110
1964-65	19.88	118
1965-66	25.23	150
1966-67	29.33	174
1967-68	36.66	218
1968-69	49.21	251
1969-70	49.07	292
1970-71	52.53	312
1971-72	57.64	342
1972-73	59.71	355
1973-74	67.39	400
1974-75	86.17	512
1975-76	105.69	628
1976-77	116.73	694
1977-78	124.80	742
1978-79	134.14	797

Source: -State Planning Board--Economic Review -- 1982.

The cost per pupil increased to Rs. 213.11 in the primary and Rs. 361.87 in the secondary stage in 1978-79 from Rs. 49.30 and Rs. 90.37 in 1965-66. The rapid strides made in education are the result of the increased Government expenditure and attitude of the people.

Rapid expansion of educational development has created problems of accommodation and equipments. The average class room space available is far below the norms prescribed by the department. Inadequacy of furniture and equipment is another problem. In several areas, there is no site or building for the primary school. During the monsoon, in spite of all precautions some of the old buildings collapse. Sometimes resulting in casualties.

The present system of education is, by and large, academic and literary. It tends to create a bias for white collar jobs and neglects the development of skill and physical capabilities. A technical bias has to be given and vocationalisation is to be resorted to.

The present system of shifts will continue for some more time. Diversification of courses, provision of laboratory equipment, improvement of library, production of text books in regional languages, introduction of autonomous colleges, faculty improvement and promotion of fundamental and applied research are new areas in this field.

The unplanned growth of technical education is a problem which has to be looked into.

Transport and Communications

Transport sector in Kerala comprises of rail and road facilities as well as extensive net work of water connections. Information is available on the goods traffic through these channels from the Goods Traffic Survey conducted by the Directorate of Economics and Statistics in 1974-75. The total volume of inter-state goods traffic was estimated to be 79 lakh tonnes, 53 per cent of which is accounted for by incoming goods. The total value of incoming goods is estimated at Rs. 1130 crores as against the value of outgoing goods of Rs. 982 crores. Thus imports exceeded exports both in terms of quantity and value. In value terms, traffic by road accounts for 56% and quantity-wise 42%. Commodity movements through Cochin Port is 5 lakh tonnes of exports and 34 lakh tonnes of imports and in value terms, the exports are worth Rs. 327 crores and imports Rs. 322 crores. The rail traffic shows an adverse balance of trade to the tune of Rs. 165.55 crores forming about 8 per cent of the State income as against a maximum of 3 per cent for the country as a whole in any year. Inter-state trade through water is only 8.9% of export and 3.4% of import in volume as against 4.6% and 0.6% in value. The total trade through water is 6.1% in volume and 2.5% in value. However price variations are also to be considered when trade deficit is analysed.

Number of vehicles according to the information provided by the Motor Vehicles Department increased by about 161 per cent between 1966 and 1975. Kerala had 2.9 stage carriages per 10000 population in 1974.

Health

Kerala has progressed well in the field of health services. In 1979 there were 617 allopathic health

institutions in the State representing 145% increase from 1960-61 when the total number of the institutions was only 379. There is a proposal to have at least one dispensary in each panchayat in the State; most of the panchayats have been covered already. There are 6 such institutions per lakh of population. The total number of beds in all systems in 1979 was 61657 (as against 14591 in 1960-61) which works out to more than 2 beds per 1000 population. Family Planning measures have also taken rapid strides. The expectation of life at birth has increased from 32 years in 1970 to 62 years in 1975. There is a slight advantage to females in life expectation compared to males in Kerala unlike in the rest of India. In spite of all these, much is desired by way of improvement in the health services of Kerala. These include improvement in the quality of free service, supply of adequate medicines, amelioration of over-crowding and lack of cleanliness, removal of the inefficiency of emergency and casualty services and inserviceable equipments. Regional disparities are also to be eliminated in this respect. A high power committee has gone into these problems and suggested remedies. The Government has taken a decision to implement the recommendations. Health care and nutrition have been linked. Preventive measures have been strengthened.

Co-operation

The State Government established co-operative banks and societies during the Second Five Year Plan. In 1957-58 there was one Stage Co-operative Bank, two Co-operative Central Banks, one Central Land Mortgage Bank and five Primary Land Mortgage banks. There were 11 Central District Co-operative Banks and 34 Primary Land Mortgage Banks in 1975-76. The number of primary agricultural credit societies decreased from 2,072 to 1,678 in 1975-76 but that of primary non-agricultural credit societies increased from 407 to 492.

The number of marketing societies increased from 62 to 99 in 1975-76. The number of farming societies rose from 59 to 190 in 1965-66, but decreased later to 71 in 1975-76. For irrigation purposes there were 20 societies in 1975-76 as against nine in 1957-58. There were 278 consumer stores in 1957-58; by 1975-76 they went upto 329.

The number of fishermen's co-operative societies increased from 280 during 1960-61 to 899 during

1975-76, but this was less by 158 than in the previous year. The non-credit societies numbered 998 during 1960-61 but declined to 329 during 1975-76, though it was increasing upto 1973-74. A large number of co-operative stores in schools and colleges (689) started functioning during the year 1974-75.

Banking and Credit Availability

In 1976, 1,462 Commercial Banks were working in Kerala as against 779 in 1970; of these four were foreign banks and 79 non-scheduled banks. The total deposits increased from Rs. 170 crores in 1970 to Rs. 516 crores in 1976. The advances made by the banks amounted to Rs. 359 crores in 1976 as against Rs. 7.7 crores in 1970. Advances by nationalised banks to the agricultural sector stood at Rs. 2,779 lakhs as direct finance and Rs. 226 lakhs as indirect finance; the outstanding balance was Rs. 2,528 lakhs under direct finance and Rs. 118 lakhs under indirect finance. The total loans from nationalised banks, State Bank of India and its subsidiaries and other scheduled Commercial Banks amounted to Rs. 5,918 lakhs even with outstanding balance of Rs. 4,904 lakhs in 1976. In 1973, the total loan amount was Rs. 2,429 lakhs and outstanding balance was 1,979 lakhs. Thus the activity increased by 145 per cent in loans as well as outstanding amount. Loans were given for trade, self-employment and education. Agricultural loans have been given by SFDA's started in four districts in the State.

Plan Expenditure

There has been an increase from the First Plan to the Fourth Plan from Rs. 26 crores to Rs. 345 crores. The percentage expenditure on agriculture first increased and later decreased in the Fourth Plan. Though the share of irrigation and power declined, it has been substantially very high in all Plans. The share of industry and mining has been increasing over the years except in the Fourth Plan where it showed a slight decline. The social services also showed increase and then a decline, but finally again showed an increased share. But all through irrigation, power, transport and communications had more than 45 per cent of plan funds allocated; and social services had also an allocation of 15 per cent to 25 per cent.

Plan expenditure in various sectors in the various plans are given in Table 8.

TABLE 8
PLAN EXPENDITURE

	1st Plan	Ind Plan	IIIrd Plan	Annual Plans	IVth Plan	Vth Plan
1. Agriculture, Community Development and Co-Operation.	9.6	16.6	20.2	27.0	16.9	20.2
2. Irrigation and Power	60.8	40.8	41.9	37.7	43.00	39.1
3. Industry and Mining.	2.0	7.5	7.9	9.2	7.5	10.8
4. Transport and Communications.	12.7	9.0	6.5	7.4	9.2	7.2
5. Social Service and Miscellaneous.	14.9	26.1	23.5	10.7	23.4	22.7
Total	100.0	100.00	100.0	100.0	100.00	100.0

A comparative picture of Kerala and India is helpful in gauging the stage of development of the State. For this purpose a few development indicators are given in Table-9.

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TABLE 9
SOME DEVELOPMENT INDICATORS

<i>Indicator</i>	<i>Kerala</i>	<i>All-India</i>
General:		
Population in Lakhs (1981 Census)	254	6838
Density of Population (persons per Sq. Km) in 1981.	654	221
Power:		
Per capita Power Consumption in Kwh. Total (1979-80)	104	134
Industrial Purposes (1978-79)	86	87
Percentage of Villages Electrified to total Number of Villages	100.0	45.1
Irrigation:		
Percentage of Net Irrigate Area to Net Sown Area (1976-77)	10.0	24.6
Roads and Railways:		
Road Length in Km. per 100 sq. Km. of Area (March 31, 1979)	232	49
Number of (Goods Vehicles per Lakh of Population (March 31, 1978)	72	66
Length of National Highways in Km. per 1,000 sq. km. of Area (March 31, 1979)	21.5	8.8
Railway Route Length in Km. per 100 sq. km. of Area (March 31, 1979)	23	18
Postal Facilities:		
Number of Post Office per Lakh of Population (March 31, 1980)	17.8	21.0
Number of Letter Boxes per Lakh of Population (March 31 1979)	63.5	66.8

<i>Indicator</i>	<i>Kerala</i>	<i>All-India</i>
Education:		
Literarcy Percentage (1981)	69.2	16.2*
Schooling facilities (enrolment) (1976-77)		
Percentage of Age Group in standard		
(i) I to V	105.9	80.9
(ii) VI to VII	88.4	37.0
(iii) IX to XII	35.9	20.9
Health:		
Number of Hospitals per 1000 sq. km. of Area (1977)	19.5	1.6
Number of Hospital Beds per Lakh of Population (1977)	198.7	79.0
Banking:		
Number of Bank Offices per Lakh of Population (June end 1980)	8.5	4.9
Per capita Bank Deposits in Rupees (December end 1978)	420	415
Per capita Bank Credit in Rupees (December end 1978)	264	291

*Excludes data for Assam and Jammu and Kashmir

The overall impression is that Kerala is undergoing significant transformations. The tertiary boom consequent to the money flow from outside, the significant growth in health care facilities, the fall in birth rate etc., are some of the unique features of its recent economic development. While poverty has been considerably reduced, the unemployment level is persisting high, especially the educated unemployment despite the outmigration. Therefore need for real growth in the production sectors of agriculture and industry emerges vital for sustained growth.

2. PROCEEDINGS OF THE SEMINAR ON "DATA BASE OF THE KERALA ECONOMY" HELD ON 27TH AND 28TH OF JANUARY 1983 AT KANAKAKUNNU PALACE, TRIVANDRUM

A two day seminar on "Data Base of the Kerala Economy" was held at Kanakakunnu Palace, Trivandrum on 27 and 28 January, 1983.

The Seminar was inaugurated at 10 a.m. on 27 January, 1983 by Sri V. Ramachandran, I. A. S., Economic Development Commissioner, Government of Kerala. In the inaugural address, he emphasised the urgent need for having adequate data for realistic planning and suggested that a continuous dialogue between the data users and producers would definitely lead to the betterment of Statistics both in terms of quality and quantity. He also suggested that the recommendations of the seminar may be sent to the Government indicating priorities so that necessary follow up action can be taken.

Earlier Sri K. Easwarankutty, Additional Director, welcomed the gathering and Dr. R. S. Kurup, Director spoke about the objectives of the seminar.

Dr. P. G. K. Panikkar, Director, Centre for Development Studies, Trivandrum presided over the meeting.

The meeting expressed its deep sense of grief at the sad demise of Dr. U. S. Nair, the founder Director of the Department on 8th August, 1982 at Tokyo.

The technical sessions were divided into seven groups:

1. The first technical session began at 11 a.m. under the Chairmanship of Dr. K. Mathew Kurien, Director of the Institute of Regional Development Studies, Kottayam. The session covered Agriculture and the allied subjects of Forestry, Fisheries and Animal Husbandry. In all thirteen papers were discussed in the session.

Shri G. Somasekharan Nair, in his paper 'Agricultural Statistics in Kerala, made a review of the availability of Agricultural Statistics in the State pointing out the limitations. In his paper 'Rice Production in Kerala' Sri V. Thyagarajan, enumerated the gaps in the data needed for planning purposes and made certain suggestions for bridging the gap. Sri S. Natarajan who presented a paper on the 'Cost of Cultivation Studies' touched on the methodological problems faced in the conduct of Cost of Cultivation Studies. In their paper on 'Land Holdings and Land Reforms', Smt. S. Retnabai Ammal and Smt. K. Leelakumari, while reviewing the impact of land reform measures, expressed the doubt whether these measures have not created a new class of affluent cultivators and led to conversion of agricultural land to other purposes.

Sri T. Janardhana Menon, presenting his paper on Official 'Animal Husbandry Statistics in Kerala' reviewed the availability of Animal Husbandry

Statistics and identified the gaps in the existing system. On the fisheries sector S/Sri T. R. Thankappan Achari, N. Vikraman Nair and A. M. Joseph jointly presented a paper reviewing the present state of fishery statistics and made certain suggestions for the improvement of the data flow and for filling the gaps.

On Forest Statistics, there were two papers, one by Sri G. Somasekharan Nair and the other by Dr. C. T. S. Nair and Sri Krishnankutty. Sri Somasekharan Nair pointed out the discrepancies in the Forestry Statistics produced by different agencies. In their paper on 'Forestry Planning' Dr. C. T. S. Nair and Sri Krishnankutty pleaded for organising a data system responsive to planning needs.

Sri N. E. Cheriyan kunju presenting his paper entitled 'Data Base on Cardamom Plantation' suggested certain steps to be taken to make available reliable and detailed statistics in time. In his paper 'Data Base of the Plantation Sector' Dr. P. T. Joseph elaborated the points raised by Sri Cheriyan kunju and pleaded for a better co-ordination of the different agencies connected with the development of plantation crops for evolving a better data system. There was a paper on the same subject received from UPASI which was circulated but was not presented in the seminar.

A paper entitled 'Facts and Figures about Tobacco Cultivation in Cannanore District' prepared by Sri P. K. Ramakrishnan Nair was presented by Sri K. Balakrishnan Nair. Sri R. Balakrishnan Asian in his paper on "Agricultural Field Experiments" pleaded for setting up a data base of the results of the experimental data for use in development planning.

Initiating the discussions, Sri N. Kaleeswaran pointed out that a lot of Statistics are already available and it is for the user to decide on how best these could be used. He said that while presenting the statistics, changes made in methodology of collection and estimation should also be pointed out so that the users are not misled by the published figures. It is also necessary that the data produced by different agencies are cross verified and reconciled. The thread of the discussion was picked up by Dr. P. G. K. Panikkar and Sri N. Gopalakrishnan Nair by emphasising the need for constant dialogue between user Departments and the Directorate of Economics and Statistics. Dr. R. Gopalakrishnan from the Centre for Water Resource Management clarified certain points raised on the classification of agricultural seasons. Sri K. J. Joseph, Chief Conservator of Forests (Social Forestry) commenting on the data availability in the forest sector said that the collection of needed data, the perception of forestry solely as a producing sector should change. S/Sri

M. Kunhaman, K. P. Kannan, P. P. Pillai and M. R. Nair participated in the discussions giving suggestions for improving the existing data system.

Winding up the discussions the chairman reiterated the need for better co-ordination between data producers and users. He made a suggestion to examine how far peoples' participation in the field can be used for generating better statistics. He stressed the need for storing the primary data and making available the records for research workers.

II. The afternoon session commenced at 2 00 p.m. under the Chairmanship of Sri K. Ramabhadran Nair, Chairman, Kerala State Electricity Board. Two papers on the Energy Sector were presented and discussed. Sri K. N. G. K. Sastry who presented his paper on 'Rural Electrification Statistics' identified the data gaps and stressed the need to collect, compile and present data in time and in the manner required for policy decision, planning and evaluation. Sri P. P. Pillai in his paper on 'Data base of Kerala Economy- the Neglected Energy Sector' pointed out that we have practically no data on the non-commercial energy sector. In the discussions that followed, Sri N. Gopalakrishnan Nair said that the data on distribution and consumption of electricity made available relate to the regions and sub-regions of the Kerala State Electricity Board, while for planning purposes data are needed by administrative divisions like district, block etc. Winding up the discussions, the Chairman pointed out that some of the concepts and classifications followed by the K. S. E. B. in presenting their figures are those laid down by the Central Government; but if we want any new type of classification it can be done as an additional item. He agreed that there is an urgent necessity to strengthen the statistical system in the K. S. E. B. to produce the needed data in time.

As Sri K. Ramabhadran Nair had to leave for some urgent official business, the session continued under the chairmanship of Dr. Mathew Kurien. In this session, papers on industry, irrigation, trade and transport were presented and discussed.

Under 'Industry' there were four papers. In their paper 'Industrial Statistics', Sri G. Ramachandran Nair and Smt. Zainaba, pointed out that even though we have a lot of data scattered in the schedules of censuses and sample surveys and in the official records of Government agencies no serious attempt has been made to compile these data and organise a system for regular data flow. The same point was stressed by Sri K. Vasukutty in his paper 'Industrial Sector and its Data Requirements'. He also made certain suggestions for organising the data in a manner needed for planning purposes. S/Sri Thomas Issac and K. P. Kannan jointly presented a paper 'Data Base of Traditional Industries in Kerala- the Case of Coir and Cashew in which they brought out the contradictions in the various available statistics in this respect. The paper entitled 'Data Gaps and Problems of Data Collection with reference to Small Scale Industries by Sri V. Mohan Pillai was presented by Sri G. Perumal. In this paper, the author has enumerated various sources of data available on the small scale industries sector and has identified the gaps.

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In the discussion that followed, S/Sri Ravindran Nair, Sreekumar, George Mathai and K. N. G. K. Sastry participated. Sri Ravindran Nair stressed the need for building up lower administrative level data involving the local population also in the collection of data. Sri George Mathai pointed out that the data relating to the individual units can be supplied only subject to confidentiality.

The Chairman, winding up the discussions, said that there is urgent need to develop a system of Industrial Statistics for collection, storage and easy retrieval of data. As regards making primary data available to researchers he suggested that wherever confidentiality is involved the relevant data could be converted to case studies and then made available to researchers.

In the session on Transport two papers were presented one by Sri Abdul Wahab and the other by Dr. B. A. Prakash. In these papers the present data system on the transport sector was reviewed and the gaps identified. In the discussions that followed Dr. N. S. Sreenivasan said that the decision on what data are to be collected and how often they are to be collected should be taken on the basis of the actual use of data. Sri T. R. Gopalakrishnan supported this by saying that the available data should first be organised and presented in a manner useful for taking decisions. The Chairman while winding up the discussions said that it is essential that the available data in the sector should be collected, processed and made available to the users in time.

The session on irrigation had three papers. Sri C. J. Joseph in his paper discussed the discrepancies in the available data on irrigation obtained from different sources. Sri S. Sthani Krishna Iyer in his paper on the subject reviewed the present data position on irrigation. The paper presented by Dr. Narayanan Nair was a methodological study linking irrigation with development. In the discussions that followed some of the participants pointed out that even though large amounts have been invested in the irrigation sector, its impact on the economy has not been evaluated and made known to the public.

The last subject discussed in the afternoon session was Trade Statistics. There were two papers on the subject, one by Sri R. P. Nair and the other by Sri R. Ramalingom. Sri R. P. Nair reviewed the present position of data on commodity flow and identified the gaps. Sri Ramalingom in his paper pointed out that the Railways have computerised their records and by suitable arrangement with the Railway Board we can obtain processed railborne data from them. He added that it is necessary to carry out periodical studies on commodity flow and estimate the state's balance of trade.

The Chairman, in his concluding remarks summarised the points emerged in the discussions.

III. The forenoon session on the second day started under the Chairmanship of Prof. V. R. Pillai, Member, State Planning Board, Kerala at 10 a.m. In the introductory remarks, the Chairman expressed base for development planning and lauded base for development planning and landed

the attempt of the sponsors of the seminar.

The forenoon session was divided into two parts one consisting of Population, Health and Education and the other on Housing, Labour and Employment. Altogether fourteen papers were presented in the session.

On "Population, Health and Education", eight papers as detailed below were presented.

1. Population Projections for District and Lower Levels. ... Dr. R. S. Kurup
2. Data Base for the Study of Growth and Structure of Population of Kerala ... Dr. R. Ramkumar
3. Population Statistics Sri M. K. Bhaskara Pillai
4. Health Statistics in Kerala. ... Dr. P. G. K. Panikkar
5. Educational Statistics of Kerala. ... Dr. P. R. Gopinathan Nair and Sri Joseph Thomas
6. Educational Statistics Dr. Vasantha Ramkumar
7. Information Base of the Tribal Economy of Kerala - a Review ... Sri M. Kunhaman
8. Source Materials for Understanding Scheduled Caste Conditions in Kerala. ... Sri P. Sivanandan.

The three papers on population enumerated the source of data on population, the defects in the existing data in terms of accuracy and coverage. The necessity for attempting population projections for district and lower levels was also brought out.

The paper on Health Statistics pointed out the discrepancies and defects of data in the health sector while those on educational statistics suggested some analytical studies to be undertaken based on the existing data for realistic planning.

The two papers on data base of tribal economy and scheduled castes sector emphasised the need for adequate data and invited attention to this most important aspect.

In the discussions that followed, Sri N. Gopala-Krishnan Nair, Dr. Ramkumar, Dr. Kurup, Dr. Panicker and others participated. The following were the major points that emerged from the discussions:

1. The feasibility of processing the vital statistics and sample registration data so as to frame fertility and mortality hypotheses.
2. The data from the Survey on Housing and Employment, 1980 may be used for preparing migration hypotheses, taking into account the push and pull forces.
3. Studies are to be made of parallel institutions to supplement the data now available.
4. Streamlining of the health statistics system should be looked into.

The second part of the session devoted for housing, labour and employment, discussed seven papers.

The papers are:

1. Housing Problems and Programmes in Kerala ... Sri K. Thomas Poulouse
2. Housing Statistics in Kerala ... Sri E. P. Raman Namboodiri
3. An insight into some Aspects of Labour Statistics ... Smt. Lillykutti K. Varghese
4. Labour Sector- Data requirements ... Sri C. T. Sukumaran
5. Data Base for estimates of employment/unemployment in Kerala ... Smt. Mridul Eapen
6. Data on employment and Man power ... Sri P. C. Jain
7. Employment and Man power Statistics ... Sri N. Gopalakrishnan Nair.

The paper of Sri Thomas Poulouse was not presented but was circulated. The papers assessed the present data position and highlighted the major gaps and weaknesses of data relating to the concerned sectors.

During the discussion Mrs. Mridul Eapen, Sri Ravindran Nair, Dr. P. G. K. Paniker and others took part. There was a plea for better appraisal of the unemployment situation.

Concluding the session, the Chairman pointed out that in view of the necessity of having all types of data at lower levels for the purpose of planning, there was need for organising research cells in departments like Health Service. The session ended at about 1.15 p. m.

IV. The afternoon session started at 2 p. m. which included State Income, Prices and Wages, Plan Programmes and Evaluation. Dr. N. T. Mathew, Chairman, Kerala Statistical Institute, presided over the session.

The following eight papers were presented in the first part of the session on State Income, Prices and Wages:

1. Growth and Structural changes of State Income of Kerala ... Sri N. George John
2. "The unobserved sector" of the National Accounting Data Base ... Dr. T. Edwin
3. National Sample Survey Data ... Sri G. Ramachandran Nair and Sri A. Abdul Gafoor
4. A Note on Agricultral Price Statistics in Kerala ... Sri D. Narayanan
5. A Review of the present Data Base of Market Price and Computation of Indices ... Sri K. Easwarankutti, Sri A Meer Sahib and Sri T. Divakaran Nair

6. Data for Price Analytic a Synoptic view
... Sri George Mathai
7. Wage Structure and Economic Development
... Sri Ramavarma, Smt. P. L. Sreedevi and
Smt. S. Saraswathy
8. Needed Statistics in Civil Supplies Administration
... Sri A. Shahul Hameed.

Initiating the discussion Sri K. M. Basheer from the International Labour Organisation pointed out the conceptual differences of the income originated and income accrued in the Computation of State Income. Sri F. Mehran from I. L. O., also participated in the discussion. Doubts were raised as to the methodology to be adopted in estimating the unobserved sector in the National Accounting Data Base. Sri Kalyanaraman from the University Department of Statistics suggested that "the randomised response technique" can be applied to this field.

The last part of the session dealt with plan programmes and evaluation and the following eight papers came up for discussion. (The paper of Sri Krishna Aiyer was circulated only).

In his paper Sri K. K. George enumerated the various sources of data on Institutional Finance and suggested that the Bureau may make an attempt to collect these data also. Sri Kalyanaraman, in his paper suggested the introduction of computer based data system.

Initiating the discussions Mrs. Leela Gulalhi mentioned that data on women's participation in all sectors of the economy are having serious gaps. Sri Basheer, from I. L. O., Dr. Mathew Kurian and others participated in the discussions.

The Chairman concluded the session by commending the effort of organising the Seminar as a good initiative in improving the present data base.

The session ended at 4.15 p. m.

The valedictory session started at 4.30 p. m. under the Chairmanship of Sri K. V. Nambiar, Secretary, State Planning Board, Government of Kerala. Smt. Padma Ramachandran, Director, Institute of Management in Government delivered the valedictory address.

Sri G. Ramachandran Nair, Joint Director, Directorate of Economics and Statistics presented the report of the sessions of the first day. The report for the second day was presented by Sri G. Somasekharan Nair Joint Director, Directorate of Economics and Statistics.

Sri K. V. Nambiar in his presidential address, expressed the need for piecing together the data already available for meaningful conclusions and stressed the necessity of having constant dialogues between the producers and users of data.

Smt. Padma Ramachandran in her valedictory address pleaded for detailed studies on problems relating to women. She laid great stress on the need and usefulness of participatory research and from this angle she appreciated the seminar efforts which brought together researchers and administrators to a common forum.

Dr. R. S. Kurup, Director, Department of Economic and Statistics proposed the vote of thanks.

The Seminar came to a close at 6 p. m.

3. SUMMARY OF THE SEMINAR PAPERS

The Seminar discussed the existing position of the data base of the different sectors of the economy of the State. The papers of the seminar highlighted the availability, limitations and the quality of the existing data as well as the major data gaps and the necessity for bridging the same.

There were fifty-seven papers relating to the different sectors. The subject-wise distribution of the papers is given below:

Sector	No. of Papers
1. Agriculture	9
2. Animal Husbandry	1
3. Fisheries	1
4. Forestry	2
5. Energy	2
6. Industries	4
7. Transport	2
8. Trade	2
9. Irrigation	3
10. Population	3
11. Health	1
12. Education	2
13. Tribal Economy	2
14. Housing	2
15. Labour	2
16. Employment and Manpower	
17. State Income	2
18. National Sample Survey	1
19. Prices and Wages	4
20. Civil Supplies	1
21. Institutional Finance	1
22. Plan Programmes	
23. Evaluation	1
24. Co-operation	1
25. Statistics of Women	1
26. Data Organisation	1
TOTAL	57

The papers were mostly presented in the different Sessions by the respective authors themselves. There were seven technical sessions. The salient points mentioned in the papers belonging to the different sessions are given below:

SESSION I

AGRICULTURE, ANIMAL HUSBANDRY FORESTRY, AND FISHERIES

1. AGRICULTURAL STATISTICS IN KERALA

G. Somasekharan Nair

The paper deals with the methodology of collection availability and limitations of primary agricultural statistics—land utilisation, area under crops and production of crops—relating to Kerala State.

The surveys under the new scheme implemented from 1975-76 collected these details in respect of all the plots in Kerala during a period of six years and the second round of the process has been started. Analysing the results of these surveys in the past, it is suggested that a change in the existing design is desirable for getting better estimates annually, as well as for lower levels than the district. The various publications of the department providing the above details are also listed.

Data on cost of production of crops, marketable surplus of agricultural commodities, details of land utilisation and cropping pattern for different agro-climatic zones, and the details of agricultural crops cultivated in forest areas are mentioned as the major data gaps in this regard.

The paper also mentions about the quality of the data collected and the limitations and ends with a request for suggestions for improvement in the present set up from the users' point of view, cautioning that the quality of data collected depends much on the co-operation of the informants.

2. RICE PRODUCTION IN KERALA—ITS DATA BASE AND DATA GAPS

V. Thyagarajan
N. Thirivikraman Nair

The authors begin the paper by analysing the production trends of rice and identifying the gaps in data availability. Since the introduction of Timely Reporting Scheme, the area statistics on paddy is available at village level. Yield and production data on paddy estimated through crop-cutting surveys are also available at taluk level. In the case of input statistics, only data on irrigation are collected at present. Data relating to other inputs such as fertilizer, manures, pesticides, credit etc., are not collected and published by any agency, though their availability is of vital importance in analysing the reasons for low productivity and declining trend in production. Statistics on size of holdings under paddy though collected by the Board of Revenue (Civil Supplies) for purpose of levy collection, policy decisions are seldom taken based on this information. Other important gaps in statistics listed by the authors are data on labour availability and demand, import of rice in private trading sector and above all the data on cost of cultivation.

3. DATA BASE ON COST OF CULTIVATION IN KERALA

S. Natarajan

In this paper, the author attempts to examine the quality and content of the available data on Cost of Cultivation in Kerala. The annual studies on Cost of Cultivation of principal crops initiated by Government of India on a country-wide basis since 1971 constitute the most important source of such

data. Principal crops taken for Cost of Cultivation studies, include paddy, wheat, jowar, cotton sugar cane, groundnut, tobacco, coconut and tapioca. Besides data on cost of cultivation, data on land holdings, asset structure, demographic characteristics, the application of material inputs etc., are also collected. The important limitation of the cost of Cultivation data collected by the University on behalf of ICAR are the following:

- (i) the available cost of cultivation data relate to the State as a whole and hence may not be relevant for region-wise studies.
- (ii) Cost data according to different size classes of operational holdings are not collected under this scheme
- (iii) The cost data are also not available separately for irrigated and unirrigated lands/high yielding and local variety of seeds grown.

4. LAND REFORMS AND LAND HOLDINGS IN KERALA

(S. Retnabai Ammal
K. Leelakumari)

In agriculture, operational holding still continues to be the fundamental unit of decision making and therefore information on the structure and characteristics of the holdings particularly in respect of marginal and small holdings is an essential pre-requisite for drawing out a well-planned policy for development of this sector. Periodical collection of data on vital aspects of holdings is necessary to assess the impact on socio-economic legislations enacted from time to time. In realisation of this fact, the Government of India conducted Agricultural Censuses during 1970-71, 1976-77 and 1980-81. The reports relating to the first two censuses have been published while the final tables relating to the third round of the survey will be released shortly.

On comparison of the census estimates with the data obtained from Timely Reporting Survey, it is revealed that the area seems to be an under-estimate. The reason is that the Census data are based on voluntary information supplied by the informants from their memory. Moreover, the details of the area belonging to members who are residing away may not be usually reported because of the apprehension about the enforcement of the provision of the Land Reforms Act.

5. ANIMAL HUSBANDRY STATISTICS IN KERALA

T. Janardhana Menon

Non-availability of reliable statistics on the various aspects of livestock is a major handicap in the formulation, implementation, monitoring and evaluation of the various livestock development programmes. The major source for Animal Husbandry Statistics is the Quinquennial Livestock

Census. Since the Livestock Census gives us data at 5 years interval only, it is essential to conduct sample surveys to estimate the annual and seasonal changes in livestock population and livestock products.

The Statistics Cell in the Animal Husbandry Department is collecting information on prices of livestock and their products and cattle feed, slaughter statistics relating to organised sector, export and import data on livestock and their products by rail, activities of the departmental livestock and poultry farms, ICD projects etc., and publishes them in the Annual Animal Husbandry Statistics Bulletin.

Besides, Benchmark and Assessment surveys on ICD projects, Integrated Sample Surveys for estimation of major livestock products, Disease Surveys to find out the various types of diseases of animals and the consequent economic loss etc., are also being conducted by the Statistics Cell of the Animal Husbandry Department.

The Government of India has proposed to conduct Sample Surveys with enlarged sample size in our State from 1983-84 onwards to work out the district-wise and season-wise estimates of livestock numbers and their products.

Periodic studies should be conducted to estimate the Cost of Production of livestock products, to study the impact of the various special Animal Husbandry programmes to the weaker sections of the society, to estimate the employment potential of livestock and poultry keeping in rural areas etc. Also category-wise technical manpower available in the sector, future annual requirement and attrition rate under each category have to be prepared annually which is essential for manpower planning.

Much of the data for the purpose of livestock development and planning has to be necessarily collected through sample surveys/special studies. This will be possible only if the statistical cells in the concerned departments are properly staffed and strengthened from time to time according to necessity.

6. FISHERY STATISTICS— DATA GAPS AND SUGGESTIONS FOR IMPROVEMENT

T. R. Thankappan Achari
N. Vikraman Nair
A. M. Joseph

The authors after listing the data availability on the fisheries sector proceed to examine the existing methodology followed in data collection by different agencies like Central Marine Fisheries Research Institute, Marine Products Export Promotion Council and the Directorate of Fisheries. Some of the gaps in fishery statistics mentioned by the authors are: (i) the absence of village-wise data on Catch Statistics according to fishing gear and fishing craft, (ii) absence of effective machinery for supervision of the statistical work of the Sub Inspectors of the Fisheries Department, (iii) non-reliability of the Price Statistics reported on different

species of fish, and (iv) the discrepancies noticed regarding inventory statistics on fishing crafts and gear thrown out by various livestock censuses. The authors also make some important suggestions for improving the data gaps in fishery statistics.

7. FOREST STATISTICS IN KERALA

G. Somasekharan Nair

The paper mentions the place of forestry in the State's economy and describes the methods adopted at present for collection of forest statistics which is obtained mainly as a by-product of the administration. It is mentioned therein that there is need for enlarging the scope and coverage of forest statistics especially at this stage when the forest has lost nearly forty per cent of its area during the past four decades. Pointing out the major discrepancies and defects in the available forest statistics, the paper ends with a brief mention of the major data gaps of the sector. The major gaps are information on unauthorised removals of produces from forest areas, details of agricultural crops grown in forest areas, prices of timber and firewood in the private depots and availability of timber and firewood in non-forest areas. The paper concludes by mentioning the importance of having reliable data on this sector which has been neglected in the past, especially with the implementation of the new Social Forestry Programme.

8. FORESTRY PLANNING IN KERALA: DO WE HAVE ADEQUATE DATA

Dr. C. T. S. Nair
P. N. Krishnankutty

This paper identifies the nature of data required for scientific forest management. The major resources of data on forestry are the administrative records of the Forest Department. Pointing out some of the discrepancies in the materials available at present, it is stated that the existing data are far from adequate. Accessibility of information is another major problem. Data on consumption and requirement of major forest produces like timber and firewood are still lacking.

The paper concludes by stating that scientific management of forest requires data pertaining to forest environment and on the environment external to forest and by suggesting short and long term measures to overcome the present situation.

9. DATA BASE OF PLANTATION CROPS IN KERALA

(UPASI)

Plantation crops are the only organised sector where the data base is quite sound. The development of the four major plantation crops viz. tea, coffee, rubber and cardamom is controlled by the Central Government through the respective Commodity Boards. A wide range of details including area under the crop once repanted, production, disposal exports and price required by the Commodity Boards are submitted by individual estates regularly. The major gaps in Statistics relate to the domestic consumption of major plantation crops. Regarding tea, coffee and cardamom, no reliable Statistics relating to domestic

consumption are available. The only exception is rubber for which the data relating to domestic consumption are available with the Rubber Board.

10. DATA BASE FOR CARDAMOM PLANTATION INDUSTRY IN KERALA

N. E. Cheriyanjunji

In this paper, the author reviews the existing methods followed for the collection of data on area under and production of cardamom and suggests measures for improving it. The area under cardamom is estimated from the statutory returns submitted by the growers. The estimate is defective since there are a large number of unregistered growers. The additional planting and conversion to other crops are also not accounted. To improve the area estimates and to fill in the data gaps in employment, ownership pattern etc., the author favours a census of cardamom estates.

Estimates on production are now built up from market sales data, i.e. by summing up the quantities sold in auction and directly outside auction. The estimates have limited use since (i) they do not give taluk-wise production, and (ii) they become available only after the season is over. To overcome this, the author suggests holding a sample survey of cardamom estates.

11. DATA BASE ON THE PLANTATION SECTOR OF KERALA

Dr. P. T. Joseph

In this paper Dr. Joseph reviews the data system for the four important plantation crops viz. rubber, tea, coffee and cardamom. In the existing system, the primary responsibility for collection and dissemination of data relating to area, production, employment, prices and exports rests with the respective Commodity Boards. The source of data for estimating the first four variables is the returns submitted by growers/producers. Even though the field officers of the Board do some sample checks, the quality of data made available is not upto the mark. As regards prices, the State Directorate of Economics and Statistics also collects and publishes the wholesale prices of these commodities of selected centres.

The main gaps in the data system identified relate to (i) socio-economic conditions of plantation labour, (ii) cost of cultivation/production, (iii) age-wise distribution of plants/area, (iv) size distribution of plantation holdings and (v) wage structure. The paper concludes with suggestions for improving the data system.

12. INFORMATION FROM AGRICULTURAL FIELD EXPERIMENTS AS DATA BASE FOR DEVELOPMENT PLANS

R. Balakrishnan Asan

The paper expresses the view that data on agricultural sector published by the Directorate of Economic and Statistics and other Governmental agencies

are not sufficient to meet the requirements of agricultural scientists and researchers. The author recommends that there should be some agency to organise a centre for collection, storage and retrieval of information from agricultural field experiments conducted in various research institutions like KAU, CPCRI, CTCRI etc. Such information system may help in drawing up development plans for the State and also financing research schemes of practical utility on a priority basis.

13. FACTS AND FIGURES ABOUT TOBACCO CULTIVATION IN CANNANORE DISTRICT

P. K. Ramakrishnan Nair

In Kerala, cultivation of tobacco on a commercial scale is confined to certain areas of Cannanore district. The area under the crop has been continuously decreasing since 1971. The author analyses the facts and figures and comes to the conclusion that the main reason for the decline is that the cultivation of the crop is unremunerative.

SESSION II

ENERGY, INDUSTRY, TRANSPORT AND TRADE

1 RURAL ELECTRIFICATION STATISTICS

K. N. G. K. Sastry

The impact of electricity has not yet been seriously felt in the rural sector. As on date there are nearly 500 kara: where electricity has not yet reached.

One of the important uses of electricity is for energisation of pumpset for irrigation. It is necessary to maintain statistics of pumpset energisation with details of number, horse power, category of farm, social group of owner etc., so that the progress achieved can be evaluated.

Another important programme of the Kerala State Electricity Board is provision of electricity to areas having concentration of SC/ST. The progress in this area has also to be watched.

It is necessary to compile and present data on generation, transmission and distribution of energy in a manner useful for planning purposes. Some of these data may be required at the block/town or further lower levels with break up for rural and urban areas.

The author closes the paper with a suggestion to utilise the services of professional statisticians in the Directorate of Economics and Statistics to organise the statistical work in the Kerala State Electricity Board.

2 DATA BASE OF KERALA ECONOMY—THE NEGLECTED ENERGY SECTOR

P. P. Pillai

The paper highlights the inadequacy of statistics relating to the energy sector. Energy can be

classified as commercial (electricity, coal and gas) and non-commercial (fuel wood, agricultural waste and animal waste). The commercial energy production sector of Kerala consists of only electricity. We have fairly good data on production and consumption of electricity. But data on consumption of other forms of commercial energy are scanty. As for non-commercial energy there are no data either on production or consumption. The following suggestions are made to improve the data base.

(i) The data on electricity consumption should be published at regional and sub-regional levels also.

(ii) Kerala State Electricity Board should collect and publish industry wise consumption of electricity.

(iii) Data on import/trade of coal, oil and gas should be collected and published.

(iv) Consumption of non-commercial form of energy should be studied

3 INDUSTRIAL STATISTICS

G. Ramachandran Nair

C. Zaimaba

The primary sources of industrial statistics can broadly be categorised as (i) regular census and surveys (ii) ad hoc census and surveys and (iii) records of administrative departments.

The Annual Survey of Industries (ASI) and the follow up surveys of the Economic Census come under the first category. The ASI is an annual census covering all the registered factories, while the surveys under Economic Census are periodic sample. The ASI and the Economic Census attempt to collect very detailed data on the structure and working of industries. The results of the ASI are released with a time lag of three to four years. The first in the series of sample surveys under the Economic Census Scheme was conducted in 1978-79., in which both the National Sample Survey Organisation and the State Directorate participated. The data collected in these surveys are being processed at the Computer Centre of the Department of Statistics, Government of India. The next survey is scheduled for 1984. The results of ASI and Economic Census when combined together will give most of the data required for planning and for national income computation.

Among the ad hoc surveys, the most important are the Census of Small Scale Industries, Census of Handlooms, Survey on Coir Workers and the Raw Materials Survey. The Census of Small Scale Industries give basic data on the small scale industrial units registered with the Industries Department upto the time of the census. These data are now held in computer tapes at the office of the Small Scale Industries Development Commissioner, Government of India and are being updated periodically using the data in the new registration forms and the Annual Returns of Industrial Units. The

survey on Coir Workers conducted in 1981, has provided a list of all coir units in the State which can be used as a basic frame for indepth studies. The data from Raw Materials Survey when tabulated will give detailed information on capacity of units, sources and requirement of raw materials, sources of finance etc.

The Administrative Departments of Government and their sub-units generate data on a variety of characteristics, as a bye-product of their day to day activities. However these relate mainly to the industrial units receiving some kind of assistance from Government. The data when classified and tabulated will be of immense help in monitoring and evaluation.

The Directorate of Economics and Statistics compute a quarterly index of industrial production covering the factories in the Census sector of the ASI. The possibility of enlarging the scope and coverage of this series should be examined.

No concerted effort has so far been made at the State level to organise the collection, compilation and dissemination of industrial statistics. In view of the growing importance of this sector, a system for regular flow of data has to be designed and developed taking into consideration the characteristics of the sector and the information needs of the users, both present and potential.

4. THE INDUSTRIAL SECTOR AND ITS DATA REQUIREMENT

R. Vasukutty

The paper begins by enumerating the various data sources which may be classified as (i) ASI, (ii) Surveys conducted by the Directorate of Economics and Statistics; and (iii) Statistics collected by other departments.

The paper points out that the data from Handloom and Coir Directorates do not cover the units outside the co-operative sector. Similarly the data in the Directorate of Industries and Commerce cover only the registered units. The paper concludes with suggestions for generating timely data for block level planning

5. DATA BASE OF TRADITIONAL INDUSTRIES IN KERALA: THE CASE OF COIR AND CASHEW

Thomas Issac
K. P. Kannan

In this paper the authors review the various data sources for coir and cashew industries.

In coir industry the data available on employment, wages, production etc., are either very old and/or unreliable.

In cashew industry, the position is better. The main source of data is the Annual Survey of Industries, but the time lag in releasing the results reduces its usefulness. Since the practice of cottage

processing is prevalent, the figures available do not have full coverage of the industry.

6. DATA GAPS AND PROBLEMS OF DATA COLLECTION WITH REFERENCE TO SMALL SCALE INDUSTRIES

N. Mohan Pillai

The paper reviews the work done by the Small Industries Service Institute (SISI) in building a data base for the small industries. Industrial potentiality surveys, feasibility studies of products, market surveys etc., are some of the major studies undertaken by the SISI. They also collect production statistics for the computation of an index of production of small scale sector. They have conducted special surveys like sickness in industry, impact of reliefs granted by Government etc.

The Institute requires data on number, capacity, production, investment, employment etc., of industries and the demand for various products. At present there is no single source from where these can be obtained. The author suggests that the final figures should be presented on the basis of categorisation by investment (i. e., large, medium and small scale).

7. DATA SITUATION IN TRANSPORT SECTOR

B. A. Prakash

In this paper the author reviews the current data base of the transport sector, identifying the data gaps, and suggests improvements. The paper also includes a review of the existing literature on the subject. The author is of the view that for preparing block, district and state plans and for formulating policies and projects for integrated infrastructural development, the data base is very weak. But a wealth of information is available in the case of centrally controlled sectors like roadways, air transport and Cochin Port. In the case of State controlled sectors, public road transport is the only one for which a good deal of information is available. A serious deficiency is the lack of block-wise and taluk-wise figures. For private sector road transport we do not have much information except the number of buses and other vehicles registered with regional transport authorities. The data position on inland water transport is also too inadequate. The author suggests the following course of action for improving the data base in the transport sector.

(i) the Departments which are connected with roads and other motor vehicles registration may collect detailed statistics enabling them to publish block-wise/ taluk-wise statistics.

(ii) In the case of private passenger transport more statistics may be collected to cover aspects such as area of operation, volume of operations, quality of service etc.

(iii) In the case of private goods transport information may be collected on area operated, volume, of operation etc.

(iv) In the case of other categories of vehicles like taxis, auto rickshaws, tractor-trailer etc., information may be collected on their volume of operation.

7 TRANSPORT STATISTICS—A REVIEW OF THE PRESENT DATA BASE

Abdul Wahab

The author begins the analysis by dividing the transport sector into three portions, viz., State sector, the organised private sector and the unorganised private sector. The State sector is thoroughly covered by the regular statistics, the organised private sector only partly and the unorganised sector not covered at all. The author says that adequate Statistics are available only for the public sector road transport undertakings. Regarding road Statistics, a number of departments like State P. W. D. (B & R), National Highway Wing, Project Wing, Panchayats, Municipalities etc., are involved in providing data. It is observed that there is no regular and systematic flow of data from the lower levels and there is no system to register and maintain basic data at these levels. Regarding road transport, very little information is collected and published on goods and passenger transport in the private sector. There is little information regarding the output of goods vehicles in terms of tonnage carried and tonne kilometres performed. These are not collected and presented by any agency in the State on a regular basis. The author recommends that goods transport surveys are to be conducted every year at important locations in the State. All data collection relating to Motor Transport Statistics needs co-ordination at State level. It is also suggested that the feasibility of collection and compilation of statistics of water borne goods by country crafts may also be explored.

8. EXPORT IMPORT STATISTICS

R. P. Nair

The data gaps in export-import statistics can be analysed under three categories, viz., (i) sea-borne trade, which deals mainly with foreign exports and imports of the State, (ii) rail-borne statistics and (iii) movement of goods by road. Under the first category, sea-borne trade, the main problem is one of comparability of the available statistics rather than gaps because sea-borne trade statistics are published by three agencies viz., (i) Directorate of Economics and Statistics, (ii) Chamber of Commerce and Industry and (iii) Export Promotion Councils/Commodity Board of the Government of India. Though these three agencies obtain data basically from one source viz., the Customs Returns, the Statistics published by them reveal some differences. To overcome this difficulty a co-ordinated action of these three data producing agencies is an urgent necessity.

Regarding rail borne trade statistics, gaps are more than the availability. Except for few years upto 1968, no time series data on rail borne trade relating to Kerala is available. From 1969 onwards rail borne statistics are not systematically collected

and processed by any single agency in the State on a regular basis.

Data relating to the movement of goods by road form the weakest link in the whole system of export-import trade statistics. The only sources of data in this regard are the two rounds of the survey (one conducted during 1975-76 and the other in 1980-81) on inter-State movement of goods by road conducted by the Directorate of Economics and Statistics in important border checkpoints of the State. Only 1975-76 survey results are available at present. While the survey data are there only for two years, the information relating to movement of goods by road are available at all the border checkpoints and arrangements have to be made to obtain this valuable information and process them on a regular basis.

9. COMMODITY FLOW STATISTICS

R. Ramalingom

The author begins by stating that statistics on commodity flows is one of the areas where there is some data gap. Fairly accurate statistics relating to foreign trade are regularly published. Regarding coastal trade, the information is covered by the publication 'Statistics of the Coastal Trade of India'. Data on quantity of goods transported by rail are available with railway authorities. On the basis of this information it is possible to compute the statistics on originating traffic and terminating traffic in respect of each railway station in Kerala. It is therefore necessary to make a standing arrangement with the Railways for obtaining the rail traffic data regularly. Regarding the commodity flow data by roads there is no source which can supply the information regularly. Usually the road flow data is collected through origin-destination surveys in the important border checkpoints. The main source of information in this regard is the declaration forms filed at the checkpoints by the vehicle operators. At present these data are published only once in five years. It is suggested that in view of the importance of commodity flow statistics, it is desirable to bring out an annual publication 'Commodity Flow Statistics in Kerala', incorporating road borne, rail borne and water-borne statistics of Kerala.

SESSION III

IRRIGATION STATISTICS

1. IRRIGATION STATISTICS IN KERALA

C. J. Joseph

Shri C. J. Joseph in his paper attempts a critical assessment of the availability of irrigation statistics in Kerala and examines its adequacy, reliability and comparability to locate the data gaps in irrigation statistics and suggests ways and means to improve the quality of data. (i) data availability prior to the formation of Kerala. The author divides the period of analysis into two (ii) data availability after the formation of Kerala in 1956.

The data base of the former period was obviously weak owing to the nature of the administrative set

up existed at that time. The second period corresponds with an era of active development planning and well thought out policies were enunciated for the collection, compilation and maintenance of data on all sectors of the economy. Important documents which provide irrigation statistics published during this period are (i) Agricultural Statistics in Kerala, published in 1975, (ii) Statistics for Planning, published in 1977 and in 1980. Published documents of the P. W. D. (Irrigation Wing) of the Government of Kerala provide another important source of Irrigation Statistics. Important among this is the publication 'Irrigation Projects of Kerala' - Published in 1974. But these documents fail to give exact data on area benefited by irrigation. This is necessary to ensure comparability with rest of India.

2. DATA ON IRRIGATION STATISTICS

S. Sthanukrishna Iyer

Rainfall forms to be the main source of water for crop cultivation in Kerala. There are also numerous rivers and streams spread over the State. In spite of the availability of heavy rainfall and numerous rivers the necessity of irrigation is felt for watering the crops at various stages. Paddy which is the main crop is cultivated in three stages of which virippu gets water from rain and the other two depend on irrigation.

Data on irrigation are available from two different sources. Details relating to projects such as irrigation potential, requirement of water for irrigating wet and garden lands in the basin etc., are available with the P. W. D. The sample surveys conducted by the Directorate of Economics and Statistics provide estimates of area irrigated by different sources and area under different crops irrigated.

3. LINKING IRRIGATION WITH DEVELOPMENT THE KERALA EXPERIENCE

K. Narayanan Nair
D. Narayana

In this paper, the authors examine two basic issues: (i) the impact of irrigation in stabilising and increasing the yields of paddy crop, and (ii) the factors hindering the proper use of water for paddy cultivation. By making use of the data on paddy yields in the irrigated and unirrigated taluks, the authors tried to provide some idea about the impact of irrigation on paddy production. The following findings emerged from this paper:

(i) The impact of irrigation in terms of stabilising productivity of paddy lands and increasing it over time is seen to be only marginal in the State.

(ii) The lack of any significant influence of irrigation on crop yields is due to the poor management of irrigation water.

Many factors are responsible for the inefficient management of irrigation water. Firstly, no attempt is made so far for improving the management of agricultural land with the result that irrigation projects are contributing to water logging and this process results in wastage of irrigation water.

Secondly, the management of irrigation projects are inefficient in terms of supplying water from the main canals to the farmers' fields and regulating the storage and discharge of water from the head works taking into account the intensity and spread of rainfall in the command area and the crop water requirements.

SESSION IV POPULATION HEALTH AND EDUCATION

1. POPULATION PROJECTIONS FOR DISTRICT AND LOWER LEVELS

Dr. R. S. Kurup

In this paper, methods for population projections at district level have been explained. The same methods can be applied for lower levels. The emphasis is on the component methods wherein components of population are to be separately taken and hypotheses for fertility, mortality and migration have to be formed. The use of the data from vital statistics registration and sample registration have been indicated. Migration data available from the surveys conducted by the Directorate of Economics and Statistics will be useful for forming a base for formulating migration hypothesis. Other methods like the ratio to state population have also been indicated.

2. DATA BASE FOR THE STUDY OF GROWTH AND STRUCTURE OF POPULATION OF KERALA

Dr. R. Ramkumar

Dr. Ramkumar in this paper indicates the gaps in the total data system under population statistics and concludes that the inadequacies in the system make it difficult for a researcher to derive continuous and comprehensive picture of the changing demographic profile of Kerala with the available data. Dr. Ramkumar lists the demographic data needed to study the growth and structure of population as follows:

(1) population size from state level up to the smallest unit;

(2) distribution by age, sex and marital status;

(3) number of births and deaths for specific period like an year at all levels right from the smallest unit and details relating to events;

(4) volume of displacement of population with details of the places of origin and destination and characteristics of the migrants;

(5) households-size and type; and

(6) details on the size and characteristics of specific groups like working population, school going population etc.

Among the inadequacies in the data system Dr. Ramkumar mentions:

(1) the boundary changes that occur between censuses and consequent difficulty in studying the size and structure of population;

- (2) inadequate coverage of the data on births, deaths and marriages thrown up by the Vital Registration system.
- (3) lack of precise data on birth and death rates and migration during the intercensal period;
- (4) change in definitions between censuses and lack of uniformity among sample studies reducing the utility of the data for a time-series study;
- (5) non-availability of data on caste in the census publications.

3. POPULATION STATISTICS

M. K. Bhaskara Pillai

Planning for Economic Development requires population statistics. Morbidity and Mortality Statistics is essential both for launching Public Health Programmes and for the appraisal of their impact. Census is the main source of population statistics. Details like vital rates, employment, literacy, sex-wise population etc., are obtained in the census.

In order to get birth rate, death rate and infant mortality rate etc., vital statistics is being collected in the state through civil registration. But the registration system is incomplete and hence reliable data is hardly available through civil registration. For estimating the correct residential vital rates spot check has been introduced in three corporations, thirty municipalities and one township. Model registration survey on cause of death has been introduced in the State and it is in operation in forty Primary Health Centres since 1-1-1983. In the case of urban areas cause of death statistics is collected in three Corporations and two municipalities of Quilon and Alleppey by the Deputy Health Officers.

In order to get reliable estimates of births, deaths and growth of population, sample registration scheme has been introduced in 150 rural samples of the State. Half Yearly Survey is also conducted. These two sets of information are compared and verified. The final result is sent to the Registrar General and the report is also published by the Directorate of Economics and Statistics.

Population statistics through census will be available only once in ten years. For estimating birth rate, death rate and annual estimates of population we have to depend on sample registration data. Therefore efforts should be made to make the people knowledgeable about civil registration. The compulsory production of birth certificate at the time of admission to school may be introduced. The certification of cause of death should also be pursued.

4. HEALTH STATISTICS IN KERALA

Dr. P. G. K. Panikkar

Dr. Panikkar examines three categories of health statistics viz., (i) data relating to type of diseases, their rates of incidence and the general and age-specific mortality rates; (ii) data regarding the various physical and environmental factors such

as housing, water supply, and sanitation which determine the health status; and (iii) data relating to health care facilities and their utilisation, man-power on health services and their distribution, supply of drugs, financial allocation to health services etc.

Dr. Panikkar observes that the most glaring gap in health statistics is in respect of morbidity. He is of opinion that both the coverage and quantity of morbidity statistics have to be improved. Since Kerala has a wide net work of medical care institutions in the public sector, and the rate of their utilisation is high it is possible to generate the necessary morbidity statistics with reasonable level of accuracy by toning up the process of record keeping and compilation of the data at the primary unit level. To supplement the data from hospital records, Dr. Panikkar suggests the organisation of micro level surveys using technically competent investigators.

5. EDUCATIONAL STATISTICS

Dr. P. R. Gopinathan Nair
Joseph Thomas

The authors begin the paper by the observations that the expansion of the educational sector should form part of the overall economic planning. But surprisingly Kerala has a higher rate of growth at various stages and branches of education with little planning and less conscious policy. In such a set up educational data may not be of great importance for planning purposes. We require data on two types of flows: one, the material flows and two, the population flows. In Kerala, data are available on the demographic processes from the decennial population censuses and sample registration surveys. Data on educational processes are reported by the Director of Public Instruction, the Universities and the Directorates of Technical and Collegiate Education. But there are several important items which are not covered in the regular data collection programme such as data on non-formal education, enrolment in unrecognised institutions, private expenditure on education, family background of students and teachers, degree of utilisation of staff, and the stock of physical capital in the educational sector and the annual additions to it. The data on educated man power supply is also weak in view of migration which is quite important for Kerala. Another serious limitation of the educational statistics is the absence of a co-ordinating agency to collect data from the different types and stages of education and the paucity of arrangements to publish the data.

6. EDUCATIONAL STATISTICS

Dr. Vasantha Ramkumar

The author in this paper makes an attempt to survey the available statistical data on education in Kerala collected and published by different agencies and to assess the extent to which the data can provide proper base for decision making in economic and social planning. The author is of the view that the objective and requirements of educational planning have not been well defined in our country and important decisions have been taken without proper data base.

After reviewing the present data availability in the field of education, Mrs. Ramkumar dwells in great detail on the gaps and limitations of the educational statistics. The following are the important of them:

(i) There is disparity in data collected by different agencies for different purposes with different periodicity. There is also time lag, in publishing the data.

(ii) There is lack of continuity in data related to stock and flow statistics.

(iii) The available data on expenditure on education do not cover private agencies. Similarly community participants through land grants etc., is completely omitted.

(iv) The different basis adopted by different agencies for data collection create difficulties in the calculation of ratios like coefficient of inequality.

(v) There is non-availability of data on adult-education.

The author has put forth several suggestions for improvement of educational statistics including the suggestion for making the individual household as the unit for collective of educational statistics.

7 INFORMATION BASE OF THE TRIBAL ECONOMY OF KERALA

M. Kumhaman

The objective of this paper is to assess the various sources of data pertaining to the tribal economy of Kerala which are required for the formulations of programmes of tribal welfare and development and also to understand the extent to which the existing statistical base justifies the various programmes of tribal welfare and development. The gaps and inconsistencies on the available data have also been identified. An exhaustive list of the available data on Scheduled Tribe is presented by the author with a critical appraisal. The author observes that inter-temporal and inter-local comparisons of socio-economic aspects of the Scheduled Tribes of Kerala pose formidable problems owing to the several inconsistencies in the available data. No attempt is so far made to compile statistics on age-wise and class-wise distribution of tribal students. This information is particularly important in view of the great emphasis given to education in the package of tribal welfare programme. Also data relating to Tribes are lacking in the fields of nutrition and health standards, characteristics of tribal agrarian households such as land possessed/cultivated, wage rates and earnings, irrigation facilities in the tribal areas and labour relations in the tribal farms.

8. SOURCE MATERIALS FOR UNDERSTANDING SCHEDULED CASTE CONDITIONS IN KERALA—A REVIEW

P. Sivanandan

An assessment of the available information about the scheduled castes in Kerala is attempted in this paper. The author broadly classifies the source material on Scheduled Castes in Kerala into three broad categories:

- (a) historical narration by individual scholars,
- (b) statistics collected and compiled by centralised agencies; and

- (c) Surveys undertaken by individual agencies.

The literature available in the first category gives emphasis on the Socio-economic and political inter-relation in its broad historical context. The second category provides information on the quantitative aspects mainly in the national perspective. The third category however is a synthesis of the two sets of approaches on specific environmental setting. A large body of historical materials relating to Scheduled Castes in Kerala are now available in published form. In the second category systematic collection of basic data seems to have begun with census operations. All India Rural Enquiry Reports published periodically form another source material under this category. The NSSO through its various rounds of investigation also furnishes valuable information on important economic variables pertaining to Scheduled Castes. Also the annual reports prepared by the Commissioner of Scheduled Caste and Scheduled Tribe contain both qualitative and quantitative information on their current status. At regional level also, this information is available in the administrative reports of the respective departments under State Government. Various surveys and studies conducted by agencies like Directorate of Economics and Statistics and Planning Board also form an important source material on Scheduled Caste conditions. Last category of information in this field is the surveys undertaken by individual scholars, which certainly enrich the understanding of the scheduled caste problems.

SESSION V:

HOUSING, LABOUR AND EMPLOYMENT

1. HOUSING IN KERALA—PROBLEMS AND PROGRAMMES

K. Thomas Poulose

According to the author, the first step to study the problem of housing in Kerala is to understand its nature, magnitude and location. Any scheme to wipe off the backlog of housing and to cope up with the increasing demand every year should include programmes for conservation by repairs and improvements of the existing stock and for putting up new houses in place of those which are fit for demolition and replacement. The author is of the view that no serious attempt has been made in this direction till now. The author makes an estimate of demand for housing in Kerala on the basis of certain assumptions like past trends, the available census and survey data and on this basis the total shortage of houses has been estimated as 7.5 lakhs. The author also reviews the existing housing activities in Kerala. There are sixteen agencies in the State which are engaged in housing activities. Among these, the Kerala State Housing Board plays a major role. About 30,000 houses are constructed in the State every year with Government assistance. The expenditure per year under Public Sector housing comes to nearly Rs. 12 crores. The future programme of housing as suggested by the author includes the conservation of the existing stock, sites and services scheme in Urban areas and aided schemes for weaker sections.

2. HOUSING STATISTICS

E. P. Raman Nampoothiri

The housing statistics unit of the Department was set up in 1967 at the instance of the National Building Organisation, Government of India. Since then, the unit has been collecting statistics on building constructions in both public and private sectors. The State P.W.D. is the source of information for public sector whereas the Directorate of Municipalities and the three corporations furnish data relating to urban private sector. Number of constructions, plinth area and floor area are the three items on which data are collected from these sources. The constructions are also classified by type viz. (1) residential, (2) industrial, (3) commercial (4) institutional and (5) Others. Besides, the Department is collecting directly prices of building materials and wage rates of building labour from all the Districts in the State. Building cost index numbers relating to M.I.G. houses for Trivandrum centre are also computed by the Department. It has been found that the average annual increase in the cost indices during the past decade is 20.3.

In addition to the housing statistics collected as mentioned above, comprehensive housing data are available from the decennial population census also. The total number of houses in the State in 1981 is 42.89 lakhs.

The major gaps and limitations of the existing system of housing statistics are (1) the non-coverage of rural private sector, (2) omissions of important items like cost of construction and plot area and (3) limiting the computation of cost index to Trivandrum centre. As regards census data, the main limitations are the delayed release of data and want of information for shorter periods than a decade.

A few suggestions for improvement have also been discussed in the paper.

3. AN INSIGHT INTO SOME ASPECTS OF LABOUR STATISTICS IN KERALA

Lillykutty K. Varghese

With the growth in the industrial units, the country has assumed new obligations, to increase the security and welfare amenities of the business community comprising both the employers and employees. In this context, the importance of collection and analysis of Labour Statistics needs hardly any emphasis. The primary object of collecting the data under the various labour enactments and administrative measures is to find out the extent to which the different provisions contained in the enactments are implemented in the States and the number of persons benefited.

This paper deals with the analysis of the statutory returns received from the factories registered under the Payment of Wages Act, 1936, the Industrial Dispute Act, 1947, the Factories Act, 1948, and the Maternity Benefit Act, 1961 and the non-statutory returns under monthly review of industrial disputes resulting in work stoppages, monthly reports on closures, lay off and retrenchment. The scope,

coverage, data base and limitations of the available statistics are presented in this paper. The major problems in analysing the data are the poor response and delay in getting the returns. In addition to these, returns received are incomplete and defective. Suggestions for bringing out qualitative and quantitative improvements in the available data are also given in this paper.

4. LABOUR SECTOR—DATA REQUIREMENTS

C. T. Sukumaran

This paper gives a detailed review of the statistics available on various aspects of labour pointing out the gaps and inadequacies in data for policy decisions. The main areas on which labour statistics are collected by the Labour Department are: (1) data relating to various aspects of industrial disputes; (2) data collected under the Trade Union Act; (3) data on Industrial Relations; (4) Statistics relating to the Minimum Wages; (5) data relating to shops and other commercial establishments; (6) data relating to Workmen's Compensation Act etc. In addition to this, certain welfare schemes are also administered by the Department the details of which are also available. Most important among them are subsidised Housing Scheme for Plantations Labour, Kerala Cashew Workers' Welfare Scheme, Kerala Coir Workers' Welfare Scheme etc.

5. DATA BASE FOR ESTIMATES OF EMPLOYMENT IN KERALA

Mridul Eapen
Chandra Mohan

The authors, in this paper, briefly discuss the existing sources of data on employment and also highlight the strength and weakness of the 1980 census of employment in Kerala conducted by the Directorate of Economics and Statistics. The major limitations of the decennial population census data, though comprehensive, is the changes made in the concept and definition of a worker in each census which makes inter censal comparison difficult. Also the census does not attempt a rigorous estimate of unemployed persons. The NSSO Surveys on Employment Unemployment is the second major source of data. But the NSS methodology has been strongly criticised on the ground that it is mainly one-dimensional measure of unemployment and is not meaningful in a country like ours where unemployment has a heterogeneous character. Though the 27th and 32nd round made a conceptual improvement, the data still do not enhance the phenomenon of employment/unemployment. Other sources of data in this field are Employment Exchange Statistics, Rural Labour Reports, Employment Market Informations and other Micro Surveys conducted by individual scholars. The latest available information in this field is the Census of Housing and Employment conducted in 1980 by the Directorate of Economics and Statistics. One novel feature is that this publication gives estimates at block and town level, which is helpful for bringing out inter-regional differences. This source makes a simpler and neater approach in classifying the employed into permanently employed and not permanently employed than the NSS categorisation, although further probing questions would have been helpful. Another useful aspect is the light it throws on emigration.

6. DATA ON EMPLOYMENT AND MANPOWER

P. C. Jain

Manpower data is at present collected by agencies like the census organisation, National Sample Survey Organisation, Employment and Market Information, Universities, Directorate of Economics and Statistics etc. Available information on employment and manpower includes data on working force, Status distribution, employment, unemployment, under employment, some estimates of migration and certain studies on important manpower problems of the state. Data on stock, intake and outturn, wastage and utilisation of important technical manpower categories are also collected and maintained upto date. "Housing and Employment Survey-1980" and "Census of State Government Employees-1980" are sources of manpower data. Data gaps are many. Data from various sources are non-comparable, not dissiminated in time and not effectively co-ordinated. Estimation of demand and employment generation are not systematic. Manpower data are insufficient to meet the research needs. A better co-ordination of available data is the first step of re-organising the data base.

7. EMPLOYMENT AND MANPOWER STATISTICS

N. Gopalakrishnan Nair

The author expresses the view that in a situation of surplus manpower, as we have in our country, the gap between supply and demand can be reduced by operating from the demand side by attempting to maximise employment content of the plans in a selective manner. The data requirements for this purpose are: (i) labour force classified according to age, sex and educational qualifications, (ii) industrial and occupational profile of the employed; and (iii) demographic and educational profile of the unemployed. The main sources of the above data are the decennial censuses, NSS, the reports of the Directorate of Employment and Training and the ad hoc surveys conducted by the Directorate of Economics and Statistics. One serious gap in these data is the lack of periodical estimates of category-wise emigration rates. The author suggests that this can be collected through the Socio-economic surveys conducted by the Economics and Statistics Directorate by including few questions on the subject. Similarly, information on attrition rates (category-wise) is also absolutely essential.

The author admits that the estimation of demand for manpower for future years poses some problems. The Man Power Officers in the major departments could attempt this exercise with the assistance of the implementing officers. It is recommended in this paper for the constitution of a committee consisting of the Director, Directorate of Economics and Statistics and representatives of the user Departments to assign priorities for the surveys to be undertaken in this field.

SESSION VI

STATE INCOME, NATIONAL SAMPLE SURVEYS, PRICES AND WAGES

1. GROWTH AND STRUCTURAL CHANGES OF THE STATE INCOME OF KERALA

N. George John

This paper gives a comprehensive account of the concepts, methodology, data availability and also an analysis of the changes in State Income. The analysis is done on the basis of the revised estimates for the period 1970-71 to 1980-81 and brings out the shifts in the sectoral shares in state income during the period. It is seen that the primary sector remained stagnant over the period and a shift is observed from the primary and secondary sectors to the tertiary sector. The paper also compares the per capita income of the state with that of the nation as a whole. In addition, the paper gives the data sources of the estimates of Net State Domestic Product.

2. THE 'UNOBSERVED SECTOR' OF THE NATIONAL ACCOUNTING DATA BASE

Dr. T. Edwin

The paper identifies the existence of the "unobserved, unmeasured, non-reporting, under-reporting, underground, untaxed, unofficial, hidden or the evasive sector". This constitutes a gap in the National Accounting Data. The sector has two components, (i) the monetary or market sector and (ii) the non-monetary sector. The former includes such illegal and spurious activities as usurious money lending, real estate transactions, multi-storey buildings, private practice by professionals etc. In the latter group, real funds and services are produced but are either directly consumed by the producing unit or are informally exchanged through barter by households, firms and voluntary institutions. The unquantified sector is quite sizable and engender a situation where economists, policy makers and people at large respond to false economic signals. In order to overcome this the author advocates the introduction of a correction factor of 25 to 30 per cent in the State Income accounting so as to credit for the above sector. Alternatively there must be a competent official organisation which must be fully equipped to make realistic estimates of the sector.

3. NATIONAL SAMPLE SURVEY DATA

G. Ramachandran Nair
A. Abdul Gafoor

An account of the NSS data that are available through the hitherto thirty-eight rounds of sample surveys since its inception in 1950 is given in this paper. Although initially NSS was envisaged to fill in the gaps in data required for National income computation, gradually its scope widened to meet the needs of planning and is a rich mine of data. NSS generally uses a stratified two stage sampling design with census villages and urban blocks as

first stage units and households (or establishments) as second stage units. Every survey consists of a Central Sample (under the NSSO) and a matching state sample (under the State Directorate of Economics and Statistics). The paper enlists the subjects covered under the respective rounds. Two issues of concern raised on the paper are the time lag involved in the processing and dissemination of NSS data and the loss of some of the data due to inadequate facilities of storage. The authors make a plea for storage in magnetic tapes and the processing of data in computer.

4. A NOTE ON AGRICULTURAL PRICE STATISTICS IN KERALA

D. Narayana

The main concern of this paper is the relative prices that are received by different groups. The author confines his attention to different size groups of farmers and examines this aspect with respect to rubber, tea and cardamom. According to him these goods are transacted within the regulated market and under the purview of the commodity boards. It should be possible for these boards to publish on a selective basis some figures on lot sizes and prices, minimum and maximum lot sizes and minimum/maximum prices. This step, he feels, will throw some light on the question as to which sections of producers receive what prices and who are kept out of the regulated markets.

5. A REVIEW OF THE PRESENT DATA BASE OF MARKET PRICES AND COMPUTATION OF INDICES

E. Easwarankutty
A. Meera Sahib
T. Divakaran Nair

Price is an integral part of national income accounting in any economy. However, it has wider applications and perspectives than this. These aspects and in their context the data base and requirements are discussed in the paper, with particular mention to the data position, their sources and methodology of collection. The methods of computation of various index numbers and the changes that have taken place in the methodology from time to time have also been outlined. The paper has indicated the trend in general price level over time. One area where improvement in methodology is needed is in the case of parity index. This indicator of relative price ratios of the transactions between the agricultural sector and the non-agricultural sector is outmoded in its present methodology; the base is far too remote, all the primary products are not included in the prices received, consumption expenditure of working class is not realistic for the agriculturists and several important modern inputs are omitted from the cost of cultivation.

6. DATA FOR PRICE ANALYSIS—A SYNOPSIS VIEW

George Mathai

The paper identifies through a frame work the strength and weakness of the data base on price.

In our mixed economy where the price mechanism is dominantly present but amended by the planning process, the data requirements are for the study of the market forces, for their regulation and for planning. In all these the relative benefits and harms of price variations are important. Price variations could be viewed from the angle of different sectors and sub sectors, income groups, regions, commodity groups and grades and time periods. The policy measures emerging from these variations are to be guided by the goals of planning. The paper assesses the data position from these angles. Apart from certain sectoral and time series deficiencies in data, data gaps on both demand side and supply side are identified. Data are required not only for estimation of market demand but also normative demand and on the basis of these and supply information 'budgeting' can be undertaken especially for items like food. The paper also puts forth some methodological suggestions for assessment of such variables as income elasticity of demand, marketable surplus, extent of hoarding and farm investment response to price changes. From the point of view of prices used for region specific planning also there are certain major gaps. These relate to shadow prices and market prices of land, labour and private capital prices of three of the factors of production. They are not adequately taken cognizance of in the planning exercises mainly due to lack of correct data. The neglect, however, is serious as these prices affect the relative income positions of different sectors and groups of people, very often taking away the economy from the path set by the goals of planning. Nevertheless data can be collected on them only after enough discussion elapses on the required coverage and methodologies.

7. WAGE STRUCTURE AND ECONOMIC DEVELOPMENT

K. Rama Varma
P. L. Sreedevi
J. Saraswathy

Wage is the price of labour. The data base of this aspect is discussed in this paper. The paper has examined in detail the present availability of data, the special surveys conducted in this area and the computation of relevant indices. In addition the authors have made an analysis with the time series data available, the trend in wages in the various sectors and subsectors. The sectors where data on wages are lacking are the plantation sector and the industrial sector. While in the case of unorganised industrial sector, efforts are yet to materialise for collection of wage data on a regular basis, in the case of the plantation sector due to the gross non-response from the plantation authorities and in the case of organised industrial sector due to inadequate response the data availability is not satisfactory.

8. NEEDED STATISTICS FOR CIVIL SUPPLIES ADMINISTRATION

A. Shahul Hameed

This paper examines an issue closely related to the price aspect viz., public distribution and the

data requirements in this respect. Information is needed on the basic pattern of the consumption of rationed commodities like rice, wheat, sugar and kerosene, per capita consumption of items of general household consumption, production and availability (considering seasonal variations also), trade statistics on a continuous basis, price trends and price statistics.

SESSION VII

1. DATA BASE OF INSTITUTIONAL FINANCE

K. K. George

Describing briefly the present and future roles of institutional finance in the economy, the paper suggests that more studies on its flow are necessary for taking policy decisions, especially in the present context when all the State Governments in India suffer from acute shortage of budgetary funds. The main features of institutional finance data, according to the paper, are relatively higher degree of accuracy and lesser time lag in availability. The paper enumerates the various sources of data on institutional finance and ends with a suggestion that the Directorate of Economics and Statistics may initiate action to collect these data from the various sources.

2. PLAN PERFORMANCE IN KERALA

S. Krishna Iyer

A review of the Plan achievements in the period 1951-81 and the prospects of the Sixth Plan, which is half-way through by now, is made in this paper. In spite of the developmental efforts, the overall growth rate of the State's economy has been lagging behind that of the national economy. Nothing much could be done to solve the problem of unemployment, which has assumed alarming proportion. 16.76 per cent of the Plan expenditure so far has been on agriculture, where the emphasis continues to be on crop production. Despite the promotional efforts by various Government agencies, the pace of industrialisation has not picked up and industrial progress leaves much to be desired. Though there are some achievements to speak of the transport sector, a co-ordinated approach, towards the development of an integrated transport network in the State, has been lacking. In the field of education, the expenditure incurred is 23.2 per cent of the aggregate and the State is far ahead of others in respect of literacy. The State also ranks first among the States in respect of health facilities with some spectacular achievements in family planning. Though the overall expenditure during the first two years of the sixth plan has been in excess of the outlay, the same is not the case in respect of some of the individual sectors. There is a need to make greater provision in the remaining plan years.

3. STRATEGIES AND TARGETS OF THE SIXTH FIVE YEAR PLAN OF KERALA

O. Ayyappan

This paper has attempted to examine the possibility of increasing the per capita income with the pattern of investment and the strategy of development adopted in the plan. It is seen that, the per capita income growth of the State from 1960-61 to 1979-80, lags behind that of the nation. The annual rate of growth of 5.2 per cent, envisaged in the Sixth Five Year Plan, is not sufficient to make any reasonable increase in per capita income in the near future. The agricultural sector of the State has reached all the elastic limits of expansion. For the economic development of the State industrialisation is essential. But the industrial sector is rather neglected, with only 10.25 per cent of the total plan investment as against 21.6 per cent investment in agriculture. This strategy is bound to defeat the very purpose of planning. Further, the capital output ratio of 3.5 per cent of the State, is quite unrealistic and would make the expected growth rate remote to achieve. The State's per capita plan outlay (Rs. 728) is lower than that of the nation (Rs. 891) and considering the economic backwardness of the State, this is quite inadequate to achieve any reasonable improvement in the standard of living. There is obviously shortage of investment and that calls for adoption of a new strategy to increase the productivity of the economy to the maximum possible extent. A greater percentage of plan investment in the industrial sector, with maximum utilisation of modern technology appropriate to the economy, is the need of the time.

4. EVALUATION STUDIES

C. R. Parameswaran

R. Subramanian

In this paper, the authors make an attempt to take stock of the data on Evaluation Studies. Of the 46 studies completed so far, 70 per cent have been on agriculture and related sectors. Other sectors touched upon include, industry, health, education, social and harijan welfare and rural employment. For most of the studies, multi-stage stratified sampling has been adopted. The coverage has ranged from the whole State to particular locality or institution, depending upon the nature of the project. In almost all the studies, the main sources of data have been the implementing authorities and the beneficiaries. The studies have helped in bringing forth corrections in further plan formulations and they have also been of use to secondary level users. However, the studies tend to be sporadic attempts and practically very little attention has been given to evaluation of plan performance in sectors other than agriculture. A systematic and continuous effort to take up projects in important sectors of the economy is called for. There is also need to have better co-ordination between the Evaluation Division and the planning and implementing bodies.

5. GAPS IN INFORMATION FOR THE PREPARATION OF A REGIONAL PLAN FOR WESTERN GHATS

N. Gopalakrishnan

A brief description of the Western Ghats development programme and in the light of that an attempt to identify the data requirements and data gaps are made in this paper. For the Western Ghats Development Programme, taluk is adopted as the basic unit and hence taluk level data are essential for proper planning. Land use data at taluk level, along with land use and land capability maps, are necessary. Similarly agricultural statistics, as also data on other aspects like, minerals and forest resources, industrial raw materials, power potential etc., at taluk level are also required. There is a need to develop a Regional Data Bank and Regional Information System.

6. LOGICAL ORGANISATION OF DATA BASE

K. Kalyanaraman

The evolution of the society depends on new ideas conceived in all walks of life and this is based on the information already available in the related field in a usable form. Further, the need for information goes on increasing and for a matching growth in information itself, an efficient organisation of data is needed. In his paper Sri K. Kalyanaraman has tried to point out some aspects of the data base organisation. An explanation of what is meant by a data base and a narration of its objectives are given. The concept of data independence and the need for more data independence are also explained. A desirable pattern of data base organisation must meet the requirements of 'logical organisation'. That is, if a request comes from user in any form without considering how the physical organisation of data is, the data base must be able to provide the same. This should be followed by logical data base descriptions which are referred to in computer based data systems as schema. The paper has enlisted the attributes of such schema. These measures have been consolidated in computer based data systems. They may be practised in manual data base systems too so that switch over to computer based data system becomes easier.

7. DATA ON CO-OPERATIVE SOCIETIES IN KERALA

P. Kochunarayana Pillai

Over the years, the co-operative societies have assumed importance not only as institutions of democratic control and management, but also as units promoting economic development. In that, they act as outlets for the dispersal of the resources to the needy in various sections of the society, especially in the lower strata. In this paper entitled, 'Data on Co-operative Societies in Kerala' a brief idea of the development, present set up, classification and objectives of the co-operative societies are given. It also examines the major sources of information relating to the functioning of the societies and points out the lack of data in certain respects. The statistical statements relating to the co-operative movements in Kerala published by the Registrar of Co-operative Societies, Government of Kerala, give a lot of information on various types of co-operative institutions, a detailed list of which is given thereof. A flaw pointed out is regarding the details on Scheduled Castes and Scheduled Tribes. Although the details are collected, they are not published. Similarly data on utilisation and impact of credit is not collected and published. This gap is proposed to be filled up by conducting periodic sample surveys employing appropriate methodology.

8. GAPS IN STATISTICS OF WOMEN'S ACTIVITIES

A. Syamala Devi

This paper examines the available data on socio-economic characteristics of women and points out the need to fill in the gaps so as to enable the preparation and implementation of plans for their development. The usual household chores performed by women remain one of the most ignored aspects of their activities and there is a need to prepare an inventory to collect the details and to identify the time disposition pattern of such activities. Similarly data is lacking on the role played, and the extent of efforts taken by the women in the nurture and preservation of health of the family members and the hygienic upkeep of the family surroundings. Further the efforts taken by the women in helping to reduce the birth and death rates are not adequately documented. The need to collect and quantify data on the loss of wages/salaries women incur and the mental and physical agony they undergo in order to promote family planning has been neglected so far. Data on employment of women in various details is not available now. In short, there is urgent necessity for a Department of Women's Welfare or at least a Section in the Directorate of Economics and Statistics to take steps to collect all the necessary statistics and fill in gaps in data on the activities of women.

4. RECOMMENDATIONS OF THE SEMINAR

The papers and deliberations of the two day seminar facilitated exchange of ideas between the producers and users of data on the economy of Kerala. At different stages of the discussions several policy directions for affording wider and better data generation and dissemination emerged. Salient among them are enlisted in this section.

1. In order to understand fully the effect of the development plans, statistics on the various aspects of the economy are essential. Annual information should be made available as a time series.

2. A lot of data has already been collected and a part has been tabulated and reports published. The publication based on the remaining should be expedited even if some of them are outdated. They should be published as they will contribute to the time series data.

3. The organisation of the data system should be made scientific. Timelag should be avoided and storage and retrieval should be systematic and capable of preserving large mass of data. This entails the adoption of computer based data system for which the installation of a computer in the Directorate of Economics and Statistics is urgently needed.

4. There are several important variables in the economy which are at present not brought into the quantitative focus such as remittances, land prices and even black-money. It is difficult to measure some of these variables with the conventional methods and for this purpose the Randomised Response Technique should be adopted.

5. The accuracy and reliability of data depends to a great extent on the participation of the public in the data collection. Steps should be taken to ensure this. In order to improve the quality of the data there should be a continuous dialogue between data producers and data users.

6. Adequate block level data should be made available to the financial institutions for preparing credit plans. A lot of information is resting with the industrial project development banks on financing of industrial projects under terms lending process. These informations should be collected by the Directorate of Economics and Statistics.

7. As much data as possible should be made available at disaggregate levels like district taluk, block etc. Also data for agro-climatic zones preferably within administrative units should be made available.

8. Wherever possible data for examining activities related to women especially for monitoring welfare programmes for them have to be brought out. Serious thought is to be given to the question of including the services of housewives in economic activity.

9. Under Agricultural Statistics findings of studies on cost of production should be made available to

users without any timelag. There is need for studies that will bring out the causes of stagnant/declining trends in crop outputs even in the face of increased input use. There should be better dissemination and use of the data from agricultural field experiments. Data on the plantation sector should be made comprehensive through census/sample surveys.

10. Data related to forestry are also to be collected extensively and systematically. Attention should be equally paid to data based on Divisional Management Plan and State Management Plan. Separate data should be available on social forestry and forestry proper.

11. Data relating to investment projects especially irrigation should be readily available to researchers. The Directorate of Economics and Statistics should undertake studies to assess the effectiveness of projects implemented. There is also need for greater emphasis on the needs of scientific water management.

12. At present there are not much useful data on inland fisheries. This gap should be covered. Information on employment as well as crafts and trolleys in the fisheries sector is also not adequate. In this respect it was felt that the implementation of the recommendation of the National Commission on Agriculture to have the census of the fisheries sector undertaken by the Fisheries Department should be expedited.

13. Studies on sickness and mortality in the industrial sector particularly the small-scale and traditional industries have to be undertaken. Information on several aspects of the industrial sector like the employment potential, capacity utilisation etc. is not at present available. Studies are needed to fill this gap. All details on coir industry, handloom industry and handicrafts should be collected and disseminated.

14. From the point of view of data base energy sector is a neglected area. Studies are needed to map this area adequately. It was observed that Kerala State Electricity Board is the only board in India where there is no statistical unit. There was general agreement on the need for a well-organised statistical unit in Kerala State Electricity Board.

15. Methodology for ascertaining the stock position of manpower has to be revised taking migration also into account. Assessment of supply of educated manpower, elusive as it is in the phase of migration requires serious efforts at evolving a suitable methodology. A committee is to be formed for co-ordinating the man-power units. Consolidation of the vast volume of unemployment data lying in the Directorate of Economics and Statistics is to be undertaken.

16. Data already available on fertility, mortality and migration should be properly utilised for forma-

tion of hypotheses which can be used for population projection at district and lower levels, for this purpose the adjustment factors for various levels should be obtained.

17. Collection of data on transport should be approached from the point of view of planning and optimising the transport facilities for meeting the requirements placed on it viz. goods traffic and the passenger travel. It was suggested that the projection of future requirements of passenger travel can be done by relating the household expenditure on transport to income. The national sample survey data should be tabulated for this purpose. Efforts should be made to estimate the other requirements also. A wealth of information relating to railborne goods traffic is available with the Railways in their computer. These should be collected on a regular basis by arranging with the Railways. Information on road borne goods traffic available in the declaration forms at the check posts are to be collected and tabulated on a regular basis.

18. Health statistics should be given adequate attention and the present inadequacy of data on morbidity aspects and environmental pollution should be filled in. Microlevel surveys are required to supplement secondary data in this respect. Institutions in the private sector dealing with health and education (tutorials, parallel colleges and schools) are to be covered under data collection for the purpose of State Income computation. A comprehensive survey with household as the unit may help the study of the cost of education, enrolment, drop-out and similar aspects.

19. Comprehensive and timely information on data relating to scheduled caste/tribe should be made available.

20. Rationalised supervision of price collection is an urgently felt need. It was also felt that a number of price aspects are to be additionally collected for effective prices policies and planning. These include revised parity indices, variables on the supply side and demand side (market demand and normative demand) and also appropriate shadow prices and market prices for planning. Price collection relating to all the sectors should be brought under the aegis of the Directorate of Economics and Statistics.

21. There is need for effective and greater co-ordination between the Directorate of Economics and Statistics and other Departments. A specific suggestion for having collaborative efforts between Directorate of Economics and Statistics and Labour Department for imparting orientation training was made.

22. The scope of evaluation studies should be expanded to areas other than agriculture.

23. As far as possible data including primary data should be available to researchers. Unwarranted confidentiality should not stand in its way. However, wherever confidentiality is absolutely required the relevant data should be converted to case studies.

24. There was a plea for holding sectoral meetings so as to bring out data gaps in detail in specific areas.

PART II

PAPERS OF THE TECHNICAL SESSIONS OF THE SEMINAR

SESSION 1

AGRICULTURE, FORESTRY, FISHERIES AND ANIMAL HUSBANDRY

I. AGRICULTURAL STATISTICS IN KERALA

G. Somasekharan Nair

Introduction:

The term 'Agricultural Statistics' denotes and includes all types of statistics relating to the agricultural sector of the economy of any country. With this wider meaning it includes a variety of topics like agricultural population, rainfall, land holdings, land use pattern, area under crops, production and productivity, irrigation, prices of agricultural commodities, agricultural wages, implements and so on. The discussions that follow are mainly confined to what is known as primary agricultural statistics, viz., land use pattern, area under crops and production of crops, giving a brief background of the existing system of collection of these details, availability and limitations.

Historical background:

Agricultural statistics are perhaps, the oldest statistics in India, Historical evidences have shown that even as early as 300 B. C., the Mauryan Kings used to collect information regarding land, production of crops etc., eventhough the purpose of collecting these details was to assess the portion of the revenue due to the Kings and Chiefs. The primary reporting agency known as the Patwari in the villages of temporarily settled areas in India was established along with the introduction of the Ryotwari system in 1792 by the East India Company. The necessity of the collection and dissemination of agricultural statistics was keenly felt by the recurring famines, so as to enable the administration to cope up with such calamities. Based on the recommendation of the Indian Famine Commission, Agriculture Departments were set up in some of the then existed provinces, with collection of agricultural statistics as a side job. The crop forecast system was introduced for the first time in India in 1894 covering the two major crops Wheat and rice following the recommendation of the Statistical Conference held at Calcutta in 1883. Later on more crops were brought under the system and presently forecast reports are released for nearly 40 crops by the Government of India. In 1948, all work relating to agricultural statistics was centralised with Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, and the responsibility for collection, compilation and publication of these statistics at the State level was vested with the State Agricultural Statistics Authority (SASA).

3. Data Collection System in India and Kerala:

In India, two different systems, viz., the reporting system and the non-reporting system are in vogue for the collection of area statistics. Under the reporting system, the patwari (village level agency)

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is entrusted with the duty of collecting information on land use and area under crops in all units (Survey number or holding) in this jurisdiction by field visits. On the other hand, the non-reporting system envisages the collection of these data by sample survey method, mainly due to the non-availability of a separate agency for this item of work. Kerala, along with Orissa and West Bengal follows the non-reporting system.

In the erstwhile Travancore-Cochin State, the responsibility for the preparation of annual agricultural statistics returns was entrusted with the Board of Revenue till 1954. The returns were prepared by the Board of Revenue on the basis of the reports from the Village Officers and Tahsildar. But the Village Officers were neither getting time nor given any additional amount or remuneration for this item of work. As such this work became a part of the routine administration and consequently much time lag was experienced in the publication of the results, apart from the question of accuracy which could never be checked.

With a view to collecting and compiling data on land utilisation and area under crops, on a scientific and objective basis, the responsibility of the work was entrusted with the Department of Statistics (present Directorate of Economics and Statistics) in 1954. The sample survey system in the field was introduced first in the Travancore-Cochin region and later extended to the Malabar region. The procedure adopted in the State for the collection of area and yield statistics is briefly described below.

4 Area Statistics

(a) Land Utilisation Survey

Till 1975-76, the annual estimates on land utilisation and area under crops were framed on the basis of the land utilisation surveys conducted in two rounds during each agricultural year. The first round was for a period of 7 months from July to January and the second for a period of five months from February to June. A stratified two stage sampling design with the taluk as the stratum, Census Village as the first stage and clusters of plots as the second stage sampling unit was adopted for the survey. The sample size for each stratum was fixed as 15 Census Villages at the first stage and 10 clusters of 5 plots at the second stage irrespective of the variation in size and other characteristics between strata, mainly due to cost considerations. The total sample size for the State as a whole was 85500 plots (Survey sub-divisions) in an year accounting for a slightly more than one per cent of the total number of plots in the State. The stratum-wise estimates were obtained by pooling those for 'wet land' plots

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and 'dry land' plots framed separately by the ratio method of estimation.

The estimates obtained from these surveys were having some limitations owing to the small sample size. Past experience has shown that these sample surveys could provide estimates of area under major crops at the district level and that of minor crops at the State level with reasonable level of precision. Considering the large scale heterogeneity in the land use and cropping pattern prevalent in the State, it was thought that the ideal method in this regard would be to have a complete enumeration of all the plots in the State during an year and to study the annual variations by sample surveys in the subsequent years. But the huge cost involved for this method prevented the State Government from this attempt and the system, however continued till 1975-76.

(b) *Scheme for Establishment of an Agency for Reporting Crop Statistics (EARCS)*

The new Scheme EARCS, commonly known as T. R. S. with full financial assistance and technical guidance from the Government of India, was introduced in the State during 1975-76. This scheme, a variant of the Timely Reporting Scheme implemented in the 'reporting States of India' envisaged complete area enumeration of all the revenue villages in the State by establishing a suitable agency, on a phased manner. The scheme started with complete enumeration of 10% of the villages during 1975-76, the percentage enhanced to 15 during 1976-77 and 20 during 1977-78 and subsequent years. The number of villages completely enumerated during each year is given below:

TABLE 1

Details of Villages Covered

Year	Number of Villages	Percentage
1975-76	134	10
1976-77	200	15

Year	Number of Villages	Percentage
1977-78	265	20
1978-79	265	20
1979-80	265	20
1980-81	199	13
	1328	100

The area enumeration surveys under the scheme aim at collecting and recording the details of land use and cropping pattern in all the plots in the selected villages, by visiting the wet land plots thrice-once during each season-and the dry land plots twice during each year, so as to avoid the possibility of omission of short duration crops. Thus, by 1980-81, the entire villages in the State has been completely enumerated and the second round of the process has started from 1981-82 onwards. It is felt desirable, at this stage, to have a brief discussion on the results obtained so far in this regard.

(c) *Results of Area Statistics*

(1) *Land Utilisation*

The estimates obtained from the land utilisation surveys and the area enumeration surveys under the EARCS scheme are not strictly comparable owing to the difference in the methodology adopted in each case and therefore, the same is not attempted here. The estimates of the different types of land utilisation of Kerala for the past five years as obtained from the surveys on area enumeration under the EARCS scheme are given in Table V, which reveal that the utilisation pattern of land is more or less stable over time. The minor difference can only be attributed due to random fluctuations and not due to any structural change in the land use pattern.

(2) *Area under crops*

The area under different crops as estimated from the above surveys from the last five years are given in Table 3. Only major crops are considered here for the sake of brevity.

TABLE 2

LAND UTILISATION IN KERALA

(Area in hundred hectares)

Sl. No.	Type of Land use	1975-76		1976-77		1977-78		1978-79		1979-80	
		Area	%	Area	%	Area	%	Area	%	Area	%
1.	Total area	38855	100.0	38855	100.0	38855	100.0	38855	100.0	38855	100.0
2.	Forest	10815	27.8	10815	27.8	10815	27.8	10815	27.8	10815	27.8
3.	Land put to non-agricultural uses	2592	6.7	2604	6.7	2572	6.6	2604	6.7	2635	6.8
4.	Barrren and uncultivable land	785	2.0	788	2.0	754	1.9	746	1.9	782	2.0
5.	Permanent pastures and grazing land	199	0.5	61	0.4	106	0.3	63	0.2	56	0.2
6.	Land under miscellaneous tree crops not included in net area sown	843	2.2	727	1.8	680	1.8	664	1.7	655	1.7
7.	Not available for cultivation (2 3 4 5 6)	15234	39.2	15095	38.7	14927	38.4	14892	38.3	14943	38.5
8.	Cultivable waste	1134	2.9	1157	3.0	1183	3.0	1233	3.2	1250	3.2
9.	Fallow other than current fallow	229	0.6	223	0.6	271	0.7	266	0.7	277	0.7
10.	Current fallow	366	0.9	374	1.0	461	1.2	423	1.1	434	1.1
11.	Net area sown	21892	56.9	22006	56.7	22013	56.7	22041	56.7	21951	56.5
	Available for cultivation (7 8 9 10)	23621	60.5	23760	61.3	83928	61.6	23963	61.7	23912	61.5

Source: Directorate of Economics and Statistics

TABLE 3
AREA UNDER CROPS-KERALA

(Area in '000 hectares)

Sl. No.	Crop	1975-76	1976-77	1977-78	1978-79	1979-80
1.	Paddy					
	Autumn	375	364	365	347	348
	Winter	396	381	371	346	340
	Summer	105	109	104	106	105
	Total	876	854	840	799	793
2.	Tapioca	327	323	290	273	244
3.	Coconut	693	695	673	661	663
4.	Areccant	77	68	62	62	61
5.	Cashew	109	113	127	137	140
6.	Pepper	108	109	101	107	106
7.	Plantation crops*	337	338	353	359	363
8.	Other crops	454	433	478	488	484
9.	Total area under all crops	2981	2933	2924	2886	2854
10.	Area sown more than once	792	733	723	682	659
11.	Net area sown	2189	2201	2201	2204	2195
12.	Intensity of cropping	1.36	1.33	1.33	1.31	1.30

* Tea, coffee, rubber and cardamom for which the figures from the respective commodity boards adopted.

(3) PRECISION OF THE ESTIMATES

The reports of the surveys conducted under the scheme also give an idea of the level of accuracy of the estimates in the case of six major crops

which cover more than 80% of the area under all crops. The per centage standard errors of the estimates of the area under these crops for the state for the first four years of the scheme are given below in Table 4.

TABLE 4

Percentage Standard Errors of the Estimates of Area under Major Crops

Crop	1975-76	1976-77	1977-78	1978-79	
1. Paddy	Autumn	1.70	2.30	2.01	1.70
	Autumn	1.80	2.30	1.60	1.50
	Summer	5.90	6.00	5.41	3.68
2. Tapica	8.00	9.45	4.65	5.57	
3. Coconut B		4.00	2.76	5.47	4.91
	NB	3.40	3.28	3.79	3.50
4. Areccant B		4.50	4.15	9.33	4.35
	NB	5.10	3.66	3.40	3.61
5. Cashew	6.90	5.27	9.35	4.42	
6. Pepper	10.10	5.34	10.39	6.80	

B: Bearing

NB: Non-bearing

The percentage standard errors together with the corresponding estimates reveal that the State level estimates framed on the basis of the survey data are fairly consistent over time from the statistical point of view. These estimates may not however be accurate, but only reliable. But the level of precision of the district-wise estimates is not so high as evidenced from the reports for these years. It is, therefore, desirable to have a change in the existing design of the survey on the basis of the bench mark data collected by completely enumerating the entire villages once, and past experience. The Department is understood to have initiated action on this regard especially in the context of the necessity to have the details at levels lower than the district.

5. Yield Estimation

(1) Paddy

Kerala has the credit of being one of the pioneer States in India to introduce random sampling technique for estimating the average yield of crops. This technique consists, in principal, of choosing a sample of elements comprising the population in a manner as to offer each element in the totality an equal (or

known) chance of inclusion in the sample. This technique not only ensures that the sample is representative of the population but also provides the means of knowing how far one is likely to be in error in estimating any characteristic of the population on the basis of a sample.

This technique was first introduced in the field of yield estimation surveys in 1950, when crop-cutting experiments were conducted for paddy in the Kuttanad region during the summer season. thereafter, crop-cutting experiments are conducted for paddy during each of the three seasons viz., autumn, winter and summer in all taluks where the crop is grown. The results obtained by these surveys are analysed and the taluk-wise average yield together with the margin of error is published in the crop cutting survey reports, issued twice during an year.

Design of the survey

A stratified three stage sampling design, with the taluk as the stratum, village (formerly census village and presently revenue village) as the first stage unit, plot as the second stage and a square cut of size 5 metres as the third stage unit is adopted for the survey. The selection of villages within the taluk, plots within the village and the square cut within the plot is done strictly according to random principles and the harvesting of the plants within the square cut is done in the presence of the primary worker, who records the weight of the produce after threshing and winnowing. These sample yields, together with an estimate of the drriage ratio of the produce based on a sub-sample are used in estimating the average yield per unit area in each taluk. The standard errors indicating the level of precision of the estimates are also given along with the estimates.

2. *Tapioca*

Crop-cutting experiments on Tapioca, the second staple food of Kerala, are also conducted on a regular basis from 1964-65 onwards, adopting almost the same design as that of paddy except that the ultimate sampling unit is a square plot of size 2 metres. In the case of tapioca only district-wise estimates of average yield are framed owing to small sample size. The results are regularly published in the consolidated reports of crop-cutting experiments released annually.

3. *Other crops*

In the case of crops other than paddy and tapioca only conventional estimates, framed on the basis of the enquiry reports of the Taluk Statistical Inspector, were available earlier. These estimates were revised later on the basis of ad hoc studies conducted for crops like pepper (1954), Sugarcane (1956) coconut and arecanut (1964) and cardamom (1967). These surveys, being of ad hoc nature, were not useful to revise the yield rates annually.

From 1976-77 onwards yield estimation surveys were integrated with the EARCS scheme and regular crop cutting experiments are conducted on paddy, tapioca, coconut, arecanut, cashew pepper and cocoa

(from 1982-83 only). Further, the important minor and localised crops were also brought under the purview of yield estimation surveys from 1977-78, on a phased programme with a view to covering all such crops during a period of three to four years. The details of minor crops brought under the scheme for yield estimation from 1977-78 onwards are given below:—

<i>Years</i>	<i>Crops covered for yield estimation</i>
1977-78	Jack, sesamum, banana plantain
1978-79	Mango, ginger, turmeric, sweet potato
1979-80	Tamarind, pulses, groundnut, cotton
1980-81	Cocoa, pappaya, lemongrass, cardamom
1981-82	Jowar, pineapple, ragi, cardamom
1982-83	Drumstick, Sugarcane, betel leaves tubers (chenai, kachil and chembu).

The results obtained from the yield estimation surveys together with the methodology adopted are given in the annual publication 'A Consolidated Report on the Yield Estimation Surveys'. An examination of the results of these surveys during 1977-78, reveals that the estimates of average yield per unit area show large variation between districts, the co-efficient of variation ranging from fourteen per cent to forty per cent for the different crops. This is probably an indication that the district-wise estimates are less reliable than that of the State, mainly due to small sample size at the district level. In order to frame reliable estimates of average yield at the district and lower levels, the sample size at these levels has to be enhanced.

The estimates of average yield have been framed for all other minor crops for which crop cutting experiments are conducted and are being used to estimate the production for computation of the State Income and the consolidated reports for each year are under preparation.

4. *Cocoa*

Considering the increasing importance and enthusiasm shown for cocoa cultivation in the State, a detailed survey to collect data on the extent, age distribution and other relevant details of cocoa plants was conducted in 1980 under the rural employment generation programme and a report of the survey giving all available information has been published.

5. *Source and Utilisation of Data*

Being the State Agricultural Statistics Authority (SASA) the responsibility of the timely submission of the annual agricultural statistics returns, giving the classification of area, area under crops and area under irrigation, to the Government of India vests with the Department. These details are also made available in the periodic publications of the Department, the most important of which are the following:

1. Report on Crop Cuttings To number
Surveys on Paddy annually
2. Consolidated Report of Annual
Crops Estimation Surveys

3. Season and Crop Report : Annual (1956-57 onwards)
4. Report of the Timely Report Survey : Annual (1975-76 onwards)
5. Statistics for Planning : Triennial (latest 1980)
6. Cocoa Survey : 1980
7. Agricultural Statistics of Kerala : 1965
8. Survey on Land Reforms : 1966-67
9. Agricultural Census Report : 1970-71
10. Agricultural Census Report : 1976-77

As regards Agricultural Statistics, the Department provides help and assistance by supplying the required data to the different Government departments like Agriculture, Revenue, Land Use Board and State Planning Board, Research Organisations, Institutions and individuals.

6 Major Data Gaps

(i) The most important gap in respect of primary agricultural Statistics, is that of the Cost of production of crops. Even though the Department of Economics of the University has been conducting cost studies on paddy and coconut, since the past few years, the results of the studies are not yet made available. A study in this regard covering some important crops like paddy, tapioca, coconut, arecanut, ginger and turmeric has been started during 1980-81. As the Cost Studies on Agricultural Crops are likely to get influenced by the climatic seasonal and related factors during each year, it would be necessary that the analysis is undertaken based on the data for a series of years. It is expected that the processing of the data on the cost studies conducted from 1980-81 to 1982-83 will provide some valuable and useful information.

(ii) Since the division of the State into different districts is made purely on administrative grounds, the various factors like rainfall, soil type, climatic conditions etc., influencing the cropping pattern and the productivity have no relevance in such a stratification. A Committee constituted by Government in 1974 has identified 12 different agro-climatic zones in the State. But details of land use and cropping pattern are not available for these zones. Since the entire villages in the state have been completely enumerated once, it is not difficult to prepare these details by retabulation.

(iii) Data on the marketable surplus of agricultural produces are also lacking at present. It is learnt that the Department has initiated action to collect these details on a scientific manner.

(iv) At present agricultural crops are extensively cultivated in the land occupied by forest, by encroachment or otherwise. But details of these are not included at present in the annual estimates of area under crops and production, as the surveys conducted in this regard do not cover the forest lands shown as such in the records. It is desirable

to make an attempt to collect these details also with the co-operation of the Forest Department, if necessary. This will, inter-alia, help to reconcile the discrepancies in the figures of area under forest as furnished by the Census, Directorate of Economics and Statistics and the Forest Department (A detailed discussion in this regard is given in another paper).

7. Quality and Limitations

In order to ensure the quality of data collected at the primary level, a wide net-work of inspections of the primary work has been established both at the State and Central level. At the state level, there is a Supervisor for every eight primary workers who is vested with the responsibility of inspecting the primary work concurrently and independently.

(ii) Under the scheme for Improvement of Crop Statistics (ICS) the National Sample Survey Organisation as well as the State Bureau conducts sample checks of area enumeration and yield estimation surveys on a parallel basis by sharing one-half of the villages selected during each year. The results of the sample checks are processed both by the State Headquarters and the NSSO. In the State Bureau 12 Officers in the cadre of Additional District Officers have been appointed to attend to this item of work alone, to be on a par with the NSSO.

(iii) The district level machinery has also been strengthened recently so as to make it competent to provide technical guidance and effective supervision.

(iv) At the enumeration stage, the perennial tree crops are recorded in numbers and the details of other crops are recorded in acreage. The estimated number of trees is converted to acreage based on the average stand per hectare of each crop collected from pure plots. The conversion is done only at the district level. A study conducted to assess the existing cropping pattern of the command area of the Kallada Irrigation Project has revealed that the area under tree crops estimated by using these conversion factors could be sight over estimates mainly due to the difference in pattern of cultivation of these crops in pure and mixed plots. A recent survey conducted by the Forest Department has identified the possibility of planting nearly 15 crores of trees additionally within the cultivators' holdings without changing the existing cropping pattern, which also supports the above conclusions.

(v) At present much timelag has become inevitable in processing the data collected during an year and the date of its publication, so that the data users are not in a position to utilise the same as and when required by them. This difficulty is to be sorted out and suggestions in this regard are welcome.

The fore-going pages give a brief but comprehensive review of the state of primary agricultural statistics in the State. It is open to the users of the data to suggest new methods and procedures to make improvements in the present set up. But finally, a most important point to be stressed is that any programme of this kind can achieve its goal only with the whole-hearted co-operation of the people who are to give reliable information.

Let us therefore, jointly try to achieve this prime objective.

The concepts and definitions used for these surveys are given in Appendix I.

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APPENDIX I

Collection of Agricultural Statistics- Concepts and Definitions

1. Agricultural year is defined as the period of 12 months from 1st July to 30th June.

2. *Season*.—The agricultural year is divided into three non-overlapping seasons of four months duration each. They are:—

(a) *Autumn* : July to October

(b) *Winter* : November to February

(c) *Summer* : March to June.

3. *Seasonal Crops*. Crops which are harvested during the period of four months in the season are defined as the seasonal crops of the respective season. Thus paddy, pulses, tapioca etc., which are harvested during different periods of the year will have to be classified as Autumn paddy, Autumn pulses etc., according to the date of their harvest. Those seasonal crops of which the major period of harvest in a village falls within July to October will be Autumn crops. November to February Winter crop and March to June Summer crop.

4. *Annual Crops*. For the purpose of this survey, banana, sugarcane, plantain and pineapple are treated as annual crops.

5. *Perennial Crops*.—Crops which are standing for more than an year will be treated as perennial crops. Most of the perennial crops are tree crops. In the case of sugarcane cultivated in Devicolam taluk, even though the period exceeds 12 months it will be treated as annual crops and not perennial.

6. *Plantation crops* are rubber, tea, coffee and cardamom.

7. *Building and court-yard*. The area exclusively used for building and court-yard will come under this category.

8. *Other non-agricultural uses*.—This stands for all lands occupied by roads, and railway or under water, eg., rivers and canals and other lands put to uses other than agricultural.

9. *Barren and uncultivable Land*.—This covers all barren and uncultivable lands like mountains, deserts etc. Land which cannot be brought under cultivation unless at a high cost shall be classed as uncultivable, whether such land is in isolated blocks or within cultivated holdings.

10. *Miscellaneous tree crops and groves not included in the net area sown*.—Area occupied by casurina trees, thatching grass, bamboo bushes and other groves for fuel etc., will come under this category. It may be noted that the above trees and groves do not come under the category of crops and hence they are not included under net area sown.

11. *Permanent pastures and other grazing land*.—These cover all grazing lands, whether they are permanent pastures and meadows or not.

12. *Culturable waste*. These include lands available for cultivation whether not taken up for cultivation or abandoned after a few years for one reason or the other such land may be either fallow or covered with shrubs and jungles which are not put to any use. They may be assessed or unassessed and may lie in isolated blocks or within cultivated holdings. Land once cultivated but remaining cultivated for five years or more in succession shall also be included in this category.

13. *Current fallow*. This class comprises cropped areas which are kept fallow during the current year. If any seeding area is not cropped, again in the same year it may be treated as current fallow.

14. *Other fallow*. This implies all lands which are taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years. The reasons for keeping such lands fallow may be one of the following:

(1) Poverty of cultivators, (2) Inadequate supply of water, (3) Malarial climate, (4) Silting of canals and rivers and (5) Unremunerative nature of farming.

15. *Net area sown*.—In calculating the net area sown, area sown more than once will be counted only once. Hence the net area sown will not exceed the geographical area.

2. RICE PRODUCTION IN KERALA—ITS DATA BASE AND DATA GAPS

V. Thyagarajan
N. Thirivikraman Nair

Introduction:

"Too many people labour too hard to produce to little rice". This perhaps is more true of Kerala, where rice is the staple food of a population of 25.4 million (1981) and the internal production of it can feed only less than half its population. Even though rice has been under cultivation in Kerala from very ancient times as one of the oldest of food crops, the production of it per unit area on an average has remained low. The problems posed by such subsistence pattern of cultivation and production were brought to surface with a gradual change in the feudal set up and an explosive rate of population growth, coupled with the growing unemployment and under-employment in the agricultural sector. High cost of production, low productivity, low profitability, and labour unrest etc., were a few problems simmering in this sector for quite some time.

Why rice?

Being a staple article of diet rice enjoys the popularity among grains from ancient times. It grows under a wide range of climatic conditions and thrives on any type of soil. Altitudes again are no barrier. In Kerala its cultivation extends from 3 metres below mean sea level (M. S. L.) as in Kuttanad to about 1400 m. above M. S. L. as in Vattavada area in Munnar. Varieties ranging in duration from 80 to 200 days also make it possible to cultivate rice under diverse agro-climatic conditions and in all seasons of the year.

While some drought tolerant varieties like the "modan" types could grow in minimal moisture conditions in the uplands and forest areas, some other types like chennellu could grow under shady situation in uplands and some deep water varieties like Kolappala could come up well in 2 to 4 m. of water as in Kuttanad during the pre-green revolution periods. However rice is a semi-aquatic plant yielding its best under adequate supplies of water.

Kerala being in the high rainfall tropics enjoys an average annual precipitation of 3000 mm. With its undulating topography interspersed with hills, valleys and river systems the low lying valleys river basins etc., naturally offered the necessary agro-ecological conditions for the cultivation of the semi-aquatic plant rice over large areas known as the traditional paddy fields. The possession of such paddy fields was considered a symbol of social prestige in the long past. Its wider adaptability under dry, semi-wet and wet conditions and different methods of cultivation, its labour absorbing capacity,

its complementarity with the mixed farming system in vogue, its durational convenience allowing its cultivation once, twice or even thrice within a year according to moisture availability etc., spontaneously made it the choice crop over the area it traditionally occupied.

How much rice

It is well-known that Kerala's rice production is quite insufficient to meet its internal requirements. The total production is dependent on two functions viz., total area and productivity. The season-wise area, production and productivity of rice in Kerala for all varieties together for the years 1956-57 to 1979-80 and for HYV alone for the years 1969-70 to 1980-81 are presented in Tables 1 and 2 respectively.

It can be seen that the gross area under rice has increased from 7.62 lakh hectares in 1956-57 to 7.93 lakh hectares in 1979-80 which amounts to an increase by 4 per cent. Even though taking this period end to end the increase is only 4 per cent it could be seen that the gross area under rice has been higher during the periods between 1962-63 and 1977-78, the year 1974-75 recording the highest (8.81 lakh hectares) with an increase of 15.6 per cent over 1956-57. Regarding the total production of rice the year 1972-73 has recorded the all time high viz., 13.76 lakh tonnes of rice in the State. Compared to 1956-57 this all time high level of production recorded an increase by 57 per cent over the 1956-57 level, though the increase in area over the same period was only about 15 per cent.

The total production of rice in the State in 1980-81 is reported to be 12.72 lakh tonnes. The internal supplies of rice available for consumption (estimated as 90 per cent of production) is therefore only 11.45 lakh tonnes. Against this, let us examine the requirement.

The gross-population of Kerala in 1981 according to census figures in different age groups and its adult equivalent population used for working out the food requirement estimates are presented in Table-3.

Though different approaches have been made by George, et al², ranging from energy requirements for various age groups to the norms adopted by the Civil Supplies Department for statutory rationing in the State, to arrive at five different estimates on the food requirements, estimate V in their report seems to be more realistic as it is based

Note:—The opinions expressed in this paper are that of the author's and do not represent necessarily the view of the organization they work with. The authors alone are responsible for errors if any in this paper.

on pragmatic norms. It is again supported by estimate II which is based on Food Habits Survey (1971-72) conducted by the Operations Research Group, Baroda.

The total cereal requirement inclusive of non-human consumption in the State in 1981 works out to 27.01 lakh tonnes. Estimate II also comes to 27.95 lakh tonnes. On the same basis the projected estimate for 2001 AD is 3.9 million tonnes (Estimate II) and 3.8 million tonnes (Estimate V). The projections on food requirement made by Mohan et al has also placed the requirement of rice in 2000 AD at 3.9 million tonnes, which is in agreement with Estimate II and V of George et al mentioned earlier. Hence we may take the estimate made by George et al for 1981 viz. 2.7 million tonnes to be more or less reliable. On this assumption, since the internal supply of rice for consumption purpose in 1981 is only 11.45 lakh tonnes, the deficit is 15.55 lakh tonnes.

Why low production

The trend in total production in the past seems to have steadily increased and reached a static level where it has remained for more than a decade now. The increase in total production of rice has been mainly due to increase in productivity rather than increase in area under the crop as could be seen from the data presented in Table-4.

The alarming situation here is that it has not been possible to maintain the rate of increase in productivity attained prior to the period of High Yielding Variety Era (1965-66) when the productivity increased from 0.9 tonnes of rice/ha in 1950-51 to 1.4 tonnes of rice/ha in 1964-65.

The overall average productivity that could be attained in spite of the spread of HYV and other developmental efforts is only 1.6 tonnes of rice/ha since 1964-65. The step up in productivity between the period 1950-51 to 1965-66 was 55.5 per cent while that between the period 1965-66 and 1979-80 was only 14 per cent.

It is relevant to recall in this context that the High Yielding Varieties Programme was introduced in the State in 1966. Naturally one would have expected a steep rise in the productivity level due to the spread and impact of the HYVs. An evaluation study conducted by the State Planning Board has shown that the total area covered under HYV paddy in the State has increased steadily over the years—more so during the Virippu season. However the annual overall coverage of area under HYV so far has not hit above one-third of the gross area under rice. The Evaluation Study has revealed that the level of adoption of HYV was more among those whose main occupation was agriculture and least among wage earners and non-agricultural land holders and also that both the number of persons as well as the percentage of area covered under HYV was relatively more among the large size holdings. This has important implications, as vast majority of our paddy cultivators have small holdings which cannot provide a reasonable income or full time employment to an average family. However the fact remains that the average yield of HYV of paddy was nearly

42 per cent higher than that of local varieties as reported in the above evaluation study. The high productivity of HYV is further amplified by the data presented in Table-5. It is also a fact that the area coverage under HYV in 1979-80 was only 2.82 lakh ha. out of a gross area of 7.93 lakh ha. under rice which amounts to only 36 per cent of the gross area under rice; whereas the production contribution by the HYV is of the order of 47 per cent of the total rice production in the State. Roughly it may be interpreted as one-third of the area contributing one-half of the production due to the effect of HYV, which is indicative of the potential for an enhanced production tagged to the HYV coverage, even under the low potential exploitation level we could achieve. Assuming the spread of HYV to the entire area under rice, it would mean that at the level of production in 1979-80, it would contribute to a total production of 18 lakh tonnes of rice in the State, the area remaining static. Naturally one may ask the question as to what holds back the spread of HYV to more area. The Evaluation Study reveals that the cost of cultivation of HYV of paddy is almost 30 per cent higher than the cost of cultivation of local varieties and also that the Benefit Cost ratio (as measured by the ratio of gross value of output to cost of production) was 1.67 for HYV as against 1.49 for local varieties showing only a marginal advantage for HYV over local varieties. Apart from these edges, and given the higher production potential of the HYV, it is to be reckoned that HYV seeds per seed will not lead to the higher production levels in the absence of other important complementary factors like fertilizers, water, and management essential for the full expression of the high potential in seed. The production function analysis done in the Evaluation Study has shown that among the independent variables fertilizer use and size of holding were found to be two major factors determining the yield of paddy both for HYV as well as the non-high-yielding varieties.

Compared to the performance of HYV in neighbouring states, the yield potential of these varieties that could be exploited in Kerala is not that attractive (Table-6). Even within Kerala, a yield potential of 5MT per ha. could be exploited in the National Demonstrations conducted in the State. However the average yield potential that could be achieved for HYV in the State is only 2374 Kg of rice per ha. (Summer season: 1971-72) which is far less than the demonstrated performance of HYV within the State.

Constraints

The main factors that contribute to the low productivity of rice in Kerala are:

(1) Rice is cultivated in Kerala under varying conditions including problem areas like modans lands, water logged and flooded areas, high altitude areas, coastal saline regions, etc., etc. These differing agro-ecological conditions pose peculiar location specific problems standing in the way of increasing productivity at economically feasible levels of investment.

(2) The highly acidic nature of the rice growing soils of Kerala gives generally a low response to high levels of technology available at present.

(3) Even though the rainfall in the State on an annual basis is fairly good its uneven distribution leads to different problems in the rice fields. For example the first crop of paddy (virippu) suffers from droughts in its early stages and floods in its middle or later stages since the south west monsoon is concentrated towards June-July. Similarly the second crop (Mundakan) is affected by droughts in its later stages.

(4) The undulating topography of the land favours soil erosion and silting up of the natural drains and water courses and also toxic proportions of iron and aluminium salts are washed into the low lying rice fields.

(5) The high humidity and warm temperature prevailing throughout the cropping seasons and the system of multiple cropping followed are congenial for multiplication of pests and disease.

(6) Above all the high cost of cultivation and low labour output and the constant labour problems make rice cultivation less remunerative.

(7) Rice area covered under irrigation is only 36 per cent of the gross area under the crop as per reported figures (Table 7) while much is left to be desired by way of command area development for effective utilisation of the irrigation potential created.

(8) The consumption of fertilizers per unit of cropped area in the State is comparatively less. The data (Table-8) on state-wise per hectare and per-capita consumption of fertilizer reveals this point. Average quantity of inorganic manures used by cultivators using HYV is 50.6 Kg./ha, whereas the same for non-high yielding varieties is only 23 Kg./ha. In terms of NPK it amounts to 6.7 Kg. Nitrogen, 1.5 Kg. Phosphorus, 4.3 Kg. Potash per hectare for HYV, and 0.6 Kg. Nitrogen, 1.7 Kg. Phosphorus and 2.3 Kg. Potash per hectare for non high yielding varieties of rice. The recommended dose of fertilizers for HYV and Local varieties as per package of practices comes to 90 Kg. Nitrogen, 45 Kg. Phosphorus, 45 Kg. Potash per hectare for HYV and 40 Kg. Nitrogen, 20 Kg. Phosphorus and 20 Kg. Potash per hectare for local varieties respectively.

How to bridge the gap

Self sufficiency in rice production is a debatable matter in the State. Arguments could be built up on both sides with the support of assumptions and presumptions. However, the fact remains that we are yet far behind the set targets of production over different plan periods. The most feasible and pragmatic approach in the matter will be to consider the extent to which the gap between internal requirement of rice and production could be reduced through effective planning and execution of programmes. It is in this context that the data base and data gaps in respect of rice production within the State becomes relevant.

In our approach to increase rice production in the State during the Sixth Plan the two major strategies resorted to are:

(1) Coverage of more area under HYV.

(2) Bringing additional crop of paddy through irrigation, besides extending the area under irrigation.

The base year (1979-80) production of rice in the State is estimated as 12.82 lakh tonnes and the

target of production by the terminal year of Sixth Five Year Plan is 16 lakh tonnes of rice. The area under HYV of rice at the base year of Sixth Five Year Plan was assessed to be 3 lakh ha. and the plan target is to enhance the area under HYV to 6 lakh ha. by the terminal year.

The assumption here is that every additional ha. under HYV will contribute to an additional yield of 0.5 tonnes of rice. Therefore 3 lakh ha. brought additionally under HYV during the plan period will contribute to a total additional production of 1.5 lakh tonnes of rice.

The additional production due to the coverage under irrigation of the rice area is assumed as follows:

The gross area under Minor Irrigation at the base year (1979-80) is estimated to be 1 421 lakh ha. and that under Major and Medium Irrigation as 2.795 lakh ha. The targeted coverage under these two irrigation sources is 1.966 lakh ha. and 4.873 lakh ha. respectively. Therefore, the additional area that will be brought under irrigation is 2.623 lakh ha. (gross). This would correspond to 1.639 lakh ha. (net). Of this, two-third of the area is expected to be under additional crop of paddy which works out to 1.09 lakh ha. At the rate of 1.55 tonnes of rice per ha. (i.e. the average yield for 5 years ending 1979-80) it would bring about an additional production of 1.68 lakh tonnes of rice.

Together with the 1.5 lakh tonnes of rice expected to be produced additionally due to spread of HYV, it would make a total additional production of 3.18 lakh tonnes of rice by the terminal year 1984-85. The base year production being 12.82 lakh tonnes, the additional production of 3.18 lakh tonnes of rice is expected to raise the production level to 16 lakh tonnes in the terminal year of the Sixth Plan period.

In spite of the above expectations the rice production in Kerala has not shown any positive indications of enhanced production during the first half of the Sixth Five Year Plan period.

This alarming situation should not be allowed to exist as such. It has to be examined from all possible angles to find solutions.

Data for Problem Areas and Decentralised Planning

Even though many technological developments in rice culture have taken place since the introduction of high yielding varieties, the productivity level as well as the spread of high yielding varieties in the State leave much to be desired. Only about a third of the gross area alone could be brought under HYV so far. Why it is not spreading to further area is a question to be seriously considered. Availability of data regarding HYV coverage at district level or even taluk level will not be of much use for bringing out the trend of spread and the problems connected with it. There are different rice production zones (Table-9) in the State with their own location specific problems. The variation in agro-ecological conditions for rice cultivation existing in these zones are such that a common HYV or a general type of

HYV cannot suit all these zones alike. Statistics regarding the spread and performance in terms of area and productivity of HYV in these different zones from year to year has to be made available for assessing the trend and identifying constraints for adopting suitable measures for tackling the constraints. Therefore it is imperative that these rice production zones have to be treated as independent strata for estimation of area, production and productivity of rice both for HYV and other local varieties separately.

Again in the context of decentralised planning it is essential to have data consolidated at lower levels than district and taluk. The recent trend in planning seems to adopt block as the unit for planning and therefore the data base using block as the strata is an essential prelude.

Present Data Base and Data Gaps

The types of data on rice production available at present is given in Table-10.

Since the introduction of TRS, data base of paddy has considerably improved. Under this system area statistics on paddy is collected at the micro-level, viz., village. Even though variety-wise irrigated and unirrigated area under paddy is being collected at village level, it is not published in that form at village level.

Statistics on yield and production of paddy estimated through crop cutting experiments provide data at Taluk level for all varieties together. Separate data on HYV at Taluk level is not made available at present.

Similarly in the case of statistics on inputs, only data on irrigation is collected at present. Other important inputs like manures, fertilizers, insecticides, soil ameliorants, credit etc., used in this sector play a vital role in the productivity and total production of this crop. Data on their off-take are not seen collected or published by the Directorate of Economics and Statistics or any other agency. Regular supply of such data will enable the analysis of the reasons for low productivity, declining trends in production in particular areas so that planners as well as the Departments concerned with execution of programmes can adopt timely and location specific remedial measures to achieve the growth rates targeted in this sector.

Statistics on the size of holdings under paddy crop are collected by the Board of Revenue (Civil Supplies) for purposes of levy collection. Policy decisions on development of rice cultivation ought to be guided by the general size of such holdings since in an area predominantly held by small holders, the need for community action, Co-operative or joint farming systems etc., become more relevant, and the policy makers have to take this into account also. Regular supply of such data helps the authorities to take correct policy decisions in such situations.

Statistics on wage rates in this sector are published at District level by the Directorate of Economics and Statistics. Paddy cultivation, being a major sector absorbing agricultural labour force in the State, data on the labour availability, demand

etc., have to be regularly made available in order to watch any occupational shifts taking place so that the policy frame has to consider the degree to which mechanisation can be introduced in specific areas to tide over labour scarcity situations.

Even though data on procurement of rice for distribution through ration depots inclusive of stock imported by FCI are available, no data on import of rice in private trading sector is available at present. The price fluctuations at farm gate level for internal production is to a considerable extent influenced by the import made by the private trading sector. However to what extent the import of rice in this private sector influences the internal production and its impact etc., can be analysed only if reliable data on this matter is made available.

One of the important data gaps in respect of paddy production is its cost of cultivation during different seasons, under varying conditions. The declining trend in productivity is to a large extent attributed to the high cost of cultivation and unattractive returns. With the heterogeneity in rice cultivating situations that prevail in the State, it may not be correct to assume that the cost of cultivation or rather the cost of production of rice is the same throughout the state. Disparity in cultivation operations due to inherent agro-ecological factors and disparity in wage rates, etc., are the major factors which contribute to differences in cost of production, apart from the general hike in the cost of inputs like fertilizers, pesticides and soil ameliorants etc., which are common for all situations.

However data on cost of production in those different zones would enable to identify specific factors which are locational in character and hence could be/ought to be tackled through location specific programmes. For example cultivation of paddy in water logged areas in Kuttanad and Kole lands, swampy areas as in Kattampally, saline areas as in Pookali and Kaipad lands, sandy areas etc., etc., where the problem or constraint is specialised in nature ought to be removed at state cost so that the disparity in production cost is minimised to the extent possible. For this, sufficient data on these matters are necessary.

A Committee constituted by Government in 1974 has identified 12 different agro-climatic zones in the State. Data on rice cultivation viz., area, production, productivity, use of irrigation, use of manures and fertilizers pesticides, soil ameliorants, weedicides etc., for both HYV and traditional varieties separately for those different zones have to be made available for identifying constraints as well as lack of extension efforts so that deficiencies can be made good in time to achieve the enhanced production targets.

It is also important to assess the land utilisation in the rice production sector separately in order to prevent the conversion of paddy lands for other purpose as well as concentrate efforts to minimise following.

Above all whatever data are collected have to be published without lapse of time so that the important data generated will be useful in planning

TABLE I
SEASON-WISE AREA, PRODUCTION AND PRODUCTIVITY OF RICE IN KERALA

Area in lakh hectare
Production in lakh tonne
Productivity in Kg/ha.

Year	Area			Production				Productivity				
	Virippu	Mundakan	Puncha	Total	Virippu	Mundakan	Puncha	Total	Virippu	Mundakan	Puncha	Total
1956-57	3.89	2.97	0.76	7.62	4.20	3.99	0.99	8.78	1078	1208	1301	1154
1957-58	3.93	2.97	0.77	7.67	4.42	3.81	1.02	9.25	1126	1282	1328	1207
1958-59	3.98	2.95	0.76	7.69	4.53	3.92	1.10	9.55	1139	1331	1440	1242
1959-60	3.90	3.03	0.75	7.68	4.88	4.42	1.08	10.38	1249	1458	1436	1350
1960-61	3.96	3.07	0.76	7.79	5.03	4.47	1.20	10.70	1263	1458	1577	1371
1961-62	3.66	3.12	0.75	7.53	4.21	4.62	1.21	10.04	1148	1479	1630	1331
1962-63	3.96	3.29	0.77	8.02	4.95	4.82	1.16	10.93	1249	1464	1512	1362
1963-64	3.98	3.30	0.77	8.05	5.10	4.99	1.19	11.28	1282	1513	1540	1401
1964-65	3.95	3.29	0.77	8.01	4.95	5.10	1.17	11.22	1252	1548	1521	1401
1965-66	3.98	3.28	0.76	8.02	5.21	3.90	0.86	9.97	1311	1188	1122	1243
1966-67	3.95	3.27	0.77	7.99	4.98	4.71	1.15	10.84	1261	1439	1487	1356
1967-68	3.99	3.27	0.83	8.09	5.21	4.70	1.33	11.24	1305	1435	1596	1388
1968-69	3.95	3.81	0.98	8.74	5.21	5.72	1.58	12.51	1320	1502	1610	1432
1969-70	3.94	3.82	0.98	8.74	5.21	5.27	1.78	12.26	1324	1378	1618	1403
1970-71	3.95	3.82	0.98	8.75	5.39	5.67	1.92	12.98	1365	1484	1960	1484
1971-72	3.95	3.82	0.97	8.75	5.52	5.97	2.03	13.52	1397	1562	2070	1544
1972-73	3.92	3.82	1.00	8.74	5.76	6.09	1.91	13.76	1470	1594	1917	1575
1973-74	3.93	3.81	1.01	8.75	5.86	5.08	1.44	12.38	1492	1333	1424	1437
1974-75	3.95	3.85	1.01	8.81	5.36	6.02	1.96	13.34	1356	1565	1929	1513
1975-76	3.75	3.96	1.05	8.76	5.52	5.98	1.81	13.31	1473	1505	1729	1520
1976-77	3.64	3.82	1.09	8.55	4.88	5.88	1.79	12.55	1341	1540	1640	1468
1977-78	3.65	3.71	1.04	8.40	5.52	5.59	1.81	12.92	1511	1508	1730	1537
1978-79	3.47	3.46	1.07	8.00	5.44	5.30	1.99	12.73	1569	1533	1861	1593
1979-80	3.48	3.40	1.05	7.93	5.68	5.27	2.05	13.00	1629	1550	1952	1638

Source: Agricultural Statistics in Kerala 1975, Statistics for Planning 1977 & 1980. Directorate of Economics and Statistics, Kerala

TABLE 2
SPREAD OF HIGH YIELDING VARIETIES OF RICE IN KERALA

	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
	Area in '000 hectares Production in '000 tonne Yield in Kg/ha.											
<i>Area</i>												
All Seasons	136.0	159.1	167.9	209.4	248.3	167.7	230.1	264.0	293.3	279.2	282.2	279.7
Autumn	39.8	58.0	68.6	94.3	125.3	77.5	98.5	115.8	142.1	144.9	142.5	136.2
Winter	49.7	48.1	31.9	55.0	57.1	51.0	62.2	74.3	89.6	77.9	84.6	92.4
Summer	46.5	53.0	67.4	60.1	65.9	39.2	69.4	74.8	61.6	56.4	55.1	51.1
<i>Production</i>												
All Seasons	244.8	295.2	361.0	384.5	404.0	294.8	418.1	462.5	577.3	553.4	611.5	559.2
Autumn	61.7	95.4	143.4	145.0	228.8	130.6	177.5	185.8	287.7	291.6	324.5	282.1
Winter	79.8	75.4	57.5	112.0	75.8	83.8	99.1	136.5	166.6	135.3	168.9	175.2
Summer	103.3	124.4	160.1	127.5	99.4	80.4	141.5	140.2	123.0	126.5	118.1	101.9
<i>Yield</i>												
All Seasons	1798	1854	2150	1836	1627	1758	1817	1752	1968	1982	2167	1999
Autumn	1549	1644	2092	1537	1826	1542	1802	1605	2025	2012	2277	2071
Winter	1603	1564	1803	2035	1328	1644	1593	1860	1859	1737	1996	1896
Summer	2220	2345	2374	2124	1508	2054	2039	1874	1997	2243	2143	1994

* Provisional Estimates.

Source: Statistics for Planning 1977 and 1980.

Directorate of Economics and Statistics, Kerala.

TABLE 3

ADULT EQUIVALENT POPULATION OF KERALA
1981

Age Group (Years)	Coefficient	1981 Population	
		Gross population	Adult Equivalent population
0—4	0.45	41.43	18.51
5—9	0.65	33.72	21.91
10—14	0.90	29.11	26.23
15—19	1.00	25.33	25.33
20—44			
(i) Males	1.00	41.51	41.51
(ii) Females	0.90	42.39	38.15
45 and above			
(i) Males	1.00	18.95	18.95
(ii) Females	0.90	21.86	19.67
Total		254.03	210.26

Source: Food Productions for Kerala State upto 2001 A. D., Data Bank, State Planning Board, Trivandrum.

TABLE 4

CHANGES IN AREA PRODUCTION AND
PRODUCTIVITY OF RICE IN KERALA

Period	Changes in Production		Changes in Area		Change in Productivity	
	Actual ('000 tonnes)	Percent	Actual ('000 ha.)	Percent	Actual (Kg/ha.)	Percent
1956-57 to 1960-61	190.30	21.69	16.90	2.21	217	18.80
1961-62 to 1965-66	-6.50	-0.64	49.60	6.58	-91	-6.82
1966-67 to 1970-71	213.90	19.73	73.40	9.43	128	9.43
1971-72 to 1975-76	-20.50	-1.51	0.80	0.09	-24	-1.55
1976-77 to 1980-81	17.80	1.41	-52.80	-6.17	119	8.10

TABLE 5
COMPARATIVE YIELDS OF HIGH YIELDING VARIETIES (HYV) AND TRADITIONAL VARIETIES (TV)
OF RICE IN KERALA FROM 1969-70 TO 1979-80

(Rice in Kg/ha.)

Year	Virippu (Autumn)			Mundakan (Winter)			Puncha (Summer)			All Seasons		
	HYV	TV	Increase of HYV over TV	HYV	TV	Increase of HYV over TV	HYV	TV	Increase of HYV over TV	HYV	TV	Increase of HYV over TV
1969-70	1549	1299	250	1563	1350	213	2220	1455	765	1783	1333	450
1970-71	1644	1317	327	1564	1473	91	2345	1505	840	1854	1401	453
1971-72	2092	1251	841	1803	1541	262	2374	1398	976	2150	1401	749
1972-73	1537	1449	88	2635	1520	515	2124	522	522	1493	1493	343
1973-74	1826	1409	417	1328	1334	(—) 6	1508	1602	242	1627	1362	265
1974-75	1684	1276	408	1644	1553	91	2054	1851	203	1758	1456	302
1975-76	1802	1349	453	1702	1458	244	1968	1063	905	1820	1392	428
1976-77	1605	1217	388	1825	1470	355	1910	1084	826	1752	1341	411
1977-78	2024	1184	840	1860	1396	464	1997	1416	581	1968	1311	657
1978-79	2012	1251	761	1737	1474	263	2243	1433	810	1982	1383	599
1979-80	2277	1200	1077	1998	1398	600	2142	1495	647	2167	1329	838

Source: Report of the Technical Committee for Yardsticks on Additional Production of Rice from Irrigation Projects, State Planning Board

TABLE 6
STATEWISE YIELD OF HYV OF RICE
1978-79 (in Kg/ha.)

States	Non HYV	HYV
Andhra Pradesh	1868	2205
Assam	969	1456
Bihar	984	1389
Gujarat	1164	1753
Haryana	..	..
Himachal Pradesh	1247	1636
Karnataka	..	..
Kerala	1583	1997
Madhya Pradesh	938	1293
Maharashtra	1469	1835
Orissa	1007	1018
Tamil Nadu	2017	2188
Uttar Pradesh	1159	1569
Simple Average per Hectare Yield	1310	1667

Non HYV yield includes the contribution of HYV also.

Source: Basic Statistics Relating to Indian Economy—Vol. 2
1982, CMIE.

TABLE 7

IRRIGATED AND UNIRRIGATED FIELD UNDER PADDY—1979-80

	HYV			Other Varieties			Total		
	Irrigated	Unirrigated	Total (ha.)	Irrigated	Unirrigated	Total (ha.)	Irrigated	Unirrigated	Total (ha.)
Autumn (1979)	52546 (36.86)	89991 (63.14)	142537 (100)	9531 (4.63)	196305 (95.37)	205836 (100)	62077 (17.81)	286296 (82.19)	348373 (100)
Winter (1980)	58163 (68.77)	26402 (31.23)	84565 (100)	95310 (37.37)	159733 (62.63)	255043 (100)	153473 (45.19)	186135 (54.81)	339608 (100)
Summer (1980)	34434 (62.48)	20678 (37.52)	55112 (100)	35911 (71.57)	14262 (28.43)	50173 (100)	70345 (66.81)	34910 (33.19)	105285 (100)
Total	145143 (51.43)	137071 (48.57)	282214 (100)	140752 (27.54)	370300 (72.46)	511052 (100)	285895 (36.04)	507371 (63.96)	793266 (100)

Figures in brackets indicate percentage to total.

Source: Directorate of Economics & Statistics, Kerala, Trivandrum.

TABLE 8

PER HECTARE AND PER CAPITA CONSUMPTION OF FERTILISERS 1968-69 AND 1981-82

State	% share of fertiliser consumption in each State 1968-82	Fertiliser consumption per hectare of gross cropped area 1968-69	Fertiliser consumption per hectare of gross cropped area 1981-82	Annual rate of increase (%) between 1968-69 & 1981-82	Per capita fertiliser consumption (kg.) 1981-82
Punjab	13.1	34.4	121.0	10.2	48.1
Tamil Nadu	8.5	24.6	67.5	8.1	10.7
Uttar Pradesh	19.9	15.3	50.2	9.6	11.0
Andhra Pradesh	10.7	23.9	50.0	5.8	12.3
Haryana	4.2	10.2	46.9	12.5	20.2
Gujarat	6.3	9.4	37.4	11.2	11.5
ALL INDIA	100.0	10.7	35.0	9.6	9.0
Karnataka	6.3	10.1	34.5	9.9	10.4
Kerala	1.6	13.0	33.3	7.5	3.8
West Bengal	4.2	8.1	32.8	11.4	4.7
Maharashtra	9.1	6.7	28.2	11.7	8.9
Jammu & Kashmir	0.4	11.2	25.3	6.5	4.2
Himachal Pradesh	0.3	5.3	20.1	10.8	4.4
Bihar	3.7	7.3	19.9	8.0	3.3
Manipur	0.1	3.5	16.8	12.8	2.5
Sikkim	..	..	12.1	..	2.5
Madhya Pradesh	4.3	1.7	12.0	16.2	5.1
Meghalaya	..	..	10.7	..	1.8
Orissa	1.4	3.2	10.6	9.7	3.5
Rajasthan	2.7	2.0	9.3	12.6	4.8
Tripura	0.1	..	9.0	..	1.7
Assam	0.2	3.2	3.4	0.5	0.6
Nagaland	..	..	6.9	..	0.5

TABLE 9

AGRO-CLIMATIC ZONES OF KERALA

Block/Municipality/Corporation	Area in hectares
Zone - I (Omnattukara)	51890
1. Quilon	1919
2. Chawara	7490
3. Kartunagappally	11886
4. Oachira	
5. Kayamkulam	2179
6. Mavelikara	9024
7. Mavelikara	1265
8. Muthukulam	7397
9. Haripad	10730
Zone - II (Coastal Sandy)	156406
1. Ambalapuzha	6986
2. Alleppey	4677
3. Aryad	6584
4. Kanjikuzhy	10173
5. Shertalai	1619
6. Pattanakkad	10774
7. Thykkattussery	8540
8. Vaikom	873
9. Vaikom	13002
10. Vyttila	4635
11. Edappally	8896
12. Palluruthy	5557
13. Cochin	7488

Source: Basic Statistics Relating to India Economy Vol. 2, 1982 CMIE.

<i>Block/Municipality/Corporation</i>	<i>Area in hectares</i>	<i>Block/Municipality/Corporation</i>	<i>Area in hectares</i>
14. Vypeen	8683	3. Koovappady	16446
15. Parur	7332	4. Perambavoor	1349
16. Parur	703	5. Vazhakkulam	13074
17. Crangannore	4651	6. Alwaye	718
18. Thalikkulam	6510	7. Alangad	6249
19. Mathilakom	7661	8. Parakkadavu	9882
20. Chowghat	6612	9. Angamaly	16576
21. Andathode	12567	10. Mulanthuruthy	13598
22. Ponnani	12383	11. Mala	12690
<i>Zone—III (Southern Midland)</i>	<i>322358</i>	12. Vellangallur	11132
1. Trivandrum	7493	13. Irinjalakuda	1154
2. Trivandrum Rural	4608	14. Irinjalkkuda	10816
3. Kazhakuttam	12904	15. Cherppu	10476
4. Chirayinkil	9586	16. Anthikkad	7353
5. Attingal	1418	17. Trichur	1265
6. Varkala	10208	18. Puzhakkal	14810
7. Kilimanoor	18257	19. Mullassery	6371
8. Ethikkara	14802	20. Kunnamkulam	676
9. Mukhathala	8236	21. Chowannur	12805
10. Anchalumude	3509	22. Trithala	17209
11. Chadayamangalam	23035	23. Pattambi	21285
12. Kottarakkara	13787	24. Ottappalam	21580
13. Vettikkavala	16752	<i>Zone—V (Northern Midland)</i>	<i>376540</i>
14. Chittumala	8047	1. Pandalayani	5189
15. Sasthamkotta	18400	2. Balusseri	21982
16. Elanthur	13167	3. Perambra	27315
17. Pandalam	10727	4. Meladi	10018
18. Kulanada	9946	5. Badagara	2134
19. Bharanikkavu	8210	6. Thodannur	9797
20. Chengannur	9950	7. Kunnummel	24641
21. Koippuram	11927	8. Tuneri	13100
22. Thiruvalla	1447	9. Badagara	5071
23. Mallappilly	13112	10. Tellicherry	12765
24. Changanacherry	1350	11. Tellicherry	1535
25. Madappally	15005	12. Kuthuparamba	68788
26. Pallom	21618	13. Edakkad	12979
27. Kottayam	1555	14. Cannanore	1103
28. Ettimannur	14652	15. Irikkur	44289
29. Kaduthuruthy	18648	16. Cannanore	1103
<i>Zone—IV (Central Midland)</i>	<i>266636</i>	17. Taliparamba	59440
1. Pampakuda	20528	18. Payyanur	51960
2. Vadavucode	18594		

<i>Block/Municipality/Corporation</i>	<i>Area in hectares</i>	<i>Block/Municipality/Corporation</i>	<i>Area in hectares</i>
Zone—VI (Northern Midland Malappuram type) 425447		20. Muvattupuzha	1318
1. Tirur	11950	21. Kothamangalam	23793
2. Kuttippuram	17554	22. Chalakudy	14245
3. Tanur	12424	23. Kodakara	16860
4. Tirurangadi	16037	24. Ollukkara	18916
5. Vengara	13500	25. Pazhayanur	26667
6. Malappuram	20738	26. Mannarghat	33000
7. Manjeri	28200	27. Sreekrishnapuram	21906
8. Kondotty	29073	28. Perinthalmanna	29060
9. Kozhikode	3815	29. Mankada	23868
10. Kozhikode	8267	30. Vandur	114923
11. Chevayur	8572	Zone—VII (Palghat)	127950
12. Kunnamanthalam	30116	1. Alathur	38700
13. Kozhuvally	29345	2. Palghat	33929
14. Nileshwar	41751	3. Palghat MC	2660
15. Kanhangad	60401	4. Koyalmanam	44883
16. Kasargod	41440	5. Nemmara	7778
17. Manjeshwar	52264	Zone—IX (Red loam)	31699
Zone—VII (Highland) 638238		1. Neyyattinkara	970
1. Perumkadavila	30230	2. Nemom	13323
2. Vellanad	21365	3. Athiyannur	9118
3. Nedumangad	15631	4. Parassala	8288
4. Vamanapuram	25400	Zone—X (Chittur block soil)	50847
5. Anchal	98535	1. Chittoor	20027
6. Pathanapuram	26936	2. Kollengode	30820
7. Parakode	21103	Zone—XI (Kuttanad)	28359
8. Konni	17355	1. Champakulam	6626
9. Ranai	23600	2. Veliyanad	14092
10. Vazhoor	14330	3. Pulikeezh	7641
11. Kaujirappally	32634	Zone—XII (High Ranges)	514015
12. Pampady	16435	1. Arudai	114314
13. Erattupetta	30550	2. Devikulam	165600
14. Lalam	18447	3. Attappadi	22700
15. Pala	1593	4. Kalpetta	41690
16. Uzhavur	22145	5. Sultan Battery	96074
17. Thodupuzha	16000	6. Manantoddy	73828
18. Elamdesam	77700		
19. Muvattupuzha	21164		

Source: "Report of the Committee Agro-climative Zones and Cropping Pattern,"

TABLE 10
DATA RESOURCE ON PADDY

<i>Data available</i>	<i>Periodity of data</i>	<i>Level at which available</i>	<i>Source</i>
1. Area under Paddy—All varieties	Season	State, District, Taluk	Directorate of Economic and Statistics
2. Area under paddy—HYV	Season	State and District	"
3. Irrigated and Unirrigated Area Under Paddy—HYV and others	Season	State, District & Taluk	"
4. Average yield and Production of Paddy—All varieties	Season	State, District & Taluk	"
5. Average Yield and Production of Paddy—HYV	Season	State, District & Taluk	"
6. Classification of Paddy in Wet lands according the Number of Crops	Annual	State and District	"
7. Number and size of holding of Paddy Lands	Season	State, District & Taluk	Board of Revenue (Civil Supplies)
8. Average Daily Wage Rates of Paddy Field Labour—Male and Female	Daily Rates	State & District	Directorate of Economics and Statistics
9. Monthly Average Farm Price of Paddy	Monthly	State and District	Directorate of Economics & Statistics
10. Monthly Average Retail Price of Paddy	Monthly	State and District	"
11. Procurement of Paddy	Season & Monthly	State, District & Taluk	Board of Revenue (Civil Supplies)
12. Monthly off-take to Rice through Ration Shops	Monthly	State, District & Taluk	"
13. Rail and Road borne Rice Statistics	Annual	State	Sales Tax Department (No regular and systematic publication of the data)

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3. DATA BASE ON COST OF CULTIVATION IN KERALA

In this paper an attempt is made to examine the quality and content of the available data on cost of cultivation in Kerala. The annual studies on Cost of Cultivation of principal crops instituted by Government of India on a courtwide basis continuously since 1971 is the most important source of such data for this state also. The design of these studies, the various cost concepts adopted, the organisation of data collection, the method of analysis involved are elaborated with an attempt to point out the existing gaps and limitations of these studies.

Cost of Cultivation data or farm cost data are essential for their micro as well as macro uses. At the micro level, they help the individual farm enterprise in determining, either the combination of variable inputs which would give the farmer a given value output at minimum cost, or alternatively the choice of factor for maximisation of output value for a given value of inputs. For the economy in general, the data afford a basis for the formulation of policies relating to the agricultural sector. For instance, in matters of land policy, the relative efficiencies of tenant-operated farms and owner-operated farms could be judged with reference to such data. Further, the cost data are essential in the determination of the size of the optimum holding. Yet another important use lies in the formulation of agricultural price policy. Institutional credit agencies also would require cost data in the implementation of credit policies, crop loan system, etc. In a predominantly agricultural economy like ours, proper planning demands reliable data relating to costs and returns in agriculture for various regions, commodities, classes of agricultural population, etc., along with the variation of inputs and outputs consequent on price movements and agricultural practices.

In spite of the vital role of the farm cost data for planning and policy purposes, studies relating to the cost of production of agricultural commodities and its allied aspects have received due attention only in recent years.

Farm Management Studies

A beginning was made in the post-Independence years by the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, when it sponsored the Farm Management Studies in various parts of the country in 1954-55. The first series of these studies which covered important crop zones in the states of Punjab, Uttar Pradesh, West Bengal, Maharashtra and Madras was soon followed in 1957-58, in Bihar, Orissa, Andhra Pradesh and Mysore. Kerala, along with some of the other remaining states like Madhya Pradesh, was taken up in 1961-62. The Farm Management Studies have thrown a large volume of highly useful and comprehensive data on cost of cultivation for the different states and the country as a whole for the first time in the history of the country. Several analytical studies on the economics of farm management con-

ducted on the basis of these data have thrown up significant insights into the pattern and working of our agricultural economy.

N. Natarajan

The Farm Management Studies were conducted on the basis of scientific statistical methods. The Farm Management Studies adopted a multi-stage stratified random sampling with villages as primary units and the holding as the ultimate unit. Two alternative methods of investigation were adopted known as the 'Cost Accounting method' and the 'Survey method'. In each State two contiguous districts were first selected representing the typical soil complex of the region. Each district was sub-divided into two fairly homogeneous zones on the basis of agricultural and climatic conditions, and the villages were then selected at random with probability proportional to the cultivating population. The ultimate unit of the enquiry was the 'operational holding' comprising all the land cultivated by the selected farmer irrespective of location or ownership. Information was collected on the basis of two schedules—"Villages forms" and "Holding forms". Detailed data relating to the cost incurred in cash or in kind in the cultivation of individual crops as also the total costs incurred in the holdings were collected. In the survey report, estimates were furnished according to size groups of operational holdings. The data on utilisation of family and hired labour (in physical and monetary units), other current inputs like seeds etc., overhead charges paid in the form of land revenue, rents irrigation and other cesses, depreciation and interest charges on capital were presented individually for major crops and for total crop production, by size groups of holdings.

For the Farm Management Studies, four different cost concepts were adopted: Cost A1, Cost A2, Cost B and Cost C. Cost A1 is the cash and kind expenses actually incurred or incurred by way of hiring human and animal labour; purchasing of seeds, manures and fertilizers; paying of land revenue, irrigation and other cesses, depreciation charges on fixed assets; and, interest on crop loans. This would be the cost incurred by an owner cultivator. Cost A2 is Cost A1 plus rent payment; this would naturally be the cost incurred by a tenant cultivator. When the imputed rent on owned land together with the imputed interest on owned capital (farm buildings and implements) are added to Cost A1, Cost B is obtained. By adding the imputed value of family labour to Cost B, Cost C is derived. Profit or loss is defined as gross income minus Cost C.

In spite of the fact that the Farm Management Studies have thrown up very significant and useful data on farm enterprise in the country for the first time, the scope of the studies was limited as it was confined to a very few selected districts in the States and was carried out at different periods of time. It was in this context that the Government of India, on the recommendation of the Standing Technical Committee

on Indices of Input Costs, launched a Comprehensive Scheme on the Cost of Cultivation of Principal Crops on an all India basis in the year 1971. The technical details of the Scheme were worked out by the Institute of Agricultural Research Statistics. The estimates obtained through these Studies are mainly used by the Agricultural Prices Commission for their annual policy formulation.

III. *Comprehensive Scheme for the Study on the Cost of Cultivation of Principal Crops*

The Scheme envisages collection on a continuing basis of representative data on inputs in physical and monetary terms and estimation of cost of cultivation per hectare and cost of production per quintal of the principal crops. The studies on different crops are taken up by rotation. A detailed survey in respect of each principal crop is carried out for one year followed by sub-sample surveys, generally covering one-fourth of the main sample, in subsequent few years.

The design of the Study is three stage stratified random sampling with revenue taluks as the first stage sampling units, a cluster of three villages as the second-stage sampling unit and an operational holding in the cluster as the third and the ultimate stage sampling unit. For the purpose of study, each stage is demarcated into a number of zones depending on the cropping pattern, soil types, rainfall, irrigation etc.

The first stage sampling units (taluks) are allocated to the different zones in proportion to the area under the principal crops in the zones concerned to the total area under the crop in the state. Within each zone, the allotted number of taluks are selected with probability proportional to the area under the principal crop. In each selected taluk, second-stage sampling units (villages) are selected with probability proportional to the area under the principal crop. The selected villages is considered as the 'nucleus village' and the cluster is formed by adding two adjacent villages to this nucleus village. To maintain uniformity all over the country, the first added village is the nearest village due south of it and the second added village is one nearest to the added village on its due west.

A complete listing is done of all the cultivator holdings coming within the cluster and they are then arranged in ascending order according to the size of their operated area. The holdings are then stratified into five size classes in such a manner that the total operated area falling in the different size classes is about equal. Two holdings are randomly selected from each size class. Ten holdings so obtained from the cluster form the sample for detailed enquiry and computation of final estimates of cost cultivation|production.

Organisation of Field work

The Scheme was formally initiated in 1971 in four States. In the following year, it was extended to cover 15 states. Himachal Pradesh was covered in 1973-74. Since then cost studies are being carried out in 16 states on a continuing basis.

In most of the States, the task of implementing the Scheme has been entrusted with the Agricultural Universities. In Kerala, the annual cost of cultivation Studies under the Scheme are conducted by the Department of Economics, University of Kerala since 1971.

Data are collected from the selected holdings by cost accounting method. One whole time Investigator is posted in each cluster and his work is being regularly supervised by a Regional Supervisor who is having 10 Investigators under his charge. A senior officer administrates and supervises the operation of the Scheme in a state under the overall guidance of the head of the organisation implementing the Scheme. The data collected in the prescribed schedules from the field are scrutinised, tabulated and compiled at the headquarters of the Scheme by Computers appointed for the purpose under the supervision of a Statistician. The compiled data are forwarded to the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India where a Central Analytical Unit has been set up to process and analyse the data and for the preparation of the reports.

So far, the principal crops taken up for the cost of cultivation studies in the country include paddy, wheat, Jowar, bajara, maize, cotton, sugarcane, jute, groundnut, tobacco, coconut and tapioca. Ever since the Scheme was launched, estimates of crops based on survey data have been furnished to the Agricultural Prices Commission in respect of more than 200 studies.

The cost concepts adopted in the Scheme are broadly the same as those used in the earlier Farm Management Studies. Some of the cost concepts relate to the actual expenses paid in cash and kind while others take into account additional items based on imputation. Some costs are incurred solely on the specified crops while others are incurred jointly for a number of farm products and have to be allocated to the individual products.

IV. *Comprehensive Scheme on the Study of Cost of Cultivation of Principal Crops in Kerala*

(a) *Paddy*

As has been already mentioned, the main users of the data collected under the Scheme are the Agricultural Prices Commission for the formulation of their annual procurement price policies. Due to this factor, paddy has been considered the principal crop for the annual studies on cost of cultivation under the Scheme right from 1971. The sample design for the studies is uniform throughout the country, twenty samples (clusters) being allocated for Kerala for the annual cost studies which are distributed all

over the State. The sample clusters are changed once in three years, the total sample size remaining the same, in order to collect reliable data free of both the respondents' as well as investigators' bias. As has been already stated, ten holdings per cluster are selected for the study making a total sample size of 200 cultivators' holdings. The data on labour time disposition of family and hired labour (human, animal and machine labour), quantity and cost of material inputs (seed, organic manure, fertilizers etc.) and the quantity and value of output (both main product and byproduct) from each plot in the selected holdings, are regularly recorded by the Investigator. Besides, the asset structure of the holdings, demographic characteristics of the cultivator's household and detailed information on his land holdings, cost of maintenance of livestock and yield of livestock products are also collected. Besides the cost of cultivation of paddy, that of all other crops grown in the holdings are also obtained. Also data on all the factor prices involved in crop production are obtained periodically from the cluster.

(b) Coconut

During the three years from 1975-76 to 1977-78, a study was made on the cost of cultivation of coconuts in Kerala under the Scheme. Coconut, being a perennial crop and cultivated both as a pure crop and also as an inter crop in mixed gardens (especially in the mid-land region of the state), a special sample design was evolved for the study. Though the Ministry of Food & Agriculture, Government of India did a pilot study on the cost of cultivation of Coconuts as early as 1960, it was confined only to pure gardens in the low-land region of the state. The study conducted under the Scheme covered the entire state. The objective of the Study was to estimate the cost of cultivation of 100 coconuts as well as a hectare of coconut garden in the different regions of the State.

Sample design. - For this study, the state was divided into five zones based on soil type, climatic conditions and the pattern of cultivation of the crop. Based on the area under the coconut crop in the different taluks in the State (obtained from Land Utilisation Survey estimates of the Bureau of Economics & Statistics), fifteen clusters (a unit of two census villages combined) were allocated among the five zones. From each zone, the required number of revenue taluks were selected based on probability proportional to the coconut area in these taluks; from each of these selected taluks, one revenue village was chosen based on the probability proportional to the dry-land area of the revenue villages in the taluk. From the revenue village thus selected, one census village was selected by the method of s.r.s. The census village lying to the south of this was also considered and the two census villages together formed the "sample cluster" for the study.

The plots belonging to all the cultivators' holdings situated in the sample clusters were enumerated by the Investigators and the number of coconut trees in each plot was counted, bearing and non-bearing trees separately, and entered in the

prescribed listing schedules. From this list the coconut cultivators were arranged in ascending order based on the number of coconut trees possessed by them. The holdings were arranged in five size groups in such a manner that the total number of coconut trees falling in the different size classes were about equal. From each of these five size groups, four holdings were selected by the method of s.r.s. and these twenty units formed the sample for the study. Thus, the total sample consisted of three hundred holdings spread over the 15 clusters; the period of study covered the three years, 1975-76 to 1977-78.

Besides the regular schedules (holding forms) used for the general cost of cultivation studies for canvassing data on land holdings, asset structure, demographic characteristics, the labour time disposition of family and hired labour and the application of material inputs and the product and by-product obtained etc., five additional schedules were canvassed for collecting general information on coconut cultivation in the selected samples, age-wise distribution of coconut trees and the details of trees affected by pests and diseases in the selected plots. The age group-wise data (below 1 year; 1-4 years; 4-8 years; 8-15 years; 15-25 years; 25-45 years; 45-65 years; 65-80 years and above 80 years) on inputs and outputs, both for the pure coconut gardens and the mixed plots have been collected. But the reliability of these data is not highly satisfactory for the following reasons: (a) difficulties in the determination of the exact age of the trees and (b) allocation of area to and the apportionment of total costs to coconut in mixed gardens. For the apportionment of the area under coconuts in mixed plots in different regions the norms adopted by the Directorate of Economics and Statistics, Kerala, viz., "stand per hectare concept" has been followed.

V. Improvements Introduced in the Present Series of the Comprehensive Scheme

A Special Expert Committee was constituted under the Chairmanship of Dr. S. R. Sen in 1979 to examine the design, content and methodology adopted in the generation of cost of production estimates through the Comprehensive Scheme. The Committee was requested to examine the present arrangements for the collection of data at the field level and processing of the same and also to further examine the question of extending the coverage of cost of production studies in terms of varieties of crops and to suggest methods of working out a comparable series of input prices on the basis of available data collected for cost of production studies. The Committee delved into all these aspects in detail and made important recommendations to the Government of India in the organisation of the Scheme, the sampling design and the cost concepts adopted.

One of the major recommendations of the Committee was to change the sampling design of the Study in order to shift from the single crop approach followed so far by a "crop complex approach". Accordingly, instead of a single crop, estimates had to be made for a number of selected crops simultaneously. This recommendation was

accepted by the Government of India and from the year 1981-82, the new crop complex approach has been incorporated in the sampling design. Based on this, a crop complex constituting paddy and tapioca has been considered for the annual cost of cultivation studies in Kerala since 1981-82.

The change in the new sampling design involves the allocation of the first-stage sampling units (revenue taluks) to the different zones (the number of zones being three in Kerala, viz., the low-land, mid-land and high-land zones) in proportion to the area under the component crops in the zones to the total area under these crops in the State. In other words, the allocation of taluks to the different zones is done for paddy and tapioca separately taking into account the full sample size (20 samples) as if that is the only crop to be considered. Having done this, a simple average of the taluks allocated for each crop in each zone will be taken. This becomes the number of taluks to be selected in each zone in the State.

Data have been already collected in Kerala for paddy and tapioca based on the new sampling design during the year 1981-82. The same samples are being repeated during the year 1982-83 also.

VI. Position of Available Data under the Scheme

As all the crops cultivated in the selected holdings are covered through the annual studies, a rich mass of data, that too on a continuing basis (though the sample villages are changed once in three years) on the cost of cultivation of paddy, coconut, tapioca and various other minor crops in the State has been thrown up since 1971. The following comprehensive data on crop production from 200 selected holdings have been annually collected and compiled. The computerised data are kept at the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India on the following aspects:

- (i) Value of family and hired labour/hectare
- (ii) Value of owned and hired bullock labour/hectare
- (iii) Value of owned and hired machine labour/hectare
- (iv) Value of seed, fertilizer, organic manure and insecticides/hectare
- (v) Cost of irrigation by machine, canal charges or other payments for irrigation
- (vi) Value of fixed assets
- (vii) Value of machinery and implements
- (viii) Land revenue, cesses and taxes paid
- (ix) Costs A1, A2, B and C.

Besides a host of data on livestock and their maintenance and livestock products, a large number of items of information on the sample households such as demographic characteristics, asset structure, pattern of consumption of food grains and agricultural loans are also available.

The data are helpful mainly for studies on the changing patterns of factor use in the cultivation of various crops in the state. It is possible to conduct analyses of labour absorption in agriculture in different operations in the various regions of the State both quantity-wise and quality-wise (farm family labour, attached labour, casual hired labour as also for male and female labour) on the basis of these data. Such analyses would be highly useful for formulation of plan policies in the agricultural sector. The auxiliary information collected on rural wage rates (operation-wise) and the farm prices of important agricultural commodities on a continuing basis during the last decade would also be of considerable use to the researcher and policy maker. The relationship between productivity and size of holdings can form yet another field of analysis.

VII. Gaps and Limitations

(i) The Scheme was originally designed to provide reliable cost estimates for a few principal crops. At the time of formulation of the Scheme in 1970, there was no uniform support/procurement price policy for the country as a whole. Hence the emphasis was on the representative character of the cost data at the State level alone and not for the different regions of the State. Therefore, studies for particular regions based on these data would obviously have limitations.

(ii) The sampling technique provides for grouping of operational holdings in the selected clusters into five equal sizes. But the size-class intervals vary between samples (clusters). Hence size-class-wise cost estimates are not generated. The sample thus provides little information on size efficiency.

(iii) The existing design does not provide separate estimates for cost of production for different categories of farms such as irrigated and unirrigated, tractor-operated and bullock-operated, local-variety-seed-grown and high-yielding variety grown, fertilizer-using and non-fertilizer using. Regional estimates on such aspects would therefore be impossible to be generated.

(iv) At present, perennial crops like coconut, arecanut, pepper and cashew and plantation crops like tea, rubber, cardamom and coffee are completely left out of the scope of the Scheme. Considering the significant contribution of these crops to the economy of Kerala, it is essential to take up systematic studies on the Cost of Cultivation of these crops as well. Of course, such studies would have to surmount innumerable methodological and conceptual problems due to inter-cropping patterns and the long gestation periods of the perennial crops involved. However, the experience already gained in the collection of data under cost of cultivation studies on coconut in Kerala conducted during the three years 1975-76 to 1977-78, would provide, despite their several limitations, useful guidelines in the design of proper scientific studies in the field.

(v) In spite of the fact that a rich mass of data on cost of cultivation collected under the scheme

during the last decade is available, it has not yet been put to proper use either by administrators or academic researchers in the State due to the restriction imposed by the sponsors of the Scheme in the utilisation of data by outside agencies. Reports on cost of production were published initially by the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India for the different States; but this system was later discontinued. Out of over 200 estimates generated under the Scheme since 1971, only 82 have so far been published but none on Kerala. Nevertheless, holding-wise listing (computer printout) is available with the Directorate

for all these different years. It would be desirable if the State Government and premier research organisations like the Centre for Development studies, Trivandrum, take up this issue with the Government of India for making all the available data under the Scheme for research and planning purposes. If the Government of India deems it necessary to maintain a certain amount of confidentiality in this regard, the data could be made available at least after the Agricultural Prices Commission has formulated its annual price and procurement policy.

4. LAND REFORMS AND LAND HOLDINGS IN KERALA

Smt. S. Retna Bai Ammal
Smt. K. Leelakumari

(A) Land Reforms

Agriculture is the most vital sector in the State's economy and it forms the chief source of livelihood of the people. The abundance of rain and natural fertility of soil have made the state an essentially agricultural region. Agricultural sector accounts for about 44.2% of the State Income and it absorbs about 41.37% of the main workers. Among the total main workers of 67.43 lakhs in the state as per the 1981 census, as much as 27.90 lakhs of people are engaged in agriculture. Moreover, it can be seen that about 13.18% of the main workers are cultivators and 28.19% agricultural labourers. The agricultural labourers are mostly hired workers with little or no land of their own. Except a small proportion employed in plantation almost all others are casual workers employed on daily wages for short and unspecified periods when there is demand on farm. The employment is highly seasonal with peak demands during planting and harvesting seasons. Kerala has the largest percentage of rural households without land in the whole of India. Turning to the cultivators we find a large number of very small farmers.

The state of Kerala is constituted of regions from the former princely states of Travancore and Cochin and the Madras State. The conditions governing ownership and possession of land are generally termed as land tenures. The Jenmies created several types of subordinate tenures under them ranging from a simple lease to outright sale. It is reported that the revenue settlement of 1911 identified as many 455 different tenures, in T. C. area. It was usual especially in North Malabar to find 3 or 4 intermediaries between the jenmi and the tiller of soil all having different interests in the same piece of land. The tenants have no permanent right on the land and the jenmies evicted them from their holdings at their will. Being under these separate administrations prior to independence, different legislations were passed on the different categories of tenancies. The low land man ratio, the large number of landless agricultural labourers and the topmost position in regard to the percentage of area under tenancy constituted the major problem which had a bearing on land reforms in the State.

The various tenurial conditions extant in the different parts of the state led to disparity between the richer and the poorer sections of the rural society arising out of the past exploitation of agrarian labour. Unless the tenants were freed from the various forms of exploitation and given economic incentives, the disparity between the richer and poorer sections of the rural society was bound to widen leading to agrarian unrest. Further if radical agrarian reforms were not implemented expeditiously, the green revolution, the major development on the agricultural front would hardly materialise. The Kerala Agrarian Relations Act 1960 was the first step in the direction. This was the first unified legislation which provided fixity of tenure to tenants and kudikidappukars,

resumption of land held by a tenant having fixity of tenure, determination of fair rent to be paid by tenants, mode of payment of rent, discharge of arrears of rent, vesting in Government of landlord's rights in lands held by tenants and assignment of such rights to tenants, restrictions upon ownership and possession of land in excess of ceiling and disposal of excess lands. A novel feature of this Act was that it provided for the establishment of land board and land tribunals for the implementations of its provisions. Despite the fact that this Act contained provisions for improving the tenurial system in the State, there were problems standing in the way of implementation. Several of the provisions were struck down by the court. Some of the provisions of the Act came under the criticism forcing the Government to enact a new legislation, the Kerala Land Reforms Act. It retains most of the provisions of the KAR Act with minor modifications. The present Land Reforms Act was enacted in 1964 and was subjected to radical amendments.

Land reforms programmes have two basic objectives, one economic and the other social. The economic aim of creating conditions that would enhance agricultural production is to be achieved by eliminating all exploitation and social injustice and by providing security of tenure and conferment of ownership of those who till the soil. This could be achieved only by the abolition of intermediaries and by tenancy reforms. The social aim viz., reduction of large disparities in the distribution of land can be achieved by imposition of ceiling on land holdings and redistribution of surplus land to landless agriculturists. Kerala Land Reforms Act was passed to achieve these twin objectives of Land Reforms.

Bureau of Economics and Statistics undertook a study on Land Reforms in Kerala during 1966-67 and published the report. The study consisted of four parts: 1) study of available material on land legislations; 2) collection of primary data through a sample survey; 3) study of cases disposed of by and pending with Land Tribunal; 4) collection of information on land holding and agrarian relations from village records and contacts with leading public men, peasant organisations etc.

The survey has revealed that the total number of households which have interests in land in agrarian households is 28.25 lakhs which forms about 84% of the total number of households in the State. Landlords account for just 2.3% and Kudikidappukars for 12.2%. Information on category-wise composition of ownership/operational holdings according to size in respect of landlords, owner-cultivator, kudiyrippu, tenant other than kudiyrippu and Kudikidappu types of households is available in the report. Any household which has got owned land leased out irrespective of the extent of lease is considered as the household of the landlord. Distribution of land lords' households by size of ownership holding shows that 12% of the households have ownership holdings less than 1 acre in size while 13% have holdings above

25 acres in size. This shows that most of the landlords come in the category of small holders. They are landlords only by definition. All landowners who have leased out even a bit of land are classified as landlords for the purpose of the survey. The total number of kudikidappus in the State according to the survey is 3 43 lakhs. It forms 12.2% of the total number of households with interest in land. A large percentage of kudikidappukars belong to the landless agricultural labourers and are real tillers of the soil. Their right in land is confined to a hutment and one or two cents of land in which it is put up. They cease to become kudikidappukars as soon as they happen to possess any land suitable for putting up a house. Distribution of operational holdings according to size reveal that nearly 92% of the operational holdings are in the size group less than 5 acres. Holdings of 25 acres and above constitute only 0.4% of the total number of holdings but they account for 12% the total area. The average area per holding in this size group is as high as 48.94 acres. These large holdings are mainly private plantations. Another interesting phenomenon is that there is steady decline in the number of cultivators per acre of the holding as the farm size increase.

Another Land Reforms Survey in Kerala was conducted during 1978-79. The results are in the analysis stage.

As already stated the three main objectives of Land Reforms are (a) abolition of intermediaries (b) Tenancy Reforms and (c) Imposition of ceiling on holdings and redistribution of surplus lands.

The tenants of Kanam lands of Cochin, the Odupply lands of Cochin, the Viruths and Inams still remain to be brought into direct relations of the State. Main acts of Tenancy Reforms are 1. Security of tenure, fixation of rent and right of tenants to purchase the ownership of their holdings. The amendment to the Land Reforms Act enacted in 1969 confers security of tenure to all categories of tenants except a few categories mentioned in the last section. Of course sections 14 to 22 provide for the resumption of land in certain cases. Largest number of applications were registered under section 17 as per which a small holder may resume from his tenant a portion of the holding not exceeding one half provided that by such resumption the total extent of land in his possession shall not exceed 5 acres. According to section 27 of the Act 35 of 1969, fair rent was fixed. Section 72 of the amended Land Reforms Act 1969 provides for the vesting of all rights, titles and interests of the land owners in respect of the holdings held by tenants in the Government. Up to the end of November, 1981 about 36.76 lakhs tenancy cases were filed for assignment of the right and of these 36.66 lakhs cases were disposed off. The number of cases allowed was 24.78 lakhs. As far as kudikidappukars are concerned a total of 4.40 lakhs cases were disposed of out of the 4.45 lakhs cases filed, the number of cases allowed being 2.72 lakhs. The need for a ceiling on holdings was officially recognised in this region even before the planning commission recommended it. In anticipation of the ceiling redistribution several malafide transfers took place. 1969

amendment has reduced the exemptions and ceiling limit. Kerala has the lowest ceiling limit among the states in India. Major exemptions from ceiling provisions are private forests, plantations, lands belonging to religious and charitable institutions. As on 31-5-1982, out of the 67450 ceiling cases filed 65631 cases have been disposed off. Total extent of surplus land ordered for surrender upto 31-5-82 is 120690.53 acres. Total beneficiaries are about 85631.

The land reforms legislations aimed at drastic structural transformation in agrarian relations definitely succeeded in abolishing landlordism completely but did not succeed in transferring lands to the real tillers of the soil. However, during the process, most of the landless agricultural labourers got possession of small plot of land up to ten cents for dwelling purposes. The land reforms effected only marginal reduction in the inequality of land distribution. But some of the relatively richer tenant peasants who had a substantial area of leased in land got ownership right of the whole land operated by them and consequently emerged as a new class of capitalist farmers. Ceiling on holdings could not achieve much because of the exemption granted to plantations. Distribution of surplus land meant little to agricultural labourers since land has not gone to the tiller of the soil but to the intermediate possessor. The small and marginal farmers were economically at less advantageous position in the sense that the benefit of modern technology and agricultural subsidy programmes of the Government were mostly reaped by the larger farmers. The decline in the number of cultivators (from 11.08 lakhs in 1971 to 8.89 lakhs in 1981) probably meant that some of the small farmers had abandoned farm cultivation. The decline in the total number of cultivators was due to the steep fall in the number of men cultivators from 10.39 lakhs to 8.05 lakhs. This may be partially due to the fact that a large number of Keralites have gone to the Gulf countries in search of employment and substantial number of them may be small cultivators with a meagre size of holding who might have sold out their small plot of land. The provisional result of 81 census reveal a shift in the working population from the agricultural sector to the non-agricultural sector. The upward trend in the working population in the non-agricultural sector would show that more and more persons get themselves absorbed in activities other than traditional ones.

B. Land Holding

Based on the recommendation of the Planning Commission, a census of holdings and cultivation relating to Agricultural land, the cultivable area comprised in a holding including groves and pastures was conducted in all the states as per the direction of Government of India in 1954. All unoccupied area such as forest land and other uncultivable land and land held in urban areas were excluded. For comparison purposes, the Government of India have directed that the land holdings should be evaluated in terms of standard acre (A standard acre is defined as the area of land available for Rs. 5000 at the prevailing average market value).

The land records are not generally up to date. The classifications into *tharam* (grade) according to yield are not done periodically. The land registers do not give details of tenure. In the light of these limitations, the land census had to be conducted by spot enquiry of land owners and cultivators. The details of tenure of cultivation was done by sampling methods. The enumeration was done by the staff of the Department of Statistics.

The report containing the results of the census of land holdings and cultivation conducted in the T. C. State was first published in 1956. At the instance of Government of India, the report was reprinted incorporating the modifications. The details in respect of Malabar District furnished by the Madras Government were also incorporated in the report. Statements on holdings classified according to area owned and given on lease (in ordinary acres and standard acres) in respect of low land, mid land and high land are given in the report. So also the details of holdings classified according to owned area under personal cultivation are also available. The main finding was 2/3 of the holdings was below one acre and 5 percentage was over 5 acres. Lease in the case of small holdings was only 2 to 3%. In terms of standard acres, the land comprising cultivators, holdings may be equated to 52% of the geographical area. Per capita cultivated land can be valued at Rs. 885 the details given in respect of T. C. area and Malabar area are not strictly additive and comparable since unlike T. C. area, plantations were included and the method adopted for reducing ordinary acre to standard acre were also different.

Data on the structure of agricultural holdings were collected through sample surveys by the N.S.S. The first was done during 54-55 as part of the 8th round and the second during 60-62 as part of 16th and 17th rounds of N. S. S. The sample surveys could give estimates at the all India level only and hence the estimates were of limited value for micro level planning at the lower regional levels like States and Districts.

With the decision of Government of India to participate in the World Agricultural Census 1970, the Ministry of Agriculture desired that the NSS organisation may organise a sample survey on land holdings with the object of obtaining comparable information on the structure of agriculture in the country. The survey was undertaken in 1971-72 as part of 26th round of NSS in conjunction with the 'Debt and Investment Survey' proposed by the R. B. I. At the All India level, the difference between the NSS estimates of the number of households and that of 1971. Agricultural Census is negligible. However, NSS estimates are lower in Kerala by 7% and the figures on net area sown by 43%. Area sown by the non household sector like co-operative farms, government agricultural farms, land under temple etc., is included in the net area sown by the State Agricultural Statistics Authority (SASA) Statistics of net area sown are obtained not by complete enumeration through land records but estimated on the basis of the sample surveys conducted by the State Government.

In agriculture, an operational holding still continues to be the fundamental unit of decision

making and therefore information on the structure and characteristics of the holdings particularly in respect of marginal and small holdings an essential pre-requisite for drawing out any well thought out plan of development in this sector. Periodical collection of data on vital aspects of holdings is necessary to assess the impact of economic legislations enacted by the country from time to time so as to ensure social justice to the vast multitude of weaker sections. As a result of this realisation, Government of India carried out censuses during 1970-71, 1976-77 and 1980-81. Printed reports in respect of the first two censuses are available. Scrutiny of the information gathered in respect of the 3rd census is almost over and the final tables will be ready shortly. The census provided information on the number of operational holdings and area operated, their size, area irrigated, number and area of holdings by tenure, land utilisation, source of irrigation, area under different crops and inventory of livestock and agricultural machineries. A statement showing number of operational holding and area operated by size class of operational holdings as per 1970-71 and 1976-77 censuses is appended.

The agricultural census is different from the current agricultural statistics in that information for census has to be collected for individual agricultural holdings and not only for plots of land without reference to holdings of which they form part. On comparison of the census estimates with the data available from TRS, it is noted that the area seems to be underestimated. The extent of under-reporting of area was reported to be very significant in the case of some items of informations. In this case it has to be remembered that the census data are supplied as voluntary information by the informants from their memory. Moreover, provision on the ceiling of land in the Land Reforms Act has led to large scale partitions. The details of the area of land belonging to members who are residing away may not be usually reported even though a household member operates the land on their behalf. There are several holdings (cardamom, rubber, coffee estates) the operational holders of which reside outside the state. The apprehension about the enforcement of the provision of the Land Reforms Act might also have heavily influenced the cultivators while reporting the area under operational holdings.

Data on agricultural structure by interrelating various characteristics of holdings is necessary for socio-economic planning and efficient implementation of projects designed to increase agricultural production by facilitating selection of suitable farming areas and types of farmers for concentrated development with available resources. Further data agricultural sector, and the Agricultural census is the only source for comparative data on these on an All India basis. Therefore even with all the agricultural sector, and the agriculture defects circumstances data in All India basis are the only sources and information the changes in the holding other is available. Therefore even with all the limitations and deficiencies, the agricultural census is providing useful results for undertaking more realistic planning in the agricultural sector.

5. ANNUAL HUSBANDRY STATISTICS IN KERALA

T. Janardhana Menon

Introduction:

Animal Husbandry is one of the crucial sectors possessing immense scope for development in Kerala because of its large cattle population. Majority of the population of the State is dependent on agriculture and allied sectors. Agricultural workers can supplement their income by resorting to other allied occupations like livestock and poultry keeping. The preservation and improvement of cattle wealth and Development of livestock economy are highly significant both from the nutritional standards and additional employment opportunities. Non-availability of reliable statistics in the required form and in time is a major handicap in the formulation and implementation of development schemes.

The objective of this paper is to present a brief account of the statistics on the livestock economy of the State collected by the Statistical Wing of the Animal Husbandry Department. The Statistical Cell in the department was started in the year 1962 with the objective of collection, compilation, analysis and interpretation of Animal Husbandry Statistics for the planning, formulation and evaluation of development programmes. This unit has got three wings (a) the official Statistics (b) the Intergrated sample survey wing and (c) the disease survey wing. An account of the data collected by these wings are given below.

(a) The Official Statistics Wing

The main items of work attended to by this wing are (1) Preparation of the Bulletin of Animal Husbandry Statistics (Annual). This is the official publication of the Statistical unit of the Department.

(2) Preparation of the Annual Administration report of the Department.

(3) Preparation of the monthly review on the activities of the Departmental Poultry farms in the State.

(4) Preparation of the monthly review on the activities of the ICD Projects and Key Village Blocks under the Department.

(5) Collection of the Market Intelligence data on the prices of Livestock and Livestock Products, Cattle feed etc., from the selected Centres in the State. Prices are collected weekly; monthly average prices are published in the bulletin.

(6) Collection and compilation of slaughter statistics from Panchayats and Municipalities monthly district-wise (organised sector only).

(7) Collection and compilation of Export and Import data of Livestock and Livestock Products by Rail (Annual).

(8) Collection of details regarding the achievements of all departmental institutions.

(9) Attending residuary work on Livestock census.

(10) Conducting Bench mark and Assessment Survey in the Intensive Cattle Development Project areas.

The bench mark survey was conducted in the recently established ICD Project areas at Calicut and Kottarakkara. The objective of the survey was to estimate the prevailing state of animal husbandry practices in the area (before the commencement of the project) such as the number of livestock according to breed, average milk yield per day per animal in milk, total milk production, veterinary and breeding facilities etc. The survey covered the entire project area and it used a stratified random sampling procedure with Panchayat/Municipal Ward as the primary unit.

This wing is also in the process of completing an evaluation study of the ICDP Project, Alwaye. The survey started in January 1982 will be completed in February 1983.

(b) The Intergrated Sample Survey Wing

The Intergrated Sample Survey (ISS) to estimate the production of major Livestock Products such as milk, egg, meat, etc., was undertaken in this State during the year 1964-65 by the then Statistical Unit under the auspices of the Indian Agricultural Statistics Research Institute (IASRI), a research wing of the ICAR. After that a survey of this type was started in this state only during the year 1977-78 and is being continued thereafter.

ISS is being carried out in accordance with the guidelines issued by the Animal Husbandry Statistics wing of the Ministry of Agriculture and Co-operation, Government of India.

Objectives of the Survey

The broad objectives of the Survey are:

(1) Estimation of the production of major Livestock products like milk, egg, wool and meat on an annual basis-State-wise and all India.

(2) Study the trend in average yield and production over a period of years.

(3) Comparative study of the average yield and production levels in different States.

Coverage

The survey covers the whole state and is conducted on a seasonal basis. The three seasons are.

Summer	March to June
Rainy	July to October
Winter	November to February

Each season consists of 4 rounds of one month each and the relevant informations are collected in the prescribed pro forma from each of the selected households once in every month. The main items of information collected are Milk yield of bovines and goats and attendant practices like feed intake, utilisation of milk and dung, egg production, yield of meat from slaughter houses and butchers, number of animals slaughtered, data on disease and mortality, etc.

Sampling Plan

The sampling plan adopted is a stratified multi-stage random sampling one; The district forms the strata. From each district one Corporation/Municipality (urban sample) and 4 panchayat (rural sample) are selected during each season. Fresh samples are selected in the different seasons. From each municipality/Panchayat selected, one ward is selected at random for listing. From each ward selected 100 households (with a random start) will be enumerated during the first month of every season, and details of livestock possessed by them will be recorded. The following types and number of households have to be selected.

In Milk Bovines: 5 Clusters of 2 households.

In Milk Goats: 1 Cluster of 2 households.

Egg (Poultry) (Layers): 4 Clusters of 5 households.

Listing has to be continued if the required number of households having in milk bovines and Goats and Layers are not got from the first 100 households listed till the required numbers are got.

Estimation

The average yield of milk per animal per day/no. of eggs laid per layer per day are worked out utilising the sample results. The district wise number of in milk animals/Layers are estimated annually utilising the 1977 Livestock Census figures. Milk production is estimated separately for Cows-Non-discript; Cows-Improved, buffaloes and Goats. Egg production is estimated separately for Desi and Improved varieties.

Production

The survey results show that milk production in the state has increased from 221 thousand tonnes in 1964-65 to 908 thousand tonnes in 1980-81, raising the per capita availability of milk per day from 30 gms. in 1964-65 to 98 gms. in 1980-81. Similarly, the egg production in the state has increased from 282 million eggs in 1964-65 to 962 million in 1980-81 raising the per capita availability from 15 eggs in 1964-65 to 38 eggs in 1980-81. The provisional estimates of milk and egg production for the year 1981-82 are 950 thousand and 980 millions respectively.

District wise estimates

For the formulation of realistic targets of production and planning from below for optimum utilisation

of resources, State level estimates alone are not sufficient and that district wise estimates will be necessary. With the present sample size in the States now being adopted, the production estimates worked out will be quite precise and usable only at *State-level* but not at *district level*. Accordingly the Ministry of Agriculture and co-operation, Government of India has approved a scheme, to be adopted by States, with enlarged sample size for the estimation of the major livestock products which will give realistic estimates at district level. According to the sampling design of the new proposed survey with enlarged sample size, 10% of the villages will be selected in a State for Complete enumeration of the livestock and poultry population in all households of these selected villages. This will also provide breed wise information and data on other economic aspects of livestock and Dairy industry. The list of households from 10% of villages in the State will form the frame for selection of representative sample for detailed enumeration. The listing work will be undertaken separately for each season before the commencement of the survey. Out of the large sample of 10% villages; a sub-sample of 10 villages will be selected for each district for detailed survey. The clusters of households to be selected from each village are the same mentioned earlier. In our State the new survey is proposed to be implemented from 1982-83 onwards.

(c) The Disease Survey Wing

Kerala has a large cattle population but the output per animal is very low. This low level of production is due to a number of factors such as the Socio-economic conditions of the farmers, unscientific breeding, feeding and management practices, under utilisation of disease control methods etc.

In consonance with the development programmes for upgrading the stock and increasing the animal productivity, it is essential to check the incidence of diseases among animals. Rearing of new breeds brings in new diseases. Control of various diseases and proper maintenance of animal health are a must for ensuring animal wealth. The high cost of improved variety of animals, their susceptibility to various infectious diseases, the emergence of new diseases consequent on increased movement of livestock and poultry etc., contribute to the importance of disease investigation and disease control methods.

Reliable data on the incidence of various kinds of diseases are therefore necessary on a regular and continuing basis for preventive and curative disease control measures. As such, a sample survey on the "Incidence of Diseases to Animals and Consequent Economic Loss" was conducted in Kerala in 1980-81 and was continued in 1981-82 and 1982-83 also.

Objectives of the Survey

The main objectives of the Survey are—

(1) To estimate the incidence of the various types of diseases on important livestock and poultry species viz., cattle, buffalo, goat, poultry, pigs, etc.

(2) To assess the loss in production, reduction in working capacity, mortality rate etc., due to various diseases on animals and poultry.

(3) To study the attitude of the Public towards Artificial insemination, maintenance of improved breeds etc.

Coverage and Sampling Plan

The survey covers the whole State and is conducted on a seasonal basis (Summer, Rainy and Winter) in order to study the seasonal variation in the incidence of diseases. Fresh samples are selected for each season. Stratified Random sampling is adopted for the survey. The district is the strata. One urban sample (Municipality/Corporation) and three rural samples (Panchayats) are selected at random in each district. From each Municipality/Corporation and Panchayat selected one ward each is selected. From the selected ward of each sample 500 households are enumerated during every month. In case the number of households are less than 500, the remaining number of households will be selected from the adjacent ward. On the whole 2000 households are enumerated in one season in a district. 66000 households are enumerated in the State as a whole in one year. The field work is conducted by the Livestock Assistants of the Animal Husbandry Department.

SUGGESTIONS AND CONCLUSIONS

(1) Non-availability of reliable statistics on the various aspects of livestock is one of the main handicaps for the formulation, implementation, monitoring and evaluation of livestock development programmes.

(2) Even though the requirements of Animal Husbandry Statistics are very huge and since it is difficult to collect and compile all of them within a specified time in view of its exorbitant cost, efforts should be made to collect on a priority basis such informations without which it may not be possible to go ahead with the development programmes.

(3) At present the main source of livestock data is the quinquennial livestock census. But the livestock census gives us information only at 5 year time intervals. In the context of planning at lower levels, it is essential that we should have information annually and even seasonally on the breed wise livestock numbers and their products.

(4) For the formulation of realistic targets of production and planning from below for optimum utilisation of resources State level estimates alone are not sufficient and that district wise estimates are necessary.

(5) With the present sample size now being adopted in the States, the production estimates worked out are quite precise and usable only at *state level* and not at *district level*.

(6) In order to have district wise and seasonal estimates of livestock and their products, the Ministry of Agriculture and Co-operation, Government of India has approved a scheme with enlarged 37/1827/MC.

sample size to be adopted by States. In Kerala State it is proposed to be implemented from 1983-84 onwards.

(7) A sample survey for the estimation of livestock products was conducted in Kerala State only in 1964-65 under the auspices of the ICAR. After that a similar survey was started in the State only in 1977-78 and is being continued after that. The survey gives us seasonal estimates of livestock products only (for the state as a whole) and not the livestock numbers. The Annual livestock numbers for intersensal years are being estimated from 1977 livestock census.

(8) The 1982 Livestock census was conducted in September, 1982 and the tabulation is in progress.

(9) Periodical studies should be conducted to estimate the cost of production of livestock products and cost of cultivation and production of fodder crops.

(10) Periodical Sample Surveys should be conducted to assess the "Incidence of diseases to animals and consequent economic loss" to the State. Reliable information on these aspects will be helpful in planning the line of action for effectively controlling the diseases by adopting suitable control measures and thus avoiding the losses to a greater extent. Such a survey was started in our state in 1980-81 and is being continued.

(11) Bench mark and Assessment surveys are being conducted in the ICDP Areas in our State to assess the impact of the development programmes.

(12) It is desirable to conduct studies to estimate the employment potential of livestock and poultry keeping in rural areas.

(13) Category wise technical manpower available in the AH Section, future annual requirement of each category of personnel and attrition rate should be prepared annually.

This is essential for manpower planning.

(14) Various Special Animal Husbandry programmes for improving the economic conditions of the weaker sections of the society are being implemented in our State. Proper evaluation studies should be conducted to assess the benefits accrued by them.

(15) The Indian Agricultural Statistics Research Institute (IASRI) has suggested to conduct studies on the contribution of animals to the energy sector in the forms of:

- (1) Draught power for various agricultural operations;
- (2) Draught power in rural transport and Industry;
- (3) Soil Nutrients through animal waste for crop growth;
- (4) Household fuel in the form of dung cakes and biogas; and

- (5) Comparative study on the efficiency of animal energy to that of commercial fuel.

(16) Various agencies, official and unofficial require statistics in different forms and for different units. In order to satisfy all these agencies to meet all their requirements, we will have to collect statistics on all aspects of the economy for smaller units, even village-wise, which is an impracticable proposition to suggest.

(17) Users of statistical data and those entrusted with planning should list out on a priority basis the form of statistics required by them. Government should sanction such schemes on a priority basis and the statistical agency should collect the same using accepted statistical methodologies and make available the data to the users in time. In short, there should be close co-ordination between users and suppliers of statistical data, which at present lacks.

(18) Information relating to a particular item for a particular area can be had only through adhoc studies which the user himself should arrange to collect.

(19) The gap between collection and publication of statistics should be reduced to the minimum.

Monthly details on the following items are regularly collected by the Statistical Wing of the A. H. Department and are being published in the Annual Bulletin of A. H. Statistics:

- (1) Artificial Inseminations using Cross bred Semen.

- (2) Number of Cross bred calves.

- (3) Outbreaks, attacks, deaths etc., due to contagious diseases among livestock and poultry.

- (4) Cases treated, number of castrations done, vaccinations done etc.

- (5) Anti-Rabic treatments done.

- (6) Details on the functioning of the Departmental Livestock and Poultry farms.

- (7) Slaughter Statistics; since data relating to unorganised sector is not available at present, realistic estimates of meat production could not be prepared. This can be collected only through sample surveys.

- (8) Import and export of livestock and livestock products, cattle feed etc., by rail.

- (9) Prices of livestock and livestock products, poultry, egg etc.

Much of the data needed for the purpose of livestock development and planning has to be necessarily collected through sample surveys/studies. Even though the IASRI has already developed and standardised sampling methodologies for the collection of data and conduct of evaluation studies on certain selected topics of Animal Husbandry Statistics, methodologies have yet to be developed on many other items also.

6. FISHERY STATISTICS: DATA GAPS AND SUGGESTIONS FOR IMPROVEMENT

T. R. Thankappan Achari
N. Vikraman Nair
A. M. Joseph

1. Available Data

The data base on Fisheries comprise the following:—

(i) Marine fish production statistics published by the Central Marine Fisheries Research Institute (CMFRI).

(ii) Marine Products Export Statistics published by the Marine Products Export Development Authority (MPEDA).

(iii) Inland fish production statistics compiled by the Department of Fisheries.

(iv) Fish price statistics collected by the Department of Fisheries.

(v) Inventory of fishermen, fishing crafts and gear published through the Quinquennial livestock census.

(vi) Inventory of fishermen fishing craft and gear collected by the Department of Fisheries and the Central Marine Fisheries Research Institute periodically.

(vii) Socio Economic surveys conducted by the Central Marine Fisheries Research Institute, the Department of Fisheries and Private Organisations.

(viii) Productivity studies carried out by different agencies, including the department of Fisheries.

2. Statistical Methods Followed

The Central Marine Fisheries Research Institute has evolved and almost perfected a multi stage stratified random sampling technique for collection of marine fish statistics for the country as a whole. Through a process of stratification of space and time, sample fishing units are selected on a systematic random sampling basis by actual observation. Data on night landings are collected through enquiry. Special efforts are made to collect exhaustive data on mechanised fishing at Neendakara and Cochin. Species wise data on a quarterly basis are published by the Central Marine Fisheries Research Institute. In recent years Central Marine Fisheries Research Institute has also made certain ad-hoc surveys to supplement the data system by enumerating fishermen, fishing craft and gear in the marine sector at the village level on a census basis.

1. Project Chief, Department of Fisheries
2. Assistant Director (Statistics) Department Fisheries
3. Research Officer, (Statistics) Department Fisheries.

Productwise countrywise export statistics (quantity and value) and a host of other information relating to the export market are published by the Marine Products Export Development Authority on

a monthly and yearly basis. The information is collected directly from the exporters as well as other export and market agencies.

In the computation of inland fish statistics, the data are reported by the Sub Inspectors of Fisheries from 30 centres on a monthly basis. This is supplemented with production estimates received from the fish farms and reservoirs. The statistical cell in the Department of Fisheries also has undertaken occasional surveys to further supplement the data.

Beach side, whole sale and retail prices of fish are collected regularly by the statistical cell in the Directorate. The beach side prices of all species landed are collected from 14 centres on a fortnightly basis. The whole sale and retail market prices are collected from 20 principal markets spread over 10 districts. The districts of Idukki, Wynad and Pathanamthitta are not covered.

3. Statistical Gaps

Even though the Central Marine Fisheries Research Institute has scientific methodology in the computation of catch statistics, the published data are not fully devoid of discrepancies and statistical gaps. The discrepancies are because of the highly complex and volatile characteristics of the species of fish which vary from centre to centre and season to season. The statistical gaps comprise absence of village-wise data on catch statistics according to fishing gear and fishing craft. Even though monthly data are computed by the Central Marine Fisheries Research Institute, these are not published or made available on a regular basis.

The Inland fish production estimates computed by the Department of Fisheries is less reliable. There is no effective machinery for supervision of the statistical work of the Sub Inspectors of Fisheries nor is any scientific methodology available for collection of production statistics. Even at the national level scientific and systematic methodology for collection of the Inland fish Statistics is absent. The production estimates reported from the reservoirs and fish farms managed by the Department of Fisheries often do not convey a realistic picture.

For want of adequate supervisory personnel to check the price statistics reported, the reliability of the data cannot be ensured.

As regards the inventory of fishermen fishing craft and gear thrown out by the livestock census, it is to be pointed out that the data are full of discrepancies and hence hardly serve any official purpose. The discrepancies are mainly due to the fact that the information is canvassed by enumerators without proper training about the fishing craft and gear. Further in the livestock census, fisheries actually get only secondary importance. In view

of the lacunae in the fishery statistics published through the livestock census, the National Commission on Agriculture has recommended as follows:

“Census of fishing craft, tackle and nets should be conducted independently of the livestock census by the State Fisheries Departments under the overall technical control and guidance of the Fisheries Division of the Central Ministry of Agriculture and Irrigation”.

Fishery inputs data are essential for economic analysis of various development programmes in Fisheries. There is no regular system of collection and compilation of economic data on prices of diesel engines and spares, boat building materials, fishing gears and accessories etc. So also data on inland water areas and aquaculture are hardly available.

4. *Suggestions for Improvement*

(i) The State may also collect marine fishery statistics in consultation with Central Marine Fisheries Research Institute.

(ii) For improving inland fish statistics, gear productivity studies in inland areas may be conducted annually.

(iii) Inland fishery resources should be surveyed periodically with reference to geographical, physical, chemical and biological factors.

(iv) The registration and licensing of fishing crafts as envisaged in the Kerala Marine Fishing Regulation Act 1980 are to be ensured.

(v) The Fishermen Welfare Societies at the village level may also be utilised for collection of fishery statistics.

(vi) Collection of beach side, whole sale and retail price statistics of fish should be improved through provision of adequate administrative and technical support.

(vii) Operational details of all categories of craft gear combinations should be collected periodically on a systematic basis.

(viii) Economic assessment of all pilot development programmes implemented by the Department of Fisheries both in the Marine and Inland Sectors should be undertaken.

(ix) A full fledged data bank on fisheries must be built up.

(x) The statistical cell in the Department of Fisheries should be suitably strengthened under the leadership of a senior Statistician/Economist with necessary supporting staff.

7. FOREST STATISTICS IN KERALA

G. Somasekharan Nair

Introduction

Forest resources enjoy a special status of being the only renewable natural resources in any country. Collection, Compilation, analysis and dissemination of all types of statistics relating to the forestry sector has received added significance at present, especially when the forest area in the country as well as in the State is decreasing day by day. Man's dependence on forests and the role of forests in protecting environment are increasingly realised with more and more concern for preserving the forests. This paper attempts to present a basic brief review of the availability and limitations of forest statistics, giving the background of forest management in Kerala and some suggestions of improvement.

2. Historical Background:

Originally forests in Kerala were in the possession of the native rulers and species of timber such as teak, rosewood, ebony and sandalwood, which had recognised values as goods for export were proclaimed as "Royal trees". During the last century large quantities of teak were extracted for ship building, for railways and for the use of the military. This situation finally resulted in heavy depletion of the forest which necessitated a system of forest management, steps for which were taken in 1828. The first teak plantation was established in Nilambur area to replace the destroyed forests and the first working plan (a comprehensive and systematic area plan over a period of years of forest management) was also prepared for Nilambur in 1895. At present forest management is being carried out on the basis of approved working plan in each forest division.

The heavy pressure of population growth led to a situation where forestry and agriculture compete for land, which is the common natural resources of both the sectors. In 1940, Government sanctioned 'Kuthakapattom' (exclusive right for cultivation) in State Forests for the first time, which marked the beginning of loss in forest both in terms of extent and resources due to assignment, resettlement and encroachment. The ultimate result is that the State suffered a loss of the order of nearly forty per cent of the forest area during the last four decades. In spite of the comparatively long history of forest management and the existence of a forest department in the State for more than a century, even today the available data on forestry do not fully meet the needs of planning. The National Commission on Agriculture in their report has observed the following: "There is considerable timelag in the availability of forest statistics and complete information is not available in respect of forests under other civil authorities, corporate bodies and private individuals. There is also a large discrepancy between the area under forests as published by the Indian Forest Statistics and the figures published in the Indian Agricultural Statistics. There is also need for enlarging the scope of forest statistics" (N. C. A. Report Para 61-10-3).

3. Position of Forestry in the Economy:

At present nearly 8 to 10 per cent of the State Revenue is obtained from the forestry sector, which also enjoys the proud privilege of providing employment in various operations like timber extraction, silvicultural works and civil works. The silvicultural operations like raising nurseries, planting, weeding, thinning, climber cutting etc., are done, as a rule, by the Department while civil work are not generally taken up by it. The extraction of timber the major item of work on exploitation of produce is done both by the Departmental and non-departmental agencies. The gross revenue from forests has shown an increase of nearly four times during the past decade. It cannot be concluded that the increase is mainly due to the increase in the outturn of forest produces, as the high rate of increase in the price of the produces might also have influenced the increase in revenue. For realistic planning in the forestry sector, the necessity of having reliable forest statistics with least timelag need not be overemphasised, in this context.

4. What Is Forest Statistics?

The principal forest statistics relate to area under forests, volume of standing timber and firewood, quantity and value of out-turn of timber, firewood and minor forest produces, employment in forestry and forest industries, foreign trade and data on revenue and expenditure. Besides, information on the progress of working plans, breaches of forest rules and grazing of cattle in Government forests etc. are also collected. Collection of forestry statistics was initiated to meet the administrative needs of the Forest Departments and was largely a bye-product of the administrative reports and records of the Forest Departments of the State. The present situation regarding the various items of forest statistics is briefly described below:

(a) Area Statistics:

The area under forests in the State is reported to have reduced by about 40 per cent during the last four decades, as is evidenced from the various details available in the records of the Department. At present the area under forests in the State is available in the various publications of the Census Department, Bureau of Economics and Statistics and the Forest Department. The details available from the different sources are given in Table 1.

TABLE 1
AREA (Sq.Km) UNDER FORESTS IN KERALA

Source	Period	Area (Sq.Km)
1. Forest Department (Administration Reports)	1979-80	11251
2. Bureau of Economics and Statistics.	1978-79	10815
. Census	1971	7489

As mentioned in the NCA Report (Para 61.10.4) this discrepancy is not a speciality of the State alone, but is a part of the National level situation. Further, the forest department is having only forest division-wise figures which are not co-terminus with the revenue districts. It is high time, therefore, that the three departments may jointly try to reconcile the differences starting from the lowest possible levels viz., the revenue village and the forest ranges. This attempt will also throw light on the de-facto possession of the forest area by the Department as against the de-jure extent available in the records.

(b) *Growing Stock of Timber and Firewood:*

A Forest Resource Survey conducted during 1972-73 has estimated that the growing stock of wood in the then existed Government forests as 154.97 million cubic metre (cum.) in an area of 9.384 lakhs hectares of notified area of which 7.520 lakhs hectares is considered productive. This indicates that the per hectare growing stock of wood is 165 m³ for the notified area and 206 m³ for the productive area. The division-wise details worked out reveal that the growing stock per hectare ranges from 74 m³ to 290 m³ for the notified area and 146 m³ to 290 m³ for the productive area, indicating a co-efficient of variation of 34% and 23% respectively. The details given in the resource survey of 1973 have not been revised even after a lapse of more than a decade, which requires the immediate attention of the concerned authorities.

(c) *Quantity and Value of Out-turn of Forest Produce:*

Timber, obtainable in four different forms (viz., round wood, sawn and squared wood, poles and firewood), bamboo reeds, rattan, medicinal plants sandalwood etc., are the important produces from forests. Out-turn, both in terms of quantity and value of the produces, is available in the annual administration reports of the Forest Department. But these details relate only to the forest under the control of the Department and also in respect of the authorised removals from forests. There is considerable quantity of timber and firewood grown outside the forest lands. The NCA has recommended that suitable procedures have to be devised to frame estimates of unrecorded production and removals, at least once in five years.

(d) *Prices, Costs and Employment in Forestry:*

Data on annual average prices of timber of different species firewood, plywood etc., are also available in the various records, registers and reports of the Department. But these data are found to be defective in terms of coverage and accuracy. Data on revenue and expenditure are available for each year in the administration reports, which show that the present revenue from forests in Kerala is of the order of Rs. 55 crores as against an annual expenditure of Rs. 13 crores.

Data on employment opportunity in the Department, employment generated in the forestry

operations and forest based industries and infrastructural developments such as roads, buildings etc., in the forest area also find a place in the publications of the Department.

5. *Discrepancies and Defects:*

The forest range is the lowest administrative unit of the department and most of the registers, which are the major source of data on forest statistics are maintained in the range offices. The most important registers to be maintained at the range offices include the following:—

1. Reserve register
2. Plantation journal
3. Stock register of Forest Produces
4. Register of Revenue
5. Cash Book.

The range Officers are to send periodical (monthly, quarterly and annual) returns giving the details of the various activities of the department to the Divisional and Circle level officers who in turn will send the consolidated report to the forest headquarters. The major discrepancies noticed in these returns are inconsistency, lack of continuity and time-lag.

Recently a full-fledged statistical unit was established in the Forest Department under a Deputy Director (Statistics) with Compilers in the Divisional and Circle level Offices, to assist the officers of the Department at the various levels in the compilation and preparation of the various items of forest statistics.

At present there is no machinery in the Department to check the quality of data recorded in the various registers and records. Even though the officers at the different levels are conducting inspections of the sub-offices, they are not likely to get spare time to check the quality of data recorded or to appraise the present system of maintenance of the registers. This has affected the quality and coverage of the recorded data to a great extent. It is high time to find out ways and means to improve the situation in this regard.

6. *Major Data Gap:*

(i) As mentioned earlier, the major data gaps regarding forest statistics is the non-availability of information on the unrecorded removals of produces from forest land. As recommended by the National Commission on Agriculture, it is high time to evolve a suitable methodology to frame reliable estimates in this regard at periodical intervals.

(ii) At present a considerable extent of the forest land is utilised for cultivation of agricultural crops by settlement and encroachment. But the details of the crops are not available and as such the same is not included in the annual agricultural statistics. Efforts are to be made to frame reliable estimates in this regard.

(iii) The periodical prices of different species of timber collected at present relate to the auction sales conducted by the Department as also those available in the Government depots. For comparative purposes, the prices of timber and firewood in private depots in selected centres are also to be collected regularly.

(iv) Analytical studies utilising the existing data may be taken up to find out (1) the cost structure of plantations of different species, (2) the working charges of the different forestry operations, (3) income (anticipated and actual) from unit area

under different species of timber etc., so as to enable better management of the forests in the State.

7. Conclusions:

Forestry, being one of the neglected one in the agricultural sector in the past, has received more attention recently, especially with the implementation of the social forestry programmes in the different states. It is needless, therefore, to stress the importance of collecting, analysing and disseminating the various items of information in the forestry sector.

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8. FORESTRY PLANNING IN KERALA: DO WE HAVE ADEQUATE DATA?

C. T. S. Nair
C. N. Krishnan Kutty

1. Introduction

Planning the development of forest resources requires both economic and biological information. Although forestry planning is not very much different from planning in other sectors, certain peculiar features of forestry tend to have a direct bearing on the data requirements. Most important of this is that timber production is a long gestation activity, often taking many decades. Despite all the technical sophistications, projections of demand and supply over long time horizons tend to be unreliable. Wood production programmes, aimed at specified products and markets are particularly affected by this. Technological development in the field of wood utilisation does help to some extent, but on the whole while dealing with long rotation crops, foresters operate in a realm of uncertainty. Another problem encountered in forest management is the multiplicity of uses to which forests can be put to. Many of the alternatives are mutually exclusive and irreversible and a decision based on inadequate or incorrect information may lead to unforeseen consequences. This is particularly so in respect of non-marketed and intangible benefits.

A reliable data base is a pre-requisite for sound planning and the peculiar features of forestry make it all the more essential. This paper attempts to examine (1) the type of information required for scientific management of forests in Kerala (2) the sources of such information and the reliability of available information and (3) steps to be taken to improve the data base.

2. Data requirements for forestry planning

The type of data required will depend on the nature of decisions to be made. Policy decisions provide broad guidelines and indicate the objectives of management and the data requirements for taking such decisions are of a general nature. Data requirements for decision making, both at the policy level and at the planning and implementation level, can be categorised into (1) that pertaining to the forest environment and (2) that pertaining to the environment external to forests. The former deals with technical details of forestry practice while the latter pertains to socio-economic features which forestry has to take into account.

Policy decisions on forest management generally requires more information pertaining to the external environment, whereas implementation of plans and

programmes in a given policy context requires detailed information on the forests. Managing forests as an exhaustible resource—i.e., exploiting the available timber stock—demands only limited information pertaining to growing stock, its distribution under different species and size classes, accessibility, cost of felling, logging and transport to markets. Meeting current demands being the main objective of this option, data requirements are simple. In contrast, if forests are to be managed as a renewable resource the type of information required is elaborate. Decisions on what to plant and where to plant will depend upon growth and productivity of species, site quality, cost of establishment and maintenance, etc. Questions such as when to harvest the trees and how much to harvest can be answered only if there is adequate information on the growth rate of each species, future demand, prices, etc. Forestry activities were hitherto primarily carried out in land under the control of the forest department. With social forestry coming to the forefront, the nature of information required has become complex and different from what was conventionally required. Information on current land use practices, socio-economic background of farmers and social and commercial profitability of various species are required. Willingness of land owners to raise non-conventional tree crops will be influenced by existing land use intensity, dependence of households on land and above all the technical and economic feasibility of raising tree crops. Cultivators would be keen to know how planting of tree crops will affect the production of other crops, while policy makers would be interested in the overall impact of such schemes on food production, employment, etc.

Information on future changes in demand for timber and allied products is very crucial to planning forestry activities. Being a derived demand, future wood requirements will depend upon changes in the wood consuming sectors. Although wood continues to be an important source of energy, its future use as fuel depends not only on future supply of wood but also on supply of other fuels and their prices. Building construction is another major wood consuming activity. Use of timber for construction depends upon the trend in building activity, availability and price of timber and other substitute and complementary products.

3. Sources of information and their utility

3.1 On forest land use

Records maintained by the forest department are the major source of information in respect of forests and forestry. Some of the information pertaining to forestry is available from the annual administration reports of the department. Utility

of the information however depends on its reliability, adequacy and accessibility.

(a) Reliability and adequacy

A classic case of doubtful reliability is with regard to the area under forests. The following table gives the forest area figures obtainable from different sources.

TABLE I
FOREST AREA IN KERALA (in Sq. Km.)

Source	Pertaining to year	Area	As percentage of the geographical area of the state
1. Administration Report of forest department	1978-79	11279.60	29
2. Revenue records	1978-79	10815.00	27.8
3. Resource survey of forest department	1970	9400.00	24.2

1. Government of Kerala (1981)
2. Government of Kerala (1980)
3. Chandrasekharan, C. (1973)

Sources (1) and (2) are based entirely on official records. Figures given in official records are based on legal ownership, but for planning land use these are unsuitable. Vast area of forests, which are legally reserved, is under occupation and cultivation. Such areas, however, continue to be treated as forests primarily on account of the delay in dis-reserving them in accordance with the provision in the forest act. Incorrect information not only misleads planners and policy makers in the forestry sector, but also affects data pertaining to net cropped area, production of various agricultural crops, etc. Although at the time of preparation of working plans an attempt is made to correctly estimate the area, growing stock, etc., on account of the difference in the reference years the utility of the data is limited. Information contained in the working plans are seldom compiled systematically to provide reliable data pertaining to the whole state. Despite the fact that changes in land use during the last decade have affected its usefulness, for want of more reliable information planning in forestry sector continues to be based on the resource survey data pertaining to the year 1970. Assuming that deforestation in the 1971-80 period continued at the rate applicable to the previous decade, in 1980 the area under forests in the State is unlikely to exceed 8,500 Sq. Km. or about 21.9 per cent of the geographical area. Compare this with the figures in table I. To what extent planning can go astray needs no further elaboration.

Data pertaining to area under various vegetation types, plantations, growing stock and its distribution under various utility classes also suffers from such drawbacks. During 1971-72 to 1980-81 about

436.5 Sq. Kms. of forests have been clearfelled (Karunakaran, 1982) and this obviously would have affected the distribution of area under different vegetation types and the growing stock. Total area under plantations of each species is arrived at by adding the area planted during the current year, to area at the close of the previous year. Failures--due to various reasons--however remain unreported and consequently information now available is of doubtful reliability. No realistic yield predictions are possible in the absence of information on stocking and site quality.

Non-availability of data is another major problem in respect of forestry planning. Conversion of natural forests into plantations is bound to affect the future pattern of wood supply and in all likelihood availability of ordinary construction timber, fuelwood etc., may decline. Data available now, especially from the administration reports, is not adequate to make any meaningful projections. Collection and compilation of data is primarily aimed at fulfilling administrative and accounting objectives.

Although, administration reports provide information on recorded removal of timber and other products, they seldom represent the actual removals. This is particularly true in the case of fuelwood, which in many places continue to be a free access resource. The large divergence between recorded removals and actual consumption (Government of India, 1976) is partly due to illicit and unrecorded removals. Usually 10 per cent of the recorded production is taken as an estimate of unrecorded removals. Apart from providing some figure, such an estimate has no sanctity at all.

In addition to timber, and firewood, a large number of other products, such as gums, resins, tannins, honey, wax, medicinal plants etc.--all of which are clubbed together as minor forest products, are obtained from forests. No information is available on the total stock of these products, annual yield and how much can be removed without jeopardising future production. Non-availability of such details leads to indiscriminate exploitation. This is particularly true in the case of medicinal plants whose availability has declined drastically (Thirumulpad, 1981). Recorded removal of minor forest products is usually a gross under estimate and revenue realised by the forest department seldom reflect the actual contribution to the economy.

With the increasing concern for conservation of natural resources, large areas are being set apart as sanctuaries, national parks and biosphere reserves. Information required for management of these areas is different from that required for managing production of wood. In sanctuaries where maintenance of an optimal wild life population is the primary objective, periodic monitoring of changes in population, habitat conditions etc., are of considerable importance. Techniques for gathering such information are yet to be perfected.

(b) Accessibility

Accessibility of information is another major problem. In the absence of a system for storage and retrieval of data, a lot of useful information remains in the files of the forest department, and in due course is lost irretrievably when the file is closed. Data on timber auctions in depots could provide valuable information, at least of an indicative nature, on price trends, inter-species and inter-class substitution etc. But retrieval of price-quantity information from the auction registers is extremely cumbersome, and most often the records are not readily available. Revision of management plans provide exhaustive data on vegetation characteristics, stocking, regeneration etc., but only some of the information finds a place in the working plans, while a major part tends to be lost.

Free flow of information is a pre-requisite for analysing implications of present practices and exploring the feasibility of alternatives. Vesting any department with the generation and custody of data may not always be desirable as data generated and released tend to be biased, either intentionally or unintentionally.

3.2 On non-forest land use

In Kerala, non-forest area (i. e., area outside those legally constituted as forests), particularly garden lands and estates, is an important source of wood. Rubber plantations in the State yield as much wood as that of the state owned forests, and form an important raw material source for the packing case industry. Matchwood units are increasingly depending on matti and such other species grown in house compounds. However, there is practically little information on wood production from the non-forest area. For the purpose of computation of state income, farm yard timber production for the country during 1957-58 is apportioned on the basis of proportion of area under miscellaneous tree crops, groves and fruit trees in the State (Government of Kerala, 1972). Not only that production data has become out of date, but also that assumptions underlying the estimate make it of doubtful reliability.

Timely Reporting Survey (TRS) initiated by the Directorate of Economics and Statistics (DES) could provide useful information on wood production potential of garden lands. Perennial non-horticultural crops such as anjili, teak, matti, elavu, pala etc., are included under the category 'other trees' and are taken into account for estimating the net area sown. Rather than estimating the area under each crop, an estimate of the number under each species will be more useful. It will be advantageous to estimate the number of each species in broad categories such as saplings, poles, mature and overmature trees. Investigator bias involved in directly estimating area occupied by each species could be avoided by adopting this approach. Disaggregation of the category 'other trees' into species commonly found, and a further subdivision based on broad size groups will be extremely helpful.

As casuarina trees, thatching grass, bamboos and fuelwood species are not regarded as crops, area

occupied by them is not taken into account for estimating the net area sown under the TRS. Considering their economic importance, it is however necessary to make an estimate of the potential production of above species. As bamboos, casuarina etc., are being raised in farm lands under social forestry, they can no longer be excluded from the category of crops.

3.3 Socio-economic information

Technical information pertaining to forests such as area, growing stock, growth rates, rotation, etc., fulfills only part of the data requirements. Meaningful planning depends on clearly identifying the priorities, which requires wide ranging information on social and economic parameters. Demand, for wood and allied products, both present and future cannot be estimated without data on changes in income, supply of complementary and competing products, their prices etc.

At the time of preparation of working plans, a qualitative assessment is made on the wants of people, especially those living in areas adjoining the forests, markets and marketable products, etc. With the limited demand and plentiful availability of products such as timber, firewood, green manure, fencing material, etc., qualitative assessment would have been adequate a few decades ago. This situation no more holds good. However, the pattern of data collection has not undergone any changes, and one seldom comes across a forest management plan providing quantitative information on local, and regional demand for wood and other products. May be this is due to the fact that foresters are primarily trained to grow trees, and are unable to see the context in which trees are to be grown.

Usually surveys on household consumption pattern should provide most of the data pertaining to demand for wood and related products. However, the data collected is in a highly aggregated form and serves no useful purpose. The item 'fuel and light' in the consumer expenditure and budget surveys of the DES includes a large number of items such as firewood, electricity, kerosene, coke, coal, dung cake, LPG etc. Aggregation of all these items, although justifiable considering the very low proportion of expenditure incurred, conceals a number of useful details. A disaggregation is required in respect of the durable consumption goods to give more details about furniture, timber used for maintenance, implements made of timber etc.

Often raw data is collected in a disaggregated form, but at the compilation stage it is aggregated, primarily to fulfill certain administrative objectives. For example, during decennial census, information on occupation is collected; but when reports are published totally unrelated activities such as mining, quarrying, live stock rearing, fishing, forestry, plantation activities, etc., are aggregated concealing information on employment in these activities separately.

4. Improvement of data base

Data base for planning in forestry as well as other sectors can be improved by both short term

measures as well as long term measures. Short term measures aim at improvement within the existing framework, while long term measures involve a complete reorientation in the approach involving the creation of entirely new institutions.

4.1 Short term measures

Given the existing machinery, it is possible to clearly identify the agencies for collecting and storing data pertaining to the different aspects of forestry. No doubt, forest department is the appropriate agency for collecting information pertaining to forest land use. With some modifications in the preparation of various schedules in the administration report, some of the lacunae identified earlier can be rectified. In addition to giving the area legally categorised as reserve forests, administration reports should provide an estimate of the area diverted for other purposes, but legally continues to be forests on account of various reasons. Providing the distribution of forests under different vegetation types is not at all difficult. By clearly indicating the type of forests cleared for raising plantations, or for other purposes, it is possible to estimate the remaining area under different forest types.

Wood production data should be provided separately for man-made forests and natural forests. This can be achieved by modifying return No. XIII of the administration report. A substantial quantity of wood is supplied to various industries in the State, providing details of the same, such as species, quantity, value, firm to which supply is made, will be extremely useful.

The existing proforma for plantation journal is adequate in all respects, and if properly written it could provide details of all operations carried out, costs and benefits from the year of establishment till final felling. Unfortunately the journals are seldom posted with all the information. Adherence to what has been prescribed already will be of considerable help.

To collect data on wood resources outside the forest area, demand for various wood and allied products, growth of wood-based industries, price of various timber and wood-based products, etc., it will be useful to have a forestry cell in the Directorate of Economics and Statistics. With slight modification in the TRS, it is possible to collect information on wood resources in the non-forest land in the State. Periodic Surveys on consumption pattern of timber and other products can be combined with household expenditure and budget surveys.

One of the drawbacks of the present system is that data collection and compilation are not user-oriented. Agencies concerned with data collection such as DES and other Government departments are more concerned with fulfilling the data needs of the Government and little thought is given to the requirements of other users.

4.2 Long term measures

It must however be realised that short term measures indicated above could at the most bring

about only marginal improvements. Administrative convenience being a primary concern, entrusting the departments with data collection and storage may serve only limited objectives. As pointed out before data generation can be controlled and manipulated to suit the convenience of the departments and this will lead to wrong identification of priorities.

To overcome this, establishment of a centre for data collection and storage either as an independent institution or attached to the State Planning Board is suggested. Such an organisation can be equipped and staffed to undertake continuous and periodic inventories of natural and human resources and to enable monitoring of changes. The Directorate of Economics and Statistics can be reorganised as a part of such an institution to deal with the collection of data on human resources and to conduct studies on demand, supply, prices etc.

4.3 Some transcendental issues

Suggestions to improve data generation have been made on the assumption that in planning forestry activities (or for that matter activities in any other sector) we are interested in adopting a rational approach, identifying all feasible alternatives and then choosing those which are most appropriate to our conditions. It may however be argued and rightly so considering our past experience in resource mismanagement—that all this effort directed at generation of data is likely to be a waste of resources as they are seldom-utilised. Data requirements for a 'cut and sell policy' is minimal, and as long as such a policy prevails, no useful purpose will be served by the vast array of information gathered by a data collection centre.

Such an argument could be misleading and may lead to a vicious cycle. Policy makers and planners often follow an existing alternative partly on account of non-availability of information on other options. A data centre, independent from the administrative departments, may be able to generate more information and highlight the rationality or otherwise of existing policies. Wider access to information will also be helpful in formulating public opinion, and forcing policy makers to adopt more rational alternatives.

5. Conclusion

Scientific management of forests requires data pertaining to the forest environment and on the environment external to forests. The former indicates the potentialities while the latter enables to decide the priorities.

Present sources of information and the gaps in data are highlighted. Since administrative and accounting objectives are of paramount importance, information published by the Forest Department has only limited use, and often it is riddled with several problems. Although unreliable, data provided by the department continues to be used for want of better information. As regards data on the environment external to forests, practically little is known.

Both short term and long term measures have been suggested for improving the data base. Short term measures include collection of additional information by the Forest Department and the Directorate of Economics and Statistics. Considering that these

measures are likely to improve the data base only marginally, there is a need to have a central agency dealing with all sectors and gathering information on all aspects uninfluenced by administrative myopia

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9. DATA BASE OF PLANTATION CROPS IN KERALA

UPASI

Introduction

Amongst the Various agro-based commodities, plantation crops are the only organised sector where a sound and reliable data base exists. The development of the four major plantation crops, viz. Tea, Coffee, Rubber and Cardamom is controlled by the Central Government. Under the Coffee Act, 1942, The Rubber Act, 1947 the Tea Act, 1953, and the Cardamom Act, 1965, the respective statutory Boards are directly responsible for the development of the industry and various statutory details in the prescribed form as also other information required by the Commodity Boards have to be submitted by individual estates regularly. These cover a wide range of details including area under the crop, new planting, replanting, production, disposal, exports and price.

I. Area

Under these acts, all those owning land planted with tea, coffee, rubber and cardamom plants should register their names with the respective commodity Boards in the case of tea and rubber and with the State Governments in the case of coffee and cardamom. Changes in ownership and area have to be intimated to the respective Boards/State Governments. Thus, the main source for the data of the land under cultivation is confined to the above agencies. The total area under different plantation crops in the Kerala State is given below from which, it could be seen that the State accounts for more than 40% of the total area under plantation crops in India and over 61% in South India

AREA OF PLANTATION CROPS (HECTARES)

Crops	Year	Kerala	S. India	India
Tea	1979/80	36125	74967	378447
Coffee	1979/80	57564	196061	199692
Rubber	1980/81	219866	239559	241503
Cardamom	1980/81	56376	93947	93947
Total		369931	604534	913589

PERCENTAGE SHARE OF AREA UNDER PLANTATION CROPS IN KERALA

Crops	South India	India
Tea	48.2	9.5
Coffee	29.4	28.8
Rubber	91.8	91.0
Cardamom	60.0	60.0
Total	61.2	40.5

II. Production

The primary source for information on production data in all commodities is the respective board. Besides, in the case of tea, under the Central Excise Rules, 1944, each factory producing either black or green tea is required to submit a return in Form R. T. 3 to the Central Excise authority and this forms the nucleus of production base. But the tea planting associations in the North and South are also compiling production statistics from different estates. Since these information are available much earlier than those available from central Excise returns, and because of their complete coverage, the trend now is to reliably adopt figures published by these associations. As far as the State of Kerala is concerned, the United planters Association of Southern India, is compiling production statistics from all the estates, whether registered with the Tea Board or not, through a standard form, regularly for each month.

Unlike other agricultural commodities, the coffee growers are under statutory obligation to deliver their entire crop to the Board. The Rules framed under the Coffee Act, stipulate that every grower in respect of each estate owned by him should submit a monthly return furnishing the crop picked at the estate.

In the case of rubber, every small grower when required to do so, and every large grower and licensed dealer shall submit to the Board, a true and correct monthly return of raw rubber held, produced, acquired or disposed of in certain specific forms. A mathematical analysis of the various such returns received by the Board forms the production base for natural rubber in the State.

The Cardamom Rules, 1966, stipulate that every person shall in respect of each estate owned by him, send to the Board a return of the actual crop harvested during the current season, a return of the revised crop estimate, and a final report with quantity harvested by 1st June, 1st December, and 1st May of every year. The Cardamom Board, Based on these information estimate the production of Cardamom in the State.

III. Disposal

Green tea leaves plucked from the fields, after necessary processing in the factories, are put out for sale through different channels. The most common method is sales through auctions. Kerala teas are primarily sold at the premier auction centre at Cochin, where currently over 54% of the State's production is sold. Besides, about 20% of the State's production is sold through Coimbatore and Coonoor auctions in Tamil Nadu. At Cochin weekly auctions take place on Tuesdays/Fridays, at Coimbatore on

Saturdays, and at Coonoor on Fridays. After each sale, the brokers jointly publish the reports of the quantity of tea sold by each garden and the average price realised thereon. The market intelligence in tea is, therefore, fairly accurate, and up to date data is available on disposal.

Marketing of coffee is done by the Coffee Board. As in the case of tea, coffee is also sold by open auctions, for exports and ports. A small quantity is also earmarked for allotments to propaganda department of the Board, Co-operative Societies and Local sales. Pool auctions take place at Coimbatore, Bangalore and Vijayawada once a month, while export open auction takes place only at Bangalore. The Coffee Board has local sales outlets at sixteen centres in the country. While the prices at which coffee is sold through Local Sales, propaganda department and co-operatives are pre-fixed, those for pool open auctions depend on market trends. Prices at export open auctions are governed by the world price situation. As in the case of tea, immediately after each auction or sale is done, the Coffee Board publishes the detailed statistics of the quantity put up, quantity sold and the average price fetched for each grade of coffee, and these details are made available to the public through the monthly publication and press.

Cardamom is also generally disposed of through auctions. In Kerala, where more than 73% of the Country's crop is produced, there exists six auction centres at Vandanmettu, Santhampara, Kallar, Cochin, Parathode and Udumbanchola, the leading centre being Vandanmettu in Idukki District. About 70% of the estimated crop of the state is sold through these centres. As in the case of tea, the agents who conduct these auctions publish details of quantity sold and the price fetched after each auction. The Cardamom Board also publishes these details in the monthly publication and also in periodic handouts, Cardamom Auction Price.

In the case of rubber, every person who wants to purchase, sell or otherwise deal, is required to obtain a licence from the Rubber Board for the purpose. Similar is the case with all rubber goods manufacturers. The manufacturers are by statute, obliged to submit to the Board particulars of quantity and price at which natural rubber is purchased. Also the leading daily newspapers in Kerala publish the daily market price of rubber. The Rubber Board also collects these data, and give wide publicity.

IV. Foreign Trade

Exports and Imports of plantation crops are also under the control of the different Commodity Boards. The Director General of Commercial intelligence and Statistics collects these data from various ports and publishes them. The details are also available with the customs authorities as also the Reserve Bank of India.

V. Domestic Consumption

Accurate data on the consumption of tea in Kerala or elsewhere is not readily available. Recently

the National Council of Applied Economic Research did a random study on the pattern of consumption of tea in India. Also, at the instance of the producing associations, a market research study on the pattern of consumption of tea in different state has been recently done. These are of general nature. The Tea Board annually estimates the apparent consumption of tea in India by mathematical exercise i. e., by using the closing stock, production and export figures. Since consumption of tea in Kerala is the highest in India, a foolproof method by which the data could be ascertained should be looked into.

As regards of coffee, the use of raw coffee in different States could be estimated only on the basis of purchases by dealers in each State. While the total quantity of coffee sold for internal consumption is accurately available with the Board, State-wise details are not being collected by any other agency.

Consumption of rubber in India, and the State-wise details are available fairly accurate, because of the control exercised by the Rubber Board.

Statistics on the consumption of Cardamom in India is only an estimate, based on the estimated production less the actual quantity exported.

VI. Labour Enactments

Under the Collection of Statistics Act, most of the estates are submitting Form 'A' and 'D' returns to the Statistics Authorities of the States concerned. These returns contain data on labour strength, number of working days, man days lost, absenteeism, earnings, etc. These estates are also submitting returns to the State Government authorities under various labour enactments. What is needed at the State level is to standardise the forms to make it compact and to streamline the agencies for collection of data.

Upasi's Role

With the data base of individual units, the United Planter's Association of Southern India acts as a central unit for the compilation, analysis, presentation and publication of the different statistical information pertaining to the plantation crops and allied matters. Thus, there is ready information available with the UPASI on rainfall in different areas, production in different planting districts, employment data, mandays lost/worked, health indices and the like. Besides, regular analysis of data on the financial position of companies, accounting ratios and other managerial decision-making information is being undertaken by the UPASI.

To sum up, the plantation sector in the State, which occupies 13% of the cropped area of the State has the undisputed status of being the only agricultural sector which gives statistics at each level of its operation, and the data base is readily available to all those who are interested in plantation Statistics.

10. STATISTICAL DATA BASE FOR CARDAMOM PLANTATION INDUSTRY IN KERALA

N. E. Cheriankunju

Plantation sector in Kerala's economy occupies a significant position. Almost all plantation crops are grown in Kerala on a large scale. Cardamom is one of the important plantation crops grown in the High Ranges of Kerala particularly in the Idukki, Palghat and Wynad Districts which contributes 70% of the national production of this spice followed by Karnataka and Tamilnadu. Like coffee and tea, cardamom is an export-oriented plantation crop which earns foreign exchange worth Rs. 30-35 crores per annum in very recent years although the peak level of earnings of Rs. 58 crores was recorded in the year 1978-79. Cardamom is thus instrumental in bringing about comparatively higher economic prosperity to the population of the hilly districts of the Kerala State providing gainful employment to a considerable section of the people and in earning valuable foreign exchanges to the national exchequer.

Planning is essential for the development of any plantation industry and proper statistics is the pre-requisite for planning. In other words without proper statistical data and information base, the task of planning the activities aimed at future growth of any plantation industry remains difficult. The importance of such statistics is all the more in the case of a perennial crop like cardamom for planning and formulating long-term policies, production goals and marketing strategy for the product.

A comprehensive statistical data base for the cardamom industry was not available in the past especially prior to 1960. This was mainly due to the fact that there was no organisation in the past exclusively for looking after the overall development of the industry. The constitution of the Cardamom Board in the year 1966 was a land mark in the history of the cardamom industry and the statistical department of the Board has been collecting, compiling and publishing data on various aspects of this industry for the past 2 decades with the limited technical staff available.

The main areas of statistical data collection on which the Cardamom Board is currently concentrating are:

- (1) Area under cardamom cultivation.
- (2) Number and size of holdings of cardamom plantations.
- (3) Production and productivity of cardamom.
- (4) Marketing of cardamom in the domestic market which includes auction sales and direct sales data, Agmark grading, movement of cardamom from the producing and assembling centres etc.
- (5) Export Statistics on cardamom.
- (6) World production and trade in cardamom.

The objective of this paper is to briefly highlight the sources of data and the methodology adopted to collect the statistics on the area under

cardamom, number and size of holdings and the estimation of production and productivity in the different areas and to involve into a discussion on the limitations therein and to bring out practical suggestions to improve the same.

The sources of data and the methodology followed in the collection of statistics on the above aspects are briefly indicated below:

1. *Area under cultivation and the number and size of holdings*

The unfortunate fact remains that no authentic, up to date and complete data on area under cardamom and the number and size of holdings of cardamom plantations are available at present from any source. This is perhaps due to the fact that no survey of cardamom estates has been undertaken by any agency recently. In the absence of periodic surveys up to date statistics on area under cardamom, number and size of holdings etc., cannot forthcome.

Under the above situation the Cardamom Board has been depending on the Agriculture Departments as well as the Directorates of Economics & Statistics in the concerned States for obtaining the statistics on area under cardamom. As the data available from the above sources became out dated in the absence of periodic surveys, the need for collecting this statistics by an alternate source was keenly felt and hence a statutory provision for registration of all cardamom estates has been incorporated in the Cardamom Act 1965. Under this Act such registration is entrusted with the revenue authorities of the State Government's concerned. Although the process of registration is in existence, it has got its own limitations as a source up to date data on area and holdings. For various reasons such as the administrative procedure, involved in registration, laxity on the part of a number of small growers to apply for registration, cultivation on Government lease lands etc., the process of registration of all cardamom estates could not be completed so far resulting in a considerable backlog of unregistered estates still to be brought under the registers of the Cardamom Board. Moreover due to additional plantings on the one hand and conversion of cardamom area into other crops on the other, the area figures tend to change every year. Thus the non-availability of up to date area and holdings statistics leads to difficulties in the estimation of authentic production figures in the different producing areas.

In view of the gap identified in the area and holdings statistics on cardamom and to collect certain other basic information required for planning future development of this plantation industry it is felt necessary that a census of cardamom estates has to be undertaken with the following objectives.

1. To obtain full and up to date data regarding.
 - (a) Planted area and yielding area
 - (b) Total number of holdings
 - (c) Distribution of area according to various sizes of holdings

- (d) Population of yielding and non-yielding plants
 - (e) Age-wise distribution of plants
 - (f) Nature of plant materials grown
 - (g) Extent of replanting of aged and uneconomic plants and utilisation of better plant materials.
2. To assess the extent of additional land available for expansion of cardamom cultivation in the existing plantations.
 3. To assess the labour employed in cardamom plantations.
 4. To collect information on certain basic factors viz.
 - (a) the nature and structure of ownership pattern
 - (b) main cultural operations carried out and their frequency
 - (c) the level of maintenance of the estate
 - (d) extent of fragmentation of holdings
 - (e) extent of absentee land lordism.

It is also considered essential that such census should be conducted within an interval of 5 years to up date the statistics and other basic information in view of the technological changes taking place. As the census proposed is a big project with full coverage of the entire area, the success of the project would depend on the co-operation from all sectors like planters, State revenue authorities at the village and taluk levels etc.

Scope & Coverage of the Census

The census is expected to have a wide coverage of all cardamom estates registered or unregistered and those that had applied for registration but not yet registered. Data should be collected on all aspects outlined in the objectives of the census. The geographical coverage of the census should be the entire cardamom growing districts in the State.

Methodology

The methodology is intended to comprise in the first stage of collecting the list of all revenue villages in various taluks of each cardamom growing district. These lists have to be compared with the details available with the revenue authorities and brought up to date. The field staff and the Supervisory staff to be involved in the census will have to be trained intensively. The second stage would consist of actual enumeration of estates by trained staff with the census schedule prepared. The third and the final stages should cover tabulation of data and preparation of tables analytical reports etc.

The method of collection of data would be by the investigators visiting all the estates in the villages allotted to them and to collect the data after personally interviewing the growers, inspecting the records maintained in the estate and going round the blocks of the estate. Super checks on the accuracy of data collected is also to be done by supervisory personnel.

Feasibility Study

This being the first comprehensive census to be conducted it is considered necessary to conduct a pilot census in a compact area in Idukki District mainly with the object of pre-testing the methodology proposed to be employed in the census project. This pilot census designed as a feasibility study is intended to help collect the response of the growers and the extent of availability of the several items of statistical information sought from the growers. The census schedule for eliciting the information would also be tested for its suitability so that any modification required to be made in the light of experience gained could be effected before applying the same over the entire area.

Having identified the urgent need for a comprehensive census in the manner explained above the question arises which agency should conduct the census i. e. whether the Directorate of Economics and Statistics functioning in the State or the Cardamom Board. It would be necessary to form an opinion on this matter so that possible duplication of work by different agencies could be avoided. Since the Cardamom Board is a national body concerned with the overall development of this plantation industry, the census project will have to be implemented in the three cardamom producing States of Kerala, Karnataka and Tamilnadu. A proposal for such an all India census is under the consideration of the Board.

2. Estimation of Production and Productivity of Cardamom

The Cardamom Board is currently estimating the production of Cardamom in the State based on the market sales data i. e., a summation of the auction sales data and the data on direct sales outside the auctions. Possible duplication of the data in auction sales is also eliminated before arriving at the final results. This method is used for the final estimation of production as it is based on the actual sales of cardamom by the planters during the year through the two permitted channels of auction sales and direct sales. This method, however, has a few limitations viz.

- (1) It cannot give the break up figures of production in each village, taluk or district as the market sales data are not available separately for each village, taluk or district.
- (2) It cannot give the productivity data in terms of yield per hectare for the village, taluk or district levels.
- (3) The estimates will be available only at the end of the season whereas the data itself is required at the beginning of the season itself for fixation of targets for export and formulating other marketing strategies.

In view of the above mentioned limitations of the present method of estimation of production by using the market sales data, the necessity for adopting an alternate method for estimation of both production of cardamom and the productivity in

terms of average yield per unit of area is seriously felt. One of the methods, and possibly the only method, which can be thought of is a sample study of cardamom estates. This method has been tried by the Cardamom Board on an experimental basis for estimating the production and productivity figures during the crop season 1982-83.

The various procedures followed in the above sample survey are detailed below:

Sample size

As regards sample size the larger the number of samples the more accurate would be the results. However due to administrative and practical limitations 300 sample estates have been selected from 28 field units which represent a little over 1% of the total number of registered holdings.

2. Selection of Samples

The technique of stratified random sampling has been adopted for sample selection. The stratification has been done on the basis of size of holdings and the level of management of the estates and also the geographical location. However there has been an apparent difficulty in selecting the sample from each stratum strictly according to random principle as it is not practically possible to prepare a list of the entire estates according to the level of management adopted although it is possible to select the samples at random from the different size groups and geographical locations. Therefore a combination of both random principle and judgement of the field officers based on their experience and knowledge in the ratio of 50:50 has been adopted to select the required number of samples from each stratum.

3. Distribution of samples

The distribution of the total number of samples among the 28 field units has been done in proportion to the total registered area in each unit. The total samples thus distributed in each unit is further distributed proportionate to the number of registered estates in each size group viz., small, medium and large holdings. The small holdings has been defined as estates having an area below 20 acres, the medium holding as estates between 20-100 acres and the large holding as estates having 100 acres and above.

Methodology

Direct personal investigation method has been followed in the collection of required information by

filling a questionnaire designed for the study. The study has been planned in such a way that it is to be done in three stages during the crop season. The first stage is the preliminary assessment to be done at the beginning of the harvest, the second stage is the mid-term assessment to be done in the middle of the harvesting season, and the final assessment during the close of the harvest. The second and third stages of assessment has been intended for refining the preliminary assessment based on later field indications. The methodology for the study has been such that Board's Field Officers visit the sample estates selected for study in their jurisdiction and study the field indications based on the guidelines given and fill up the questionnaire for production estimates.

Limitations identified

(1) On an analysis of the weighted average yield rate compiled in respect of each field unit in the preliminary stage, wide variation in the yield rate has been noticed in certain regions which are having almost identical characteristics. The reason for such variation was identified as the non-representative samples selected for the study. In those areas while selecting the 50% samples at random it so happened that all the samples selected at random were either having a high level of management practices or very poor level of management.

The suggestion for overcoming the above limitation is that the present method of random selection of 50% samples also can be avoided and the entire sample selection from each stratum can be on the basis of best possible judgement of the Field Officers considering the level of management practices adopted at large in the concerned areas. In other words the selection of samples from each stratum can be purposive to make them representative enough with reference to the general characteristics of the population in each stratum.

(2) The second limitation is that even if a realistic estimate of the yield per acre could be obtained from the sample study realistic production estimate will not be possible in the absence of realistic figures of area under cultivation and the percentage of yielding area in total area in each region.

The only remedy for this problem is to find out the actual area figures by undertaking a census of all plantations for a realistic estimate of production of cardamom based on the sample survey.

11. DATA BASE OF THE PLANTATION SECTOR OF KERALA

Dr. P. T. Joseph

Introduction

The objectives of this paper are:

1. To review the existing sources, coverage, quality, procedure followed and method adopted for collection, compilation and publication of data relating to the plantation sector of Kerala; and
2. To analyse the various requirements (present and potential) of the above data, to identify their consumers or users, gaps in the present system and to suggest measures for building up a broad base for providing adequate data of good quality.

Plantation is generally defined as a large group of plants under cultivation or a large estate in a tropical region that is generally cultivated by unskilled or semi-skilled labour. In Kerala, agriculture still holds the predominant position, generating about 41 per cent of the regional income and providing employment for nearly 48 per cent of the labour force. About 22 principal crops are grown in the state and depending upon the duration of each, crops are divided into seasonal (less than 6 months), annual (6 to 12 months) and perennial (more than 3 years).

An important feature of the agricultural sector of Kerala is the predominance of perennial crops which account for nearly 60 per cent of the gross cropped area and 70 per cent of the net area sown. Within the perennials there are two sub-groups namely gardenland crops and plantation crops. The latter is constituted by crops having entirely different and to some extent contrasting agronomic requirements. In this study the four plantation crops covered are rubber, tea, coffee and cardamom. Their importance in the Kerala's economy is very well established by the following reasons:

- (a) They contribute nearly 16 per cent of the agricultural income of the state;
- (b) The area occupied by these crops account for about 17 per cent of the net sown area;
- (c) Tea, coffee and cardamom claim more than 25 per cent of the total foreign exchange earnings of the state in 1980-81 (Rs. 130 crores out of Rs. 511 crores);
- (d) Rubber is the only crops activity which could register a steady and significant growth in area, production and productivity during the last 25 years period (see Annexure).

Based on the above discussions and in view of the development needs of agriculture, a study of this type is found imminent.

Review of the existing system:

For each of the four crops under study there is a Commodity Board* and it is primarily responsible for the collection, compilation, analysis and publication of data relating to area, production, yield rate, employment, prices and export of the concerned commodity. For estimating the first four indicators the source of information is the filled-in questionnaire submitted/mailed by the growers annually. A crop-wise analysis of the present system of collecting the data is given below.

Name	Year of Constitution	Had quarters
Rubber Board	1955	Kottayam
Tea Board	1954	Calcutta
Coffee	1942	Bangalore
Cardamom Board	1966	Ernakulam

Rubber:

All registered growers are statutorily bound to submit yearly returns and the data furnished therein are used for estimating the total area, production and employment. A small percentage of these returns (1 to 5%) are reported to be checked or verified by the field officers* of the Rubber Board by actual visit. Also to cover the unregistered estates some adjustments are made by the officers based on their field experience while finalising the data. Even though the system seems to be alright it is feared that the quality of data collected and processed is not up to the mark especially because of under-reporting by the farmers and lack of proper inspection or spot checks by the officials. For verification of production figures and collection of prices the sources are the returns received from the traders and rubber processing industries. Compilation and tabulation work are done in the Rubber Board Office at Kottayam and data are published in the Rubber Statistical News (monthly), Rubber Board Bulletin (quarterly) and Indian Rubber Statistics (annual). Some of the other important agencies which collect and publish data relating to rubber and rubber products are listed below:

Agency	Publication	Periodicity
(a) Rubber Manufacturers Association, Bombay	Rubber News Rubber Bulletin	Monthly Bi-monthly
(b) Rubber Manufacturers Association, Calcutta	Indian Rubber Bulletin Tyre Samachar	Monthly Quarterly
(c) United planters Association of India	Planter's Chronicals India Rubber Bulletin	Monthly Montely

*Field Officers include Statistical Inspectors, Junior Field Officers, Field Officers and Assistant Development Officers.

On the whole it appears all data excepting those relating to the market situation are to be further improved by detailed investigation, verification and spot checks on a sampling basis. This could be very well done by the Rubber Board itself by putting in more efforts and making use of the statistical wing and Field Officers.

Tea

Area and employment figures are computed from the returns submitted to the Tea Board by the existing and new growers; the latter have to obtain a permit from the Tea Board. For production data, the sources are the returns sent by the tea factories. These figures are checked up with the stocks auctioned at various places and quantity exported. These details are furnished by the agents authorised to conduct auctions and by exporters. But the Tea Board has no regular field staff to verify the statistics of crop area supplied by the growers on a regional basis. It is true that a nucleus survey section is functioning at the Tea Board Office, Cochin. But its activities are very limited. However, the data collected for Kerala are compiled, analysed and published by the Cochin Office of the Tea Board. Also for the collection and publication of data on tea, other agencies like J Thomas & Co., Calcutta are in the field. Important publications which provide tea statistics are given below:

Agency	Name of publication	Periodicity
Tea Board	Tea statistics Administration Report	yearly
	Tea Directory	yearly
		Once in four years
J. Thomas & Co., Calcutta	Indian Tea Review	Monthly
	Tea Review	Monthly

Coffee

Unlike rubber tea and cardamom, coffee is a controlled commodity which could be sold only to the Coffee Board. Since it is grown on a plantation scale only in certain portions of the highland and on small scale throughout the midland region by numerous cultivators, a correct estimation of its area and production poses a problem. Even though all coffee growers are expected to give a statement relating to the area to the State Government and production to the coffee Board every year, only very few observe this rule. It is expected that the Coffee Inspectors should go round and collect the required statistics and verify the returns received from the cultivators. Due to inadequacy of field staff, wide dispersal of the crop area and large number of cultivators the present system does not seem to be effective. There is significant under-reporting of both area and production. The data collected are processed and published from the Coffee Board Head Office at Bangalore.

Of the few publications providing data on coffee, *Indian Coffee* (monthly) published by Coffee

Board is the most important. Another is an annual under the title *Coffee Statistics* published by Coffee Board.

Cardamom

Since cardamom cultivation is confined to the high ranges, the number of estates/cultivators is comparatively small. As in the case of coffee data relating to area are submitted to the State Government. Data on production, yield and prices are furnished in the filled-in returns submitted by the growers, traders and auctioners to the Cardamom Board. These data are compiled and published by the Cardamom Board which is functioning at Cochin. It has also a field organization and a statistical officer in the headquarters. Yet the mechanism to check up figures relating to area under cardamom does not seem to be effective. The important publications which provide data on cardamom are shown below:

Agency	Name of Publication	Periodicity
Cardamom Board	Cardamom	Monthly
"	Cardamom	News Bi-monthly
"	Cardamom Statistics	Annual
"	Annual Report	Annual

An overall review of the performance of various data collecting agencies and the quality of data obtained lead one to suggest that in estimating the crucial parameters like area of rubber the most important plantation crop, the co-operation of research institutes like Centre for Development Studies, Trivandrum and Indian Institute for Regional Development Studies, Kottayam may also be sought.

At the state level, a Government agency namely Directorate of Economics and Statistics (DEOSTAT), has been functioning. It is responsible for the collection, compilation, and publication of data relating to area, production, productivity and prices of all the principal crops including the four plantation crops discussed here. For estimating the area, production and yield rate, Land Utilisation Survey/ Timely Reporting Survey and Crop Cutting Survey are conducted on a continuing basis. But in view of the various limitations such as inaccessibility of certain portions of the plantation sector especially forest lands for field investigation, incomplete revenue records—certain areas are not surveyed and settlement of land has not been completed—the area reported by the respective Commodity Boards is also taken into account for estimating the state-wise area under each crop. For production data the ECOSTAT depends on the Commodity Boards, and yield rate is worked out independently. But in 1980-81 there was a deviation from this practice when crop cutting survey on cardamom was conducted for estimating the yield rate and total production. As for prices (wholesale and retail) data, they are being collected by the ECOSTAT from the market through Investigators/Inspectors.

Research papers also form a source of data relating to certain specialised subjects or fields. Such data are generally used only by other research workers. Special mention must be made about the Farm Management Survey conducted by the University of Kerala. This scheme is now termed as "Comprehensive Scheme to study the cost of cultivation of principal crops in Kerala". There, none of the plantation crops discussed in this paper is studied.

Long delay in the publication of data is a common problem faced by all data consumers. The time lag ranges between one to ten years. In this aspect commodity boards are more efficient than the Government agencies.

About the procedure followed and method adopted it may be observed that while Commodity Boards depend mainly on mailed questionnaire method ECOSTAT adopts *survey method* by which cultivators/operators are contacted/interviewed once or more by Field Investigators who are specially trained for the purpose. Even though the procedure adopted and facilities available with the ECOSTAT are quite good it is feared that the quality of data collected is much below the expected standard. To cite an example, the average yield of cashew was recorded to be the same (1122 kg./ha.) for 12 years from 1962-63. Again after 1975, there was a decline in the area of crops like coconut (from 7.48 lakh/ha. in 1974-75 to 6.93 lakhs in 1975-76). It is true that from 1975-76 onwards Land Utilisation Survey was replaced by Timely Reporting Survey—but that does not justify the significant decline in area figures. It may be observed in this connection that only through close supervision, inspection, and spot checks, the accuracy and reliability of the data could be ensured. *Cost accounting method* is definitely superior if the respondents are an enlightened class and keep correct accounts of the activities that are being studied. Usually what happens is that the book-keeper may not enter the required details carefully and the Investigator may not keep up the norm/periodicity fixed for visiting the respondents resulting in a failure of the method. Also, to study the economic aspects of certain long-term projects like perennial crops whose economic life extends to a period of 25 years, cost accounting method is not practicable. Again, when the same set of selected respondents/farmers are contacted repeatedly at short intervals for a few years it will give rise to a kind of monotony both for the investigator and the respondent. But in the case of sociological and anthropological studies like "Social Status of Women Workers in the tea gardens of high ranges" or "The behaviour of Tribal Workers in the cardamom estates" (where the estates are located in dense forests), the investigator or researcher has either to stay with the target groups or to contact them at least once in every week. In such cases book-keeping method would be preferable.

Data Users

The number and diversity of user groups are increasing. At the Government level there are administrators and planners who need data for their purposes. In a mixed economy like that of India

the role of Government is limited. It has only to provide infrastructure, organise the supply of necessary current inputs and ensure adequate return on farmers' investment by acting on the prices of agricultural products and prices of inputs entering into agricultural production. There is very little control over allocation decisions which ultimately rests with millions of individual farmers. But it is for the Government to mobilise resources and for which potential areas are to be identified. Also, to rectify the regional and sectoral imbalances, suitable changes are to be made in the investment policies. Again, for monitoring and evaluation of plan schemes, indicators of development have to be worked out; for effective extension work, extension agencies are to be properly equipped. All these activities should be supported by adequate data. When viewed in this direction it seems that Kerala Government and State Planning Board are the major consumers of data.

Another major demand for data comes from universities, research institutions and researchers for studying the present condition and for further investigations to solve numerous theoretical and practical problems posed by expanded economic activities and growing technology. It may be stated that new specialised studies in universities emerge; for example, regular courses and research are conducted in rubber technology and tea production in Cochin University. Also modern science has brought out new possibilities for increased output, income and employment which have to be tested in the field and compared with the existing level of indicators. Further, there is an increasing trend in research studies to solve specific problems, the range of subject matters under a single investigation becoming narrower. Again, operations research is becoming more and more popular. All these developments in the research sector warrant more information and an expansion of the existing data base.

Peoples' organisations such as farmers' associations, trade unions, also come under this category and data have to be provided to meet their needs. This will facilitate a meaningful participation of all sections of the people in the various developmental activities.

For micro-level planning, local bodies and other institutions need statistics pertaining to smaller units.

Again, journalists also require data for educating their readers through their own publications.

Data Gaps

An important area that has not been covered is the socio-economic condition of plantation labour especially in the high ranges. Their level of education, housing, medical facilities, consumption pattern, unionisation etc., are to be studied periodically that is at least once in 5 years. This is necessary to assess the impact of various schemes on the working class.

Cost of production data is another major casualty in the information system of the agricultural sector in general and plantation group in particular. For rubber, cost accounting wing of the Ministry of Finance, Government of India is undertaking some regular cost studies by enquiry method. Even though all major size groups of holdings under rubber are covered, the results of these studies are not published or made available even for research purpose. For the other three crops, no attempt seems to have been made in this regard by any agency. This may perhaps be due to the fact that these crops are mainly export oriented and the output prices depend mainly on world market and do not have any link with the production cost. But to estimate the surplus generated in this sector and to formulate investment policies by the Government data on cost of production are essential and for this a concerted effort has to be made in this direction. It is true that in the case of perennial crops whose life span varies between 15 to 60 years, cost of production data should cover the development, production and maintenance and declining phases. Here discounted cash flow method is to be used. If the cost of cultivation data requirements are taken care of by the University of Kerala under the new cost of cultivation study programme, it would go a long way in solving the dispute relating to the minimum price of crops like rubber.

Again, in the cost of production data, labour component also has to be worked out separately and this would serve as a guide line for fixing the minimum wages to the worker, permanent as well as casual.

Another gap in the data base is the absence of area-wise distribution of plant/area. For estimating the trend in productivity and total production this would be an effective step. For rubber and tea, since numerous development programmes are implemented by the respective Commodity Boards collection of this categorised information may not be a serious problem if adequate efforts are put in. In the case of coffee and cardamom where estates/planters are not very systematic and regular in submitting returns, this particular problem could be solved only by a sample study and educating/persuading the producers to submit correct returns.

Size-wise distribution of holdings is another aspect which deserves further investigation for generating more reliable and timely data. In order to escape from the plantation tax there is a tendency among a section of the farmers to do bogus partition, sub-division and fragmentation. Only a specific and result oriented field enquiry would bring out the truth. In such an exercise the concepts like small farmer, medium farmer and large farmer are to be clearly defined taking into account the Kerala context. In one of the studies relating to Kerala farmers operating a total area up to 5 acres 5 to 10 acres and above 10 acres are classified as small, medium and large.

Data relating to employment is neither exhaustive or systematic. The division between permanent and casual labour has to be given. Even

for permanent labour there are short periods of unemployment. To cite an example, rubber tapping work is generally stopped for about two months in an year and this is not reflected in any of the employment returns submitted by the rubber growers. So also, there is periodicity or seasonality in the employment of casual labour. All these aspects should be exposed when consolidated data on employment are presented.

For wages rates, comprehensive and classified data are not available; there is no uniformity within the plantation sector. Even the minimum wages fixed by the Government differs according to crops. While Rs. 13.80 (7.90 + 5.90) is the daily minimum wage fixed for an adult worker in rubber plantation, for counterpart in tea, coffee and cardamom plants, it is only Rs. 11.69 (6.45 + 5.24) per day. Even within each group, wage rates actually given differ between holdings of different size classes. It is a fact that several small holders openly violate the Minimum Wages Act. Therefore data on wage rates should be provided and cover not only estates coming under the plantation Labour Act but also smaller ones. But such data which are normally suppressed by the employers could be captured only by the investigator of the State Ecostat when they go round for collecting agricultural statistics.

Summary and Conclusions

Kerala is one of the three states in India (the other two being West Bengal and Orissa) where earnest and sincere efforts were made to build up a data base even before 1950 by organising the Department of Statistics. Eventhough quantitative gains made in this field were considerable it is felt that only very little qualitative improvement could be achieved so far. Under the present Kerala context there is ample scope and need for exploring new areas. For this there should be a co-ordinated, well planned attempt.

To carry out this objective the following suggestions are made:

(a) At the state level, Directorate of Economics and Statistics should function as a co-ordinating agency for collection, analysis and publication of all data;

(b) The Commodity Board should be made responsible for building up the data base of the plantation sector;

(c) If any of the important areas of enquiry is found difficult for the Commodity Boards, necessary help and guidance should be sought from the established research institutions. However, duplication of efforts by different agencies should be avoided;

(d) The services of the agencies like UPASI, Traders' Association, Auctioners' Association etc. should be made use of in a systematic manner for expanding the data base *without sacrificing the quality and objectivity of data*;

(e) National Sample Survey, perhaps the only organisation which could provide national and regional estimates on various aspects of agriculture

may also be involved in providing an expanded data base for the plantation sector;

(f) However, all data gaps in respect of important activities are to be filled-in

(g) About the method of collection of field data it is difficult to establish the supremacy of one over the other. Yet, in most cases it is better to rely more on survey method with a fairly good sample size rather than on cost accounting method:

(h) To improve the quality of data, collected by the various agencies, emphasis may be given to training for primary workers, inspection and spot check by supervisors and scrutiny of filled in returns especially in the early stages of the field operation. Also the level of discipline and motivation with the concerned Government officials must be stepped up:

(i) New areas which are crucial for research and development planning may be covered in a phased manner:

(j) A central agency should be constituted with representatives of the Government of India, State Government, Ecostat, State Planning Board,

Commodity Boards, leading research institutions in the State and other important agencies engaged in data collection, compilation and publication. This agency should meet at least once in an year, preferably in September to monitor the system of data collection already in progress and to finalise the programmes for the next year:

(k) To reduce the time lag in publishing the data there should be more and more reliance on mechanical tabulation and computer services;

(l) In order to make the public data conscious, arrangements may be made to publish crucial data like those on minimum wages, employment and income of the weakest sections etc., in the newspapers with due prominence. Also they should be made available in Malayalam and other local languages. Discussions could be held with the data users especially people's organisations so as to enable them to understand the methodology, coverage, specificity etc., of the data collection activity:

(m) Ecostat may be fully equipped to provide all available data to the consumers within the possible minimum period.

ANNEXURE

CROPWISE AREA, PRODUCTION, YIELD AND PRICE OF PLANTATION CROPS IN KERALA

	Rubber				Tea				Coffee				Cardamom			
	A	Pn	Y	Pc	A	Pn	Y	Pc	A	Pn	Y	Pc	A	Pn	Y	Pc
1956-57	82.3	21.7	333	335	29.9	31.7	762	472	14.9	6.7	434	4.36	28.2	1.3	45	1700
1960-1960-61	122.9	23.0	293	353	37.6	40.4	1073	569	16.9	7.4	442	5.51	28.6	1.3	45	2240
1964-65	147.0	40.1	420	341	39.4	42.1	1069	599	21.7	9.7	446	5.67	28.7	1.6	56	1360
1968-69	168.5	66.5	576	390	41.2	44.8	1088	522	27.7	12.0	433	7.39	47.03	1.1	22	3710
1972-73	195.6	92.0	725	449	38.4	43.7	1138	604	34.7	14.9	430	NA	47.5	1.3	26	NA
1976-77	209.7	139.3	806	598	36.2	41.6	NA	1126	40.5	15.0	NA	17.0	51.7	1.4	NA	12600
1979-80	215.5	136.6	NA	692	36.1	52.4	NA	1609	58.0	30.1	NA	18.0	53.9	3.3	NA	16800
	(262)	(629)		(296)	(90)	(151)		(341)	(389)	(449)	(413)	(191)	(254)			(955)

A Area in '000 hectares

Pn Production in '000 tonnes

Y Average yield (kg/ha)

Pc Wholesale price per quintal for rubber, tea and cardamom/
on retail price per kg for coffee

Figures given in brackets give the percentage of area, production and price in 1979-80 over 1956-57

Source: Indian Rubber Statistics 1981

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12. INFORMATION FROM AGRICULTURAL FIELD EXPERIMENTS AS DATA BASE FOR DEVELOPMENT PLANS

R. Balakrishnan Asan

Introduction

Agriculture plays an important role in the economy of the State and therefore it is essential to have a clear picture of the performance of agriculture in the past and present. Besides area, production and productivity changes in cropping pattern have important bearings on the growth of production, particularly in cases where there have been significant shifts from one group of crops to another. Agricultural production is generally affected by uncertain factors like rainfall, floods, sunshine hours, temperature etc., and is subject to large fluctuations.

The optimal and efficient utilisation of available resources need up-to-date information of research results. Kerala Agricultural University (KAU), Central Plantation Crops Research Institute (CPCRI), Central Tuber Crops Research Institute (CTCRI) and other various research centres in the State generate valuable information on agricultural sector through field experiments. It is worthwhile to develop an Agricultural Field Experiments Information System for systematic collection of records of past and current experiments. Such a system will have to make arrangements for supplying to users the accurate and relevant information tailored to their needs for requirements in an understandable and brief form. For example, Agricultural Scientists may require information on all the experiments conducted on the desired crop or only those experiments which are conducted under the given set of conditions. The plot-wise yield data together with ancillary information like object, crop, season, site, treatments, design and other general conditions under which experiments have been conducted will be useful for comparative studies. The Indian Agricultural Statistics Research Institute (IASRI), New Delhi has proposed to develop an Agricultural Field Experiments Information System (1) for the country, using their third generation computer.

2. Crop cutting experiments and Timely Reporting Scheme

As a part of data procurement programme, the Directorate of Economics and Statistics conduct crop cutting experiments on a number of crops. The primary object of these experiments is to obtain estimates of average yield per hectare of paddy at the taluk level and of other crops at the district level in the reasonable precision and to estimate the out-turn of these crops in the State. The experiment consists of locating and marking of plots of specified size in the case of paddy, tapioca and sesamum or locating and marking of trees in the case of other crops using the principle of random

sampling and harvesting and recording the weight or number of produce obtained from the experimental plot or trees. (2)

- (1) Manual of instruction for Agricultural Field Experiments Information System, IASRI, New Delhi.
- (2) A consolidated report on the crop estimation surveys 1977-78., Directorate of Economics and Statistics, Government of Kerala, 1982.

The yield estimates based on the crop cutting experiments are not available in time. Hence the final estimates of production are released long after the crop is harvested. With the idea of reducing the time-lag between sowing/harvesting of crops and availability of estimates of area/yield per hectare, a scheme for timely reporting of area of crops is functioning in the State, since 1975-76. The Timely Reporting Scheme (TRS) has to a large extent made it possible to obtain area estimates on time.

3. Forecasting crop yields

The problem of forecasting yield is a complex one as yield is governed by several factors such as variety, date of sowing, fertiliser application, cultural practices followed, incidence of pests and diseases, weather conditions and soilmoisture. A reliable model for predicting crop yield in advance of harvest is of considerable help in taking policy decisions with greater confidence in matters relating to food procurement and distribution, price policies, export-import policies and for exercising several administrative measures for storage and marketing of agricultural commodities.

Crop yield among others is also related to several biometrical characters. To develop a suitable method of forecasting crop yield it is necessary to identify specific plant characters which are useful predictors of yield. Once these plant characteristics are identified, a suitable prediction model could be used to relate yield with bio-metrical characters. The advantage of using bio-metrical characters in the prediction model is that these characteristics are already integrated effects of weather and other factors upto the time when observations are recorded. Relevant by-product information which can be conveniently collected includes changes in components of yield over time and comparisons of yield characteristics among varieties or cultural practices. Some of the bio-metrical characters which can be counted or measured well in advance of harvest and which can be used as predictors of yield are given below

- (i) Plant population
- (ii) No. of shoots
- (iii) Total No. of tillers/No. of effective tillers (per plot)

- (iv) Length of earhead (cm)
- (v) No. of healthy earheads (per plant)
- (vi) Circumference of earhead (cm)
- (vii) Plant height
- (viii) Basal girth/girth of internode (cm)
- (ix) No. of green leaves
- (x) No. of green leaves harvested
- (xi) No. of curable leaves (per plot)
- (xii) Maximum width and length of ~~third~~ leaf (cm)
- (xiii) Length and breadth of leaves (cm)
- (xiv) Spread of plant
- (xv) No. of branches
- (xvi) No. of bolls (per plant), etc.

Data on plant population and No. of tillers may be on whole plot basis. However, for recording of plant height, girth, No. of green leaves, length of earheads, No. of branches and No. of bolls per plant a sub-sample of five plants (four corner and one central) may be observed in each plot.

The meteorological variables which may influence the plant growth are precipitation, soil moisture, soil temperature, maximum and minimum temperatures, sunshine hours, humidity, wind velocity etc.

4. Information from Agricultural Field Expenditure

The Directorate of Economics and Statistics may also take up programmes for collection, storage and facilities for retrieval of information from Agricultural Field Experiments conducted by various research institutions and Universities in the State. With necessary modifications suited to resource availability and requirement, the procedure developed by IASRI, New Delhi can be followed for implementing the programme. The Agricultural Field Experiments include annual crops, perennial crops and experiments on farmers' fields. The pro forma

for recording of information from these experiments should cover the following aspects:

Identification particulars such as name of Experimental Station of Farm (Site), Name of crop object of Experiment etc.

Basal conditions viz., crop rotation if any followed, previous crop, manuring of previous crop (quantity and kind), soil type, method of propagation plants, age of seedlings at planting, date of sowing/ planting, cultural practices (preparatory cultivation, method of sowing, seed rate, spacing, No. of seedlings/hole etc.), basal manuring given to the whole experiment, variety, intercropping if any, irrigated or unirrigated (if irrigated, source, number, interval and intensity of irrigation), important post sowing/ planting cultural operations such as weeding etc., rainfall during the crop season, date of harvest etc. Treatment tried (time and method of application) Design for the experiment—No. of plants per block, block dimensions, No. of replications, method of selection of sites, plot size gross and net (dimensions), No. of plants (trees) per plot, border and guard rows kept, allocation of treatments in each block (whether randomised independently or not). General information such as crop conditions during growth (if lodged date of lodging), incidence of pests and diseases and control measures taken, types of quantitative observations taken. Results—summary tables and standard errors.

5. Conclusion

The data on Agricultural sector published by Directorate of Economics and Statistics and other Government agencies are not sufficient to meet the requirements of Agricultural Scientists and users of research results. There should be some agency to organise a centre for collection, storage and retrieval of information from Agricultural Field Experiments conducted in various research institutions like KAU, CPRI, CTCRI etc. Such information may help in drawing up development plans for the State and also financing research schemes of practical utility on a priority basis.

13. FACTS AND FIGURES ABOUT TOBACCO CULTIVATION IN CANNANORE DISTRICT

P. K. Ramakrishnan Nair

TABLE II

COST OF CULTIVATION PFR ACRE
(0.4047 Hectares)

	Rs.
1. Soil preparation	775
2. Seedlings	220
3. Transplantation	242
4. Manure, pesticides	10083
5. Curing shed	550
6. Harvesting	330
7. Processing	960
8. Miscellaneous (other works)	825
9. Irrigation	5500
10. Rent for land	1100
	20525

Production

	Rs.
Tobacco 1650 Kg.	
(Sand mixed) @ Rs. 12/Kg.	19800
Stem 440 Kg.	220
	20020

Paradoxically, indeed, when the country given emphasis on increased production of crops of all kinds, here is a crop which receives scant attention by all developmental agencies. Tobacco is grown on commercial scale only in certain areas of Cannanore District in the State. Ajanoor, Pallikkara and Periya Villages of Hosdurg taluk and some pockets of Kasaragod taluk have the privilege of raising this particular crop. The crop pattern and cultivation practices of this area where tobacco is grown have been changed significantly since the introduction and course of development of this crop.

According to a latest estimate tobacco is cultivated in 340 hectares. The spread is contiguous mainly stretching through the coastal belt from South Kanhangad to the river Chandragiri to the north. This was an attractive crop till four to five years back. In 1971 the acreage under this crop reached its zenith covering 766 hectares and maintained this level till 1975. The downward trend began since then and the extent during current year is 340 hectares according to a quick estimate. How did this happen and what are the causes of this steep fall?

Table I will show the area figures year-wise:

TABLE I

Year	Area (hectares)	Yield (M. Tons)
1956	571	700
1961	743	1006
1962	702	915
1963	702	904
1964	704	905
1966	705	920
1967	712	911
1968	698	920
1969	670	902
1970	623	...
1971	766	1632
1975	762	1327
1979	404	768
1980	453	869
1981-82	400	660 estimates
1982-83	340	... based on local enquiry.

The tobacco cultivation had witnessed several constraints over these years. High rate of input cost is the inhibiting factor that blocked the way of development. Non-availability of institutional credit was the serious problem confronted by the farmers.

The absence of proper agency for marketing the produce was the inherent weakness and it is the crux of the problem. As said earlier, the high input cost cancels the advantages of increased selling price. Often, the production cost exceeds the sales realisation. The following table will illustrate and explain the position better.

During last year, income varied from 19800 to 24750 according to market fluctuation. The cultivators who had no holding capacity forced to resort to distress sale which often resulted in selling below the production cost. This, of course, was done at the risk of their own labour. How long this state of affairs can be continued? Definitely, the position need a change. The bulk of the cultivators are at the lowest rung of the economic ladder. The causes of this deplorable condition of tobacco farmers of this area are many. Remedy has to begin with the organisational set up. It is rather very strange to know that the farmers of this sector have no common forum to express their collective demands. I think there is no other production field which has no collective organisation. The producers generally associate themselves forming co-operative societies of their own. The immediate need for minimising the hardship of tobacco cultivators of this area is the organisation of a co-operative society. The objectives of this society should be multipurpose. Provision of crop loan, collection and marketing of produce to be made the prime objectives. At present money flow to those farmers is from the traders and indigenous money lenders, the interest of which is prohibitive. The traders exploit the farmers ruthlessly by their dual function. As the money lender, the trader advances loan to the cultivator at high rate of interest as trader, purchases the produce offering less price. The cultivator has no other choice but to submit his fate to the mercy of these traders. Often, these traders play triple role by supplying inputs like manure besides the above mentioned two functions.

The mode of marketing as done at present is very peculiar. The trader simply takes away the produce from the cultivator offering a price much less than the market rate. No payment is made

initially. After marketing, a portion of the selling price is given to the farmer and balance in several instalments in future which may spread over more than a year. Instances are many where last year's dues has not yet been settled. Farmers who have property meet their credit demand resorting to bank loan, attracted by lesser interest rates. Many a farmer finds it difficult to pay back since the realisation of the sales proceeds is abnormally delayed. Instances are not wanting where borrowers sold their belongings to clear the bank loans. In order to mitigate the hardship on this score, it is highly desirable to make available loans to the farmers on the pledge of standing crop. Tobacco is more vulnerable to adverse weather conditions than any other crop. Those who do not want to submit to ill-fate are slowly withdrawing from this cultivation. The erratic weather at the time of growing will thoroughly damage the crop. This can be attributed as one of the causes for the deep fall in the area under cultivation of tobacco. It is therefore highly desirable to protect this crop by the cover of crop insurance.

If collecting and marketing of tobacco is made the monopoly of the proposed co-operative society, problems of the farmers are deemed to be solved. This is a must, and must be done urgently.

The authorities should give a serious thought to this issue and to draw up programmes to bring farmers of this sector on par with their counter parts in other fields. Tobacco cultivation of this area should be brought under the purview of the Agricultural production commission in order to get remunerative prices for the produce. Tobacco of this area goes to the market unprocessed. Almost the entire quantity is marketed in the centres like Puthur, Karkala, Hubli, Uduppi, Coondapoor, Balthagadi and Mangalore of Karnataka State. The variety grown in this area is snuff tobacco. But to find out easy market major portion is now traded as chewing tobacco. Based on the tobacco available

in the area, a factory for manufactures of snuff can be thought of under the industrial development programme of the Government.

To sum up; (i) The area under tobacco is on decrease since farmers of this crop find this cultivation not remunerative.

(ii) In order to bring the tobacco cultivation on par with the farmers of other section, it is desirable to bring the tobacco cultivators of this area under the co-operative fold. The Co-operative Society suggested for this purpose should be a multi-purpose one with the main objectives of advancing crop loan and purchasing and marketing of the total quantum of tobacco produced in this area.

(iii) In order to make farming of tobacco more remunerative the crop may be brought under the purview of the Agricultural Production Commission.

(iv) Since it is susceptible to adverse weather conditions, crop insurance has to be introduced for tobacco cultivation.

(v) It is highly desirable to set up a factory for manufacture of snuff, based on the tobacco available here under the Industries Promotion Programme of the Government.

SESSION II

ENERGY, INDUSTRY, TRANSPORT, AND TRADE

I. ENERGY SECTOR--RURAL ELECTRIFICATION STATISTICS

Sastry K. N. G. K.

Electricity is an important source of energy. It accounts for more than 50% of the total energy consumption in the urban areas of the country today. However, its impact has not yet been felt seriously in the rural sector where most of the householders manage to get their meagre energy requirements for domestic purposes from non-commercial sources of energy like fire wood, dung cakes, dry leaves etc. In recent years, because of the oil crisis and the consequent high prices of diesel oil (required for running of pumpsets for irrigation), the State Electricity Boards have been obliged to extend the Electricity distribution network to cover even the remotest parts of the country.

In Kerala, there are 1268 census villages, all of which have been electrified according to some definition adopted by the Central Electricity Authority (C.E.A). According to this definition a census village is deemed to be electrified if electricity has been provided within the geographical area of the village for any one of the various purposes for which it is required. Thus, a census village in Kerala, which has an average area of more than 30 square Kms. will be considered electrified even if there is only one single electrically operated pumpset within the geographical boundary of the village without there being any other lines whatsoever for providing domestic/commercial or street light services in the residential areas of the village.

Another special feature of Kerala is that the census villages in this State are very big geographical entities. Each census village consists of 5 or 6 karas, desoms on the average. Each kara/desom is as big or even bigger than a census village in some other parts of the country like Uttar Pradesh, Bihar, Madhya Pradesh etc. Thus, although we may say for statistical purposes that all the 1268 census villages of Kerala have been electrified, there are nearly 500 karas even today which have remained unelectrified (even according to the limited concept of village electrification adopted by the Central Electricity Authority). The KSEB, in consultation with the Rural Electrification Corporation (REC) has drawn up a programme for electrification of all these unelectrified karas during the next 3 years in a phased manner.

One of the important uses to which electricity is put in rural areas is for pumping water for irrigation purposes. As on 31-3-1982, there were more than one lakh electricity operated pumpsets in Kerala. A large number of these pumpsets are located in Ernakulam, Trichur, Palghat and Malappuram districts. Although there is a vast potential of ground water even in the other districts of the State,

it is not being exploited, because rain water is itself quite adequate in most parts of the State.

Pumpset energisation has assumed considerable importance in recent years especially in the context of increasing food production. In Kerala, we are energising on an average, about 10000 pumpsets every year. There is demand for more pumpsets being energised and it should be possible for us to provide electricity for 15,000 pumpsets per annum in future. It is necessary to maintain statistics of pumpset energisation from year to year at District/Taluk/Block levels. This will enable us to plan our future activities for pumpset energisation in a much better manner.

One of the criticisms levelled against the pumpset energisation programme is that it is benefitting the richer farmers only and that the small land owner/cultivator is not getting benefit at all. To answer this criticism effectively, we should have data on the number of pumpsets energised under different categories, i.e., we should know the number of pumpsets of 1 HP capacity or less and similarly those of 7.5 HP or more; such statistics are not presently available. Another classification which is required is the number of scheduled caste/scheduled tribe farmers who have been benefited by the pumpset energisation programme. Efforts should be made to collect and compile such data and publish them regularly.

One of the most important and socially high priority schemes is the electrification of harijan basties. Although, in Kerala, there are no separate habitations for harijans, which are far removed from the main residential centres of the village, still there are many areas where harijans and backward classes constitute the predominant group of the population. Many of these areas have not yet been provided with electricity. The KSEB has identified nearly 1200 such areas in the State. These are being covered for electrification during 1982-83 and 1983-84. It is necessary to publish statistics of harijan basti electrification from time to time to bring out the progress in this very crucial high priority sector.

The KSEB brings out some routine publications from time to time giving state level figures of electricity generation, transmission and distribution. Not much attention is paid to the presentation of details required for meeting the various planning needs. Statistics are also not readily available at the block or lower levels. The divisional engineer of the KSEB does not have any statistical assistance for making the necessary compilations and statistical analysis. There is also some need for greater scrutiny of the available data and ways of ensuring that they meet the required standards of timeliness and reliability.

All data are presently compiled with reference to the existing set-up of the KSEB in terms of sections, Sub-divisions, Divisions, Circles etc. There

Views expressed in this paper are the personal views of the author, and do not reflect the views of the organisation to which he belongs.

is no effort made to provide the much-needed break-up of rural/urban consumption of electricity. As we are all aware, the patterns of consumption are different in both these areas. It is necessary therefore to plan for future development by taking into account the present patterns of consumption separately for both these areas. It may not be very difficult for the KSEB to produce the data separately for rural and urban sectors, provided there are separate feeders catering to the urban areas and arrangements are made for compiling the data separately on a feeder-wise basis.

Statistics is not an end in itself. It is not mere compilation and presentation of data. It is only a professional statistician, who can visualise and cater to the various types of requirements of data.

I would, therefore, suggest that the KSEB should draw upon the services of the professional statisticians from the Bureau of Economics and Statistics, Government of Kerala for professionalising their statistical activity at the Divisional level and upwards. This will also give the Bureau of Economics and Statistics an opportunity to bring about desired improvements in concepts and definitions and ensure uniformity in the methods of data collection, compilation and presentation. Eventually, it may be possible to computerise the data processing operations of the KSEB including the billing arrangements for consumers. There are several other areas like inventory management, finance and accounts etc., where also the services of the professional statistician would be found extremely useful. It is necessary to make a beginning in this direction as early as possible.

2. DATA BASE OF KERALA ECONOMY: THE NEGLECTED ENERGY SECTOR

P. P. Pillai

Introduction

Despite the importance of energy and its vital role in the day to day life, energy has not been a subject of serious discussion in the past 1. Though energy was known to be an essential input of production, no economist made an explicit reference to this in the discussion of factors of production. Energy was neither conceived as a constraint in the production process till the beginning of the 20th century. It was perhaps Chenery who tried for the first time to introduce energy as an explicit factor in the neo-classical production function analysis. So much so, nobody was very much interested either in energy statistics or in studies in energy sector. Energy thus remained as a neglected sector by development economists and statisticians.

It was probably in the work of Club of Rome done by the Massachusetts Institute of Technology (MIT) and reported in *The Limits to Growth* (1972) that we were warned for the first time by a team of scientists about the possible threat posed by fast exhausting resources including energy². As a matter of fact it is very well recognised now that on one side there is a growing demand for energy and on the other side a perpetual decline in the energy stock as we have "addicted to living off the capital of terrestrial stock of low entropy"³. The earliest attempts, perhaps, to assess the energy resources in India date back to the sixties⁴. However energy sector became a subject of serious discussion in India only since the beginning of the seventies, especially after the so called oil crisis of 1973. Subsequently energy statistics captured a prominent place in 'development statistics' and official commissions/committees and individual researchers started studying energy sector.

1. There was, of course, some concern about the depletion of forest supplies of firewood in England in the 13th century, See: Earl Cook, "Energy Sources for the Future", in William R. Burch Jr. (Ed), *Readings in Ecology, Energy, and Human Society*, Harper and Row, New York, 1977, P 114.
2. Hollis B. Chenery, "Process and Production Function from Engineering data", in W. W. Leontief (Ed), *Studies in the Structure of American Economy*, Oxford University Press, London, 1953.
3. Meadows Douella et. al., *The Limits to Growth*, Universe Books, New York, 1972.
4. Edison Electric Company, *Economic Growth in the Future*, Mc. Grew Hill Book Co., New York, 1976, P. 44.
5. (i) Report of the Energy Survey of India, Government of India Press, 1965.
(ii) NCAER, Demand for Energy in Eastern India, 1963.

- (iii) NCAER, Demand for Energy in Western India, 1965.
- (iv) NCAER, Demand for Energy in India, 1966.
- (v) NCAER, Domestic Fuels in India, 1959.
- (vi) For a detailed Bibliography on Energy in Indian Economy, See *Commerce*, Annual No. 1977, pp. 217-233.

2. Present status of energy statistics

Energy exists in different forms. Broadly speaking, one can classify them into two, viz., Commercial and non-commercial energy. Electricity, coal, oil and gas are the most important forms of commercial energy in use. These are mainly used in the industry, transport and agricultural sectors for production purposes. Fuelwood, agricultural waste and animal waste are the main non-commercial forms of energy and they are used primarily by household sector for cooking and heating. Oil and electricity are used by the household sector in India mostly for lighting and rarely for cooking. Coal and charcoal also are used for cooking very rarely.

No agency, government or private, publishes data on non-commercial energy production or consumption on any periodic basis say annual or biannual. As far as non-commercial energy forms are concerned only ad-hoc estimates of yearly consumption made by committees or commissions at some points of time are available at present. From these estimates one find that non-commercial forms of energy accounted for 125.9 MTCR (67.0% of the total energy consumption) in 1953-54 and 194.6 MTCR (43.5 per cent of the total energy) in 1975-76. Thus it should be a matter of very serious concern that we do not have authentic regular data on annual production or consumption of about 45 per cent of the total energy in use. This is definitely a great handicap, especially in the context of energy crisis.

The data position with regard to commercial forms of energy—electricity, coal, oil and gas is fairly good. The State Electricity Boards, the Central Electricity Authority, Oil and Natural Gas Commission, Government of India and various State Governments bring out various types of periodic data (usually annual series) on production and consumption of the above commercial forms of energy on a regular basis. So far as Kerala is concerned, it may be said that the only commercial forms of energy produced in Kerala is Electricity, though we consume oil, coal and gas also. The commercial energy production sector of Kerala is therefore composed of only one form of energy, viz., electricity.

Statistics on production, and consumption of electricity in Kerala are published periodically by the State Electricity Board (KSEB). Following are the main annual publications of the KSEB.

- (i) Annual Report
- (ii) Annual Accounts
- (iii) Power System Statistics
- (iv) System Operations

The above publications give some what detailed data on technical, commercial and financial aspects of electricity industry in Kerala.

6. Report of the Working Group on Energy Policy, Planning Commission, Government of India, 1979 (MTCR=Metric Tonne Coal Replacement).

Statistics on annual import of other commercial forms of energy—Oil, Coal and Gas—to the State from outside and their consumption within the State are not available at present readily in published form anywhere. The only data perhaps available is the category-wise fuel consumption data in the Annual Survey of Industries Series. This however, accounts only for part of the total consumption of coal or oil or gas.

Thus the present status of energy statistics in the State is deplorably poor. No systematic statistics are prepared or published with regard to non-commercial energy such as firewood, agricultural waste or animal waste (which form more than 40 per cent of total energy consumption on the basis of available information). Among the commercial forms of energy published periodic statistics are available only with regard to electricity production and consumption. Though oil, coal and gas are imported to the State and consumed in great bulk, no statistics about the trade of these fuels or about the consumption of these fuels in various sectors are being published by any agency at present. This neglect of the energy sector in the matter of collection and publication of essential statistical data is very much detrimental to the proper planning of this most vital sector, especially in the context of present power crisis in the state.

3. Studies in energy sector of Kerala

The energy sector of Kerala still remains almost unexplored. Barring a few studies on some aspects by individual researchers and some adhoc official papers in the State Electricity Board and State Planning Board in connection with planning, we have at present no other studies in this field. There are two reasons for this. One is, as we pointed out earlier, the lack of data except in the case of electricity and the other is that this sector has never been in the priority area of research by individual researchers till recently, probably because it has not been recognised as a problem sector. The situation has now changed drastically and the energy sector, in the present context of crisis, calls for immediate depth studies on various aspects.

- 7. (i) Parameswaran M. P., "Energy Perspective for Kerala", *Yojana* XXVI (1 & 2), 1982.
- (ii) P. P. Pillai, "Kerala's Power Sector: Its Growth and Contribution to the

Economy" in M. A. Oommen (ed) *Kerala Economy Since Independence*. Oxford and IBH, New Delhi, 1979.

- (iii) P. P. Pillai, "Interaction between Electricity and Economic Development", 19th Annual Conference of the Indian Econometric Society, Poona, 1980.
- (iv) P. P. Pillai, *Dynamics of Electricity Supply and Demand in Kerala: A Macro economic Analysis*, Agricole Publishing Academy, New Delhi, 1981.
- (v) P. P. Pillai, "Fuel Demand by Rural Households in Kerala", 21st Annual Conference of the Indian Econometric Society, Annamalaiagar (TN), 1983.
- (vi) K. D. Bahuleyan, "The pattern of Fuel consumption in villages in Kerala", unpublished M. A. Dissertation, 1979.
- (vii) P. A. Joseph, "Pattern of Household fuel consumption in a Rural Village", unpublished M. A. Dissertation, Calicut University, 1982.

Energy sector is an area where one needs to have inter-disciplinary team research by engineers, scientists, economists and statisticians in two important directions, viz: (i) to explore the possibility of alternative energy resources and (ii) to economise the use of available energy. Such studies are possible only if essential data pertaining to this sector are compiled and published on a regular basis by the concerned agencies.

The periodical data published by the KSEB at present in their annual publications listed earlier could be used, only for aggregate analysis of electricity sector which may partly help in planning this sector in a very broad way. This definitely is quite insufficient for any comprehensive planning of the energy sector as a whole. Even in the electricity sector, a lot of data on very essential aspects of electricity which are now available at different levels of the KSEB, are at present neither consolidated nor published in any form. Electricity data are available mostly at the State level. Regional or sub-regional data—may be KSEB circle wise and division wise—are necessary for any kind of special optimum planning. The KSEB publishes a list of Extra High Tension Consumers in the State. If they publish along with this monthly or annual consumption of these consumers, that would certainly be of use for researchers for studying the varying energy intensities of production in these major industries.

In the context of power shortage, there is need for choosing less energy intensive techniques of production. Studies in Energy analysis of industrial products are to be taken up for this purpose. Fuel consumption data given in ASI reports are insufficient for this. Probably KSEB can publish industry-wise annual consumption of electricity, if arrangement is made for the compilation of this statistics.

The biggest lacunae in the data of commercial forms of energy is in the trade statistics of coal,

oil and gas. Arrangements may have to be made in compiling this data by the Bureau of Economics and Statistics.

Above all, the statistical machinery in the state should seriously think of an arrangement for estimating non-commercial energy consumption in different sectors of the economy through sample surveys and publishing them on a regular basis annually. It may be remembered here that the only data now available in this category is about the firewood officially supplied by the Forest Department. But this represents hardly ten per cent of the total consumption of non-commercial energy. Studies in the area of non-commercial energy use (mostly in the rural areas for cooking and heating) are to be taken up on a priority basis. Such studies have much more relevance and significance in the context of exploring the scope of (i) economising the use of fuelwood in cooking and (ii) using alternative forms of energy (e. g., biogas) for cooking in the households. The technology of cooking using firewood deserves to be investigated in this connection to examine the scope for improving the same. This has particular significance in the wake of soaring price of firewood in our state. (It may be mentioned here that statistics on firewood prices are not available from any published periodicals at present).

4. Conclusion

The purpose of this note is to bring to the notice of the Government agencies engaged in planning and statistics and other researchers in the development problem of the state that here is an important and crucial problem sector which deserves to be immediately attended to. The point emphasised is that in terms of statistics and research the energy sector of Kerala still remains neglected and that this neglect is in fact suicidal because energy constraints poses the greatest threat to the development of the state. (Of late, Kerala started feeling the pinch of power-cut from December last). The pitiest part of this energy story is that we have absolutely no authentic periodic data on about 45 per cent of energy production and consumption (the non-commercial form of energy) and have only annual data on production and consumption (that too aggregate) of only one of the commercial forms of energy, viz., electricity. The data position in this sector is therefore deplorably poor, and probably is the poorest. The energy sector remains practically unexplored by researchers and therefore leaves scope for a very large number of in-depth studies essential and useful for energy planning and management in the state.

3. INDUSTRIAL STATISTICS

G. Ramachandran Nair
C. Zainaba

Historical background

In our country systematic collection of Industrial Statistics has started only in the sixties eventhough isolated attempts can be traced even during the British rule. As part of the war preparations during the Second World War period, Government of India required information on the production of Industrial goods. To meet this requirement the 'Industrial Statistics Act of 1942' was passed and a Directorate of Industrial Statistics created. This Directorate organised a Census of Manufacturing Industries (CMI) in 1946. This was the first organised step for the collection of Industrial Statistics in India. This Census covered only 29 Industrial groups, out of a total of 63 and was conducted in part 'A' states. Later, a National Committee headed by late Prof. P. C. Mahalanobis, after reviewing the CMI made certain recommendations to widen the scope and coverage of Industrial Statistics. According to these recommendations, a Sample Survey of Manufacturing Industries (SSMI) was organised and the work entrusted with the National Sample Survey. This survey covered all factories registered under the Factories Act of 1948. At the same time, the C. M. I. work was continued to be done by the State Governments through their Statistical Bureaus. There was thus duplication of work since some units were covered both in the CMI and SSMI. In 1956, the Industrial Statistics Act of 1942 was withdrawn and the 'Collection of Statistical Act of 1953' was put into operation. But as the rules to supplement this Act were passed only in 1959, in the interim period the CMI and the SSMI were carried out without any legal backing. In 1960, the Director National Sample Survey made the Statistics Authority for the Collection of Industrial Statistics for the whole of India. Since then, the Industrial Statistics are being collected by the Government of India under a unified Scheme 'Annual Survey of Industries' (A. S. I.).

The C. M. I., S. S. M. I and A. S. I. covered only the Industrial units registered under the Factories Act. The whole sector of smaller units that are not registered as Factories were left out in these censuses and surveys. There were many reasons for this. First and foremost, these small units were scattered widely and their number was very large, with the result that identifying and contacting individual units itself was a massive task. Secondly, since most of the small units did not keep regular accounts or registers, the data

*It follows that the unit of classification is an 'establishment' defined as an economic unit engaged in one or predominantly one economic activity at a single physical location under single ownership control of a firm or enterprise which may have more than one establishment engaged in different activities at the same location or the same activities in different locations. Each establishment is to be counted separately and classified accordingly.

had to be collected by personal probing. It was also felt that eventhough numerically large, the contribution of this sector to the net National product was small compared to the factory sector. In view of all these, for a long time no major attempts were made to build up a firm statistical base for the non-factory sector. The enquiries on this sector were mostly confined to adhoc surveys and studies conducted in selected areas. In this respect special mention should be made of the attempts made in the N.S.S. to collect data on household industries in their regular rounds.

In this paper, an attempt is made to review the present status of Industrial Statistics in Kerala and to identify the data gaps. Certain suggestions to build a statistical system responsive to the demands of planning and control are also made.

Systems of Classification of Industries

Before reviewing the data system, it will be worth while to discuss briefly the different systems of classification of Industries, since frequent references will be made of the terms used therein in the subsequent paragraphs. The term 'industry' in its broad sense is used to refer the economic activity followed by a person or a firm. In this sense, agriculture, mining, trade, manufacturing etc., are industries. In this note, however, the term is used in a restrictive sense to cover processing and related activities only, for which the generally accepted terminology is 'manufacturing industry'. In the National Industrial classification -1970 (N. I. C. 1970) prepared by the Central Statistical Organisation, these activities are classified under the major divisions 2 and 3. The basis of classification (which is on the lines similar to the International standard classification 1968) followed in the NIC 1970 is the nature of economic activity carried out in an establishment*. For the purpose of collection and publication of industrial statistics, activities similar in nature have been grouped and classified under different heads at 2, 3 and 4 digit levels. Thus 'Printing of cloth' and 'Wire drawing of aluminium' are classified as:

<i>Major group</i>	<i>Industries</i>
2 and 3	Manufacturing
23	Manufacture of Textiles
232	Printing, dyeing and bleaching of cotton textiles
232.3	Printing of cloth
33	Basic metal and alloys industry
335	Aluminium manufacturing
335.3	Wire drawing of aluminium

In this system of classification, one to one correspondence is maintained at first and second digit level with the 'International Standard Classification 1968' and at the three digit level, all the International classification items upto 4 digits can be matched or made equivalent.

Repair services, which are classified under the major division 9 (community, social and personal services) are some times grouped with manufacturing and put under a broad head 'Manufacturing and Repair Services' for collection of Industrial Statistics.

Another system of classification of Industrial establishments is on the basis of the number of persons employed and utilisation of electric power. This is followed mainly in the enforcement of labour laws. Thus in the Factories Act, 1948 the Industrial establishments are classified under various sections of the Act as follows.

Section 2m(i)—Factories employing 10 workers or more on any day during an year and working with the aid of power.

Section 2m(ii)—Factories employing 20 workers or more on any day during the year and working without the aid of power.

For the development activities of Government, industrial establishments are classified on the basis of investment and/or the administrative department concerned with the sector. Classification of industries as 'Large and medium sector', "Small Scale" 'Khadi and Village Industries' etc., are based on these considerations. As the criteria for these classifications frequently change, this type of categorisation is not quite suitable for analytical studies.

Annual Survey of Industries (ASI)

Annual Survey of Industries (ASI) is the most important source of Industrial Statistics in the Country. The survey began in 1960 and is conducted every year with the previous year as reference period. The Director, National Sample Survey Organisation (Field Operations Division) has been declared as the 'Statistics Authority' under the 'Collection of Statistical Act 1953' and it is in this capacity that he collects statistics from Industrial Units. Eventhough submission of correct data is obligatory on the part of the units, the field staff of the Industrial Statistics wing of the NSSO personally contact the owners of units and assist them in filling the returns. The returns are scrutinised by senior officers of the NSSO and sent to the NSSO headquarters for processing of data and preparation of reports.

The objects of the ASI are to collect reliable data (i) to analyse the causes influencing the growth of Industries (ii) to provide statistical information required for formulation of economic and industrial policy (iii) to provide the data base for planning (iv) to study the effects of strikes and lock outs (v) to study the employment structure and (vi) to study the condition of Industrial licensing.

Geographically the ASI covers the whole of India. In terms of establishments, the ASI covers the following categories:—

- (i) manufacturing industries registered under sections 2m(i) and 2m(ii) of the Factories Act 1948.

- (ii) units engaged in distribution of electricity (electricity generation is excluded)

- (iii) units engaged in water supply, purification and distribution

- (iv) bidi and cigar factories (under the bidi and cigar employment Act of 1966); and

- (v) laundries and motion picture production units (as a special case as requested by the Central Statistical Organisation)

In particular, the ASI excludes defence establishments, oil storage and pumping stations, technical training institutes hotels and restaurants. Manufacturing activity in Jails are covered if they are registered under the Factories Act.

The reference period of the ASI is the accounting year. This was a change made in 1967, upto which period the reference period was the previous accounting year. Thus reference period for the ASI 1980 is the accounting year 1979-80.

The Annual survey works under two schemes (i) the census sector and (ii) the non-census sector (Previously known as sample sector). The census sector covers units employing 50 or more workers with power and units employing 100 or more workers without power. However, units engaged in electricity distribution are covered under census irrespective of the number of workers employed. Further, if the total Number of units in a particular industry at the all India level happens to be less than 50, they are included in the census sector and completely enumerated. From the remaining units 50% of the units under each industry group are selected at random and covered in an year and the remaining units covered in the next year. This form the non-census sector.

In the ASI, the primary unit of enumeration is the factory and the primary data consist of returns furnished by factories. In the case of electric light and power industry, the unit of enumeration is an undertaking (divisions/sub-divisions of the State Electricity Board are treated as separate units).

For collection of data, specific forms have been prescribed by the NSSO. The return now used consists of three parts. Part I, which is the main return relates to details of capital, employment, input and output. Part II (the labour return) relates to man-days worked, absenteeism, labour, turnover, earnings, etc., and Part III relates to housing construction by employers for their employees. In respect of each of the above items included in the return data on detailed break ups are collected. Tabulation of data in Part I is done by CSO, Part II by the Labour Bureau and Part III by the National Buildings Organisation.

Eventhough the submission of returns under the ASI is obligatory on the part of owners, in practice, cent per cent response is not achieved in spite of tact and persuasion. As far as Kerala is concerned, the extent of non response is negligible, being of the order of about 2.5%.

The tabulated results of each ASI round are pleased in 10 volumes. Reports for the year upto 1978-79 have now been released. In these reports the data are presented by States and by Industries upto 3 digit level of classification. However, in any group, if the number of units are less than 3, the data for that group is not released separately in order to mask identity for reasons of data security. Some of the important variables covered in these reports are:

1. number of units
2. fixed capital
3. working capital
4. invested capital
5. outstanding loans
6. number of workers
7. man-hours worked
8. number of employees
9. wages of workers
10. total emoluments
11. fuels etc., consumed
12. raw materials consumed
13. total input
14. products
15. net value of semi finished goods
16. total output
17. depreciation
18. value added by manufacture

From 1974 onwards, copies of the ASI schedules canvassed by the NSSO are obtained by the State Directorate of Economics and Statistics to tabulate data that are of special interest to the State. Based on this tabulation, results upto the year 1977-78 have been published. Tabulation of data for 1978-79 has been completed.

Index of Industrial Production

Eventhough the Annual Survey of Industries provide detailed statistics of production in the factory sector, there is a wide time gap between the reference period and the period by which the tabulated results become available. Changes in production in vital sectors come to light only at a distant point of time, when it may be too late to take remedial measures. Central and State Governments have to keep a close watch on the industrial activity, so that appropriate action can be taken at the right time. To facilitate this, an index of industrial production is being computed and published by the State Directorate of Economics and Statistics.

The Index of Industrial Production is a quantity index and is a measure of the change in industrial productions over time. For the present index, the base period is the year 1970. The index is computed and published for each quarter beginning from the 1st quarter of 1975. It is a weighted index of the production of selected items in the factories covered by the census sector of the ASI, the weights being the proportionate value added by manufacture in the base period. Eventhough only the factories in the census sector have been covered, the index may be taken as a fair indicator of the industrial activity in the factory sector, since the census sector accounts for nearly

90% of the total value added in all the factories taken together.

The indices are published under three groups, the general index, the group indices and the sub-group indices. The general index is the combined index for all the industries taken together. The group indices are the index numbers for the industrial groups at the 2 digit level classification of the NIC and the sub-group level indices relate to the Industrial groups at the 3 digit level classification. In all, the index covers 46 major industry groups. The quarterly production data for computing the indices are collected from factories on a voluntary basis. Based on these data a quarterly report on Index of Industrial Production is issued by the Directorate of Economics and Statistics.

Economics Census and Follow up Surveys

While the ASI was intended to provide detailed statistics of establishments in the factory sector, there was no systematic arrangement for the Collection of Statistics relating to the industrial establishments in the non-factory sector. Handlooms, Coir, Cottage industries, handicrafts and most of the traditional industries come under this category. There used to be no clear idea of even the number of enterprises engaged in each type of activity nor of the places where they were concentrated. With the added emphasis given for the development of small scale, cottage and traditional industries during successive five year plans more and more new units came into existence every year. This sector which makes a substantial contribution to the National Income and provide employment to a large section of the population is of considerable importance from the social and economic point of view. In order to fill the vital gap in information on this sector, a system has been evolved by which a country wide census is to be conducted at intervals to collect basic data on Industries, and using this as basis, to carry out detailed studies through sample surveys. (It is to be pointed out here that these census known as Economic Censuses seek to collect information on all types of non-agricultural activities of which industries form one of the major sectors.)

In Kerala, the first Economic Census was conducted in November-December 1977. In this census, basic information on the establishments such as their location, nature of activity, employment, type of ownership, value of output, etc., were collected by house to house visit. (In this enquiry a distinction has been made between enterprises run wholly with the help of household members only and enterprises employing hired workers, with or without household members. It is the latter category that is termed establishment). After the census enumeration, Primary Census Abstracts (PCA) and a Directory of Establishment (DE) were prepared for each District by manual tabulation. The PCA provides panchayat/town ward-wise data on broad groups of industries like total number of establishments in the group, number of private establishments, number of units without power, number of seasonal establishments, number of workers—total and hired (separately for seasonal and

other establishments). The Directory of Establishments contains the names and addresses of all establishments having an employment of 6 or more workers and/or an annual turn over of Rs. 1 lakh. Detailed particulars of these establishments like nature of activity, employment, type of ownership, power used or not etc., are also given in the Directory. In the Directory, the particulars are arranged townward/panchayat-wise. These documents are kept in the District Statistical Offices as reference volumes.

Subsequently, the data in the Economic Census schedules (except data on output which on scrutiny was found to be unreliable) have been transferred and held in magnetic tapes. Detailed tabulation of the census data at the District level has also been completed and is ready for release.

The Economic Census provided basic data for the design of detailed sample surveys on the non-registered factory sector. These surveys were done in two parts. Part I covered the Directory Manufacturing Establishments (DME) excluding the factories covered in the ASI. Part II covered non directory establishments (establishments having less than 6 workers and/or annual output of less than Rs. 1 lakh) and own account enterprises (i. e. enterprises owned and operated by households without the help of any hired worker). The results of these surveys when combined with the results of the ASI would give a complete picture of the Industrial sector

Both these surveys, the DME Survey and the non DME surveys were carried out separately in two sets of independent samples by two different agencies using identical methodology, concepts and schedules. The idea was to compare the results and later pool them to get better estimates. In Kerala, the agencies for carrying out the surveys were the State Directorate of Economics & Statistics and the Regional Wing of the NSSO. The DME survey was conducted in 1978-79 for a period of one year starting from 1st October 1978. The Central and State samples each covered about 1700 Directory establishments distributed over different industries. The NDME survey was conducted along with the 33rd round of the NSS. The period of this survey was also one year commencing from 1st July 1978. In the NDME survey, the State participated on a double matching basis. In all, the Central sample covered about 7000 enterprises and the State sample about 14000. The main items covered in these two surveys were capital structure, employment, emoluments, consumption of fuels and raw materials, products manufactured, sales outlets etc. The data were collected by personal interviews and wherever possible the records and accounts of the units were referred. Unlike in the case of the ASI, since data collection in these surveys had no legal backing, the investigators had to do the work by tact and persuasion.

The processing of the entire schedules of these two surveys is being done at the computer Centre, New Delhi. The work is nearing completion.

The Second Economic Census was conducted in 1980 along with the houselisting operations of 37|1827|M.C.

the Population Census 1981. A preliminary tabulation of the Census schedules showing the Number of industrial establishments in each census village/town ward, categorised as Directory, non Directory and own account enterprises has been completed. The entire data is proposed to be put into computer tapes for storage and easy retrieval. The work has been already started and is expected to be over by May 1983. As in the previous census, this census will also be followed by detailed sample surveys.

Census of Small Scale Industries

In 1973-74, the Department of Industries conducted a Census of small scale industries in the State, as part of an all India programme. The coverage of this census was confined to small scale units registered with the Department of Industries upto 30th November 1973. The data collected were processed in the office of the Development Commissioner (SSI), Government of India and the census reports issued in two volumes. In these reports data were presented by broad areas of interest like dispersal of industrial units, industry-wise/product-wise consumption of selected raw materials in major consuming industries, distribution of units by investment, employment, etc.

In the office of the Development Commissioner (SSI), Government of India, the raw census data are held on computer tapes and are being used since 1975 for policy formulation. Since new units are coming up in large numbers, this data need periodic updating. All the registered units are expected to submit annual production returns to the State Departments of Industries. Utilising this data, the census tapes are being updated.

Directory of Small Scale Industrial Units

In 1980, the Department of Industries and Commerce brought out a Directory of Small Scale Industries registered with the Department upto 31-3-1979. In this Directory, besides the identification particulars, data on products, installed capacity, investment and employment are given for each unit.

Register of application

From 1978-79 onwards, an abstract of the application for registration of each unit is being prepared and maintained in the form of registers. This abstract contains information on installed capacity, capital investment, employment, sources of finance, raw material requirements, products, etc., of units applying for registration.

Raw Materials Survey

Recently a Raw Materials Survey was conducted by the District Industries Centres to assess the requirement of raw materials by the SSI units. The main items of information collected in this survey are (i) capital structure including source of funds (ii) employment particulars (iii) production and sales and (iv) raw materials consumed (including imported items and controlled commodities). The surveys covered only the small scale industries. The data collected are being processed.

Statistical data in the records of the District Industries Centre

In their day to day activities, the District Industries Centres collect and generate a wide range of statistical data. From these, information on entrepreneurs starting a new units, new registration, source of funds, employment generated, exports each subsidy, industrial sickness, closures etc., can be obtained.

Statistics on Coir Industry

The bulk of employment in the Coir Industry is in the household sector. There is no systematic arrangement for the collection of statistics relating to this sector. Whatever data available are scattered in the administration reports of the Coir Board and in the ad hoc surveys conducted by the Coir Board and the State Statistical Bureau. In 1966, the Coir Board conducted a field survey on retting, spinning and manufacturing. In 1975-76 the State Statistical Bureau conducted a sample survey on coir industry in the household sector. The principal focus of the survey was on the socio-economic conditions of the people engaged in the spinning and weaving activities in the household sector. Data on the number of workers and households engaged in coir spinning and weaving, the age--sex composition of the workers, educational standard and economic status, nature of employment, quantity and quality of products, distribution of weaving units by type of ownership, capital structure and wage rate, etc., were collected in the survey.

In 1981, the Directorate of Economics and Statistics conducted a complete enumeration of coir worker households in 256 villages scattered in 30 coastal taluks. The object of the survey was to identify the coir workers in the State so as to enable the Government to draw up welfare schemes for coir workers. Along with the work of identifying the coir workers certain basic items of information like their age, sex activity pursued etc., were also collected in the survey.

This opportunity of covering all the centres of coir industry was utilised to prepare a list of coir producing units in the State. In respect of the units identified, data on the number of coir workers, line of production, type of enterprise (i.e. whether household unit, co-operative or private) number of days worked etc., were also collected. This list can be used as a frame for detailed sample surveys in coir industry.

The data collected in the survey have been tabulated and a report released. It is for the first time that such a large scale survey covering all the worker households in the coir industry has been conducted. The data collected in the survey can be used as a basis for future indepth studies.

Statistics of Handloom Industry

Handloom is one of the most important traditional industries of the State. In view of its importance, a separate Directorate has now been set up for the development of this industry.

In 1976, the Director of Industries conducted a census of Handlooms covering all the weaving units (a household or establishment having at least one working loom at the time of enumeration) in the State. For each unit located, data on location, type of ownership, number of looms, their type and condition, number of workers in the unit investment, number of members in the household and their occupation, annual consumption of yarn, mode of marketing etc., were collected by personal interviews. The data collected was tabulated and a report issued in 1977.

In 1981, a handbook containing certain basic characteristics of the handloom industry was issued by the Directorate of Economics and Statistics, production, finance, export, etc., available in the census report and the official records of the Handloom Directorate.

Statistics of Khadi and Village Industries

The Khadi and Village Industries Board collects monthly and annual returns from all the units registered with the Board. The data in these are tabulated and published in the annual administration report of the Board. Statistics of number of units, employment and annual production of units registered with the Board are available in these reports.

Statistical data available with Kerala State Industrial Development Corporation

Data on medium and large scale industries are collected by the Kerala State Industrial Development Corporation on an annual basis. These include details of existing and future industrial programmes and requirement of funds and details of utilities like power and water required. In respect of the units aided by the Corporation, they collect data on licensed capacity, installed capacity production, investment, turnover, employment, etc.

The Corporation has conducted raw material surveys for specific industries utilising the services of specialised agencies. They have also conducted market surveys to study the marketability of specific products.

Measures suggested for improvement of Industrial data system

The need for up-to-date and reliable statistics on all aspects of the Industrial Sector, for planning and taking administration decisions have been emphasised in the memoranda/reports of various Government Agencies and Committees. But until recently, no serious attempts seem to have been made for the systematic collection, compilation and storing of Industrial Statistics in Kerala. The Government of India projects like ASI and Economic Census provide detailed data on a wide range of variables relating to the Industrial sector. If these data are properly collected and analysed, it can serve most of the information needs for State level planning. In certain specific areas like coir, handlooms, handicrafts etc., more broad based data may be necessary

and this can be collected by organising special surveys using the basic frame obtained from the Economics Census.

While the censuses and surveys provide data for the analysis of the economic system for planning the Implementing Agencies of plan programmes may require unit/product-wise data for plan execution and control. A beginning has already been made to collect these type of data through the census of Small Scale Industries. These data can be updated annually through Industrial Production Surveys, the registration schemes etc. In the office of the Development Commissioner (SSI) Government of India the data are being stored in magnetic tapes and updated periodically. This procedure can be adopted in Kerala also. In addition to this, there are various types of supplementary information that are generated at the District Industries Centres. These may broadly be classified as (i) information required for development purpose (ii) information for regular flow of data may then be developed for monitoring and evaluation (iv) market intelligence and (v) information for personnel management and financial control. These data which are available in the official records have also to be compiled, classified and stored.

It may be seen from the above discussion, that the first thing to do is to collect, scrutinise, arrange and store the available data in a manner suitable for further processing and quick retrieval. A system for regular flow of data may then be developed keeping in view the requirements of the users, both present and potential. It should be an integrated system for collection, tabulation, storing, retrieving, analysing, computing and outputting of data. The type of data processing that is being done now is very slow and preliminary, mainly aimed at generating aggregates required for preparation of National Accounts and for computing various indicators of change. Even after large scale computing capability being available, much progress has not been made in the direction of user oriented processing systems and perhaps of information based decisions making. Collection of Statistical data is costly and because of the special characteristics of the Manufacturing Sector, Collection of Industrial Statistics is costlier. Hence the new developments in the techniques of information handling and systems design have to be exploited to the maximum extent possible to organise an efficient Industrial Statistical System.

1. THE INDUSTRIAL SECTOR AND ITS DATA REQUIREMENTS

R. Vasukutty

Industries, for planning purposes, are classified into the following groups:

- (i) Large and Medium Industries
- (ii) Modern Small scale Industries
- (iii) Traditional Industries:
 - (a) Coir
 - (b) Handloom
 - (c) Handicrafts
- (iv) Khadi and Village Industries
- (v) Other Village industries

This classification is mainly based on an amount of investment and the level of technology used. Plans for industrial development are formulated based on the above classification. But industrial statistics are not collected according to this classification. For the sake of collection of statistics industries are grouped into (i) registered and (ii) unregistered, based on the quantum of employment provided by the industry (classification of industries based on industry codes is applicable in both cases). Data on various aspects of the registered industrial sectors are collected under the Annual Survey of Industries.

Annual Survey of Industries

Annual Survey of Industries covers all factories in the State registered under sections 2m (i) and 2m (ii) of the Indian Factories Act, 1948, that is, all factories employing 10 or more workers using power and those employing 20 or more workers not using power. The survey has two parts, viz., the Census part and the sample part. The Census part covers all factories employing 40 or more workers using power and those employing 100 or more workers not using power. The remaining factories, viz., those employing 10 to 49 workers, using power and those employing 20 to 99 workers not using power are covered in the sample part. The aggregates of the Census part are added to the estimated totals of the sample part to get the total picture of the industrial sector registered under sections 2m(i) and 2m (ii) of the Factories Act. The main indicators collected under the Annual Survey of Industries are:

1. Number of industrial units under each category of industries
2. Fixed capital
3. Working capital
4. Productive capital
5. Invested capital
6. Outstanding loans
7. Number of persons employed and number of workers
8. Total emoluments of employees
9. Average annual earnings
10. Value of input

11. Value of output

12. Value added by manufacture.

The field work of the survey is done by the Field Operations Division of the National Sample Survey Organisation, Government of India. One copy each of the schedules is transmitted to the Directorate of Economics and Statistics. The data on the Survey are tabulated, analysed and the Report prepared in the Directorate of Economics and Statistics.

Other industrial statistics collected by the Directorate of Economics and Statistics

Quarterly and annual indices of industrial production are computed with 1970 as the base year for the years 1975-76 onwards by the Directorate of Economics and Statistics. These indices based on two digit and three digit industry codes are published in the quarterly and annual bulletins issued by the Directorate.

Economic Censuses 1977 and 1980 contain data on census village-wise number of enterprises. These enterprises are classified according to types of activity and extent of employment.

The Department of Economics and Statistics also conducts sample surveys occasionally on certain industrial sectors for studying specific problems connected with Industries etc. In 1981 the Department conducted a census of Coir Workers in collaboration with the Department of Coir Development. The work has been completed and the report published. The Report contains Taluk-wise number of workers under different activities of the industry with age and sex-wise distribution etc.

Industrial Statistics collected by other departments/organisations

Data on industries sector are collected by the Kerala State Industrial Development Corporation (KSIDC) Department of Industries and Commerce, Department of Coir Development, Department of Handloom Development and the Kerala Khadi and Village Industries Board.

The KSIDC collects certain data on Medium and Large Industries on an annual basis and certain other data for specific purposes. Annual data collected by the Corporation includes details of existing and future industrial programmes and their requirement of funds, source-wise, for formulation of Five Year Plans and Annual Plans and the details of requirements of utilities like power and water. Data collected for specific purposes are on licensed capacity installed capacity, investment, turn over, employment etc., of Large and Medium Industries assisted by KSIDC., availability of raw materials, marketability of products etc.

The Department of Industries and Commerce collects data on number of small scale industries and artisan's units, newly established, investments employment, financial assistance given etc., through

monthly and annual returns by the District Industries Centres. The Department at present conducts a survey on the requirement and availability of raw materials for SSI units.

The Department of Coir Development obtains data on collection and stock position of husk and on all aspects of the working of primary, manufacturing and marketing societies in the Coir sector through weekly, monthly, quarterly, half-yearly and annual periodical returns. All aspects of the working of Coir industry in the Co-operative Sector are available in these returns.

The Directorate of Handloom Development obtains quarterly, half yearly and annual returns from handloom workers co-operative societies and the apex society. These returns contain data on number of looms, number of members, employment, wages paid, consumption of yarn, production, sales, working results of co-operative societies, loan transaction, etc.

The Kerala Khadi and Village Industries Board collects data on commodity-wise production and sales, employment, wages number of institutions financed, amount of loan outstanding, overdues etc., relating to Khadi and Village Industries for which financial assistance is given by the Board.

Data gaps in the Industries sector

The Annual Survey of Industries covers only those industrial units registered under the Indian Factories Act. The data collected by the Directorate of Industries and Commerce pertain to only those small scale industries registered with the Director of Industries and Commerce. These data are gathered from the pro forma filled up by the entrepreneurs at the time of registration, with the result the data on production, employment etc., are not realistic and up-to-date. The Department of Coir Development and Handloom Development are primarily concerned with the co-operative sectors in these industries. Majority of the workers in the coir and handloom industries are outside the co-operative fold; but there is practically no data regarding investment, production, employment etc., on the unorganised sectors of these industries. Thus it is very difficult to obtain a total picture of the various sectors under village and small scale industries. In this connection it would be relevant to reproduce the observations made by the Planning Commission in the "Sixth Five Year Plan 1980-85" regarding the position of industrial statistics in the country.

"Lack of sound statistical data has been the main handicap in the proper planning and formulation of the development programmes for village and small scale industries. The Annual Survey of Industries (ASI) covers only small scale units registered under the Factories Act. The data thrown up by the National Sample Survey (NSS), Economic and population censuses are not complementary to those of the Annual Survey of Industries to get a total picture of the RVSI Sector. The respective implementing organisations have carried out

surveys which are also neither comprehensive nor comparable. In the case of handlooms, the estimates of production are being made on the basis of civil deliveries of yarn by mills in the form of hanks and cones and beams respectively. The small scale units the data thrown up by the Census of small industries carried out in 1972-73 are updated on the basis of two percent for handicrafts, the estimates of production and employment are derived from the export realisations reported by the Director-General of Commercial Intelligence and Statistics. As such the data flow is neither on a time series basis nor relates to a uniform reference period and/or average to facilitate their comparison, proper interpretation and collection" (Government of India, Planning Commission, 'Sixth Five Year Plan 1980-85' p. 196).

The need for streamlining the availability of Industrial Statistics

The requirements of industrial statistics for scientific industrial planning should take into account the following developments which took place in the industrial scene of the country as a result of the industrial policies of the Government of India from time to time.

(i) Public sector has been assigned a very prominent place in the industrial development of the country.

(ii) In order to provide employment to maximum number of people, large outlays are provided under the plan for the development of modern small scale industries, ancillary industries etc.

(iii) As a result of the growth of tiny industries, small scale industries, ancillary industries etc., which do not come under the purview of ASI, the unregistered manufacturing sector has grown considerably over the years.

(iv) Traditional industries like coir, handloom and handicrafts are being restructured by organising viable co-operatives. Still major part of the workers are in the unorganised sector

(v) In the context of decentralisation of planning at District and Block levels, the need for economic data for Blocks and lower level units are keenly felt.

Some suggestions

In the light of the existing limitations of data in the industrial sector and the need for accurate and up-to-date Statistics for Planning the following suggestions are made in the collection, compilation and analysis of industrial statistics:

- (f) The data available in the Annual Survey of Industries on Small scale Industries should be tabulated separately based on the definition of Tiny Industries, small-scale industries, ancillary industries etc., in force during the reference year. This would enable to have separate data on medium and large industries. The data on small scale industries registered under Factories Act along with the data on small scale industries collected through other sources would enable to have a complete picture of the small scale industries, after making necessary adjustments for duplication or omission, wherever necessary.
- (ii) Data thrown up by ASI may be tabulated separately for industries in the Central sector, State sector, co-operative sector, joint sector and private sector. Clear picture regarding the growth of these sectors and their interse linkages are necessary for proper planning.
- (iii) Physical quantities of raw materials used under such type of industry, production, sales, turnover, export etc., may be tabulated and published.
- (iv) For exercises under district planning economic data for Blocks and lower level units are necessary. The data on ASI may be tabulated for each Block (the collection of Statistics Act 1953 and Rules framed thereunder stipulate that if the number of factories under a particular industry is less than three, that industry should be included under 'others'. In spite of this limitation Block-wise classification of other variables is possible).
- (v) At present there is considerable delay in making available the results of the Annual Survey of Industries, with the result when they reach planners and policy makers the data would have become redundant. It is therefore necessary that important variables like number of units under each category of industries, investments, production, working results and employment are tabulated and made available to planners within one year of the receipt of the filled in schedules of ASI.
- (vi) The Department of Industries and Commerce, in collaboration with the Department of Economics and Statistics or otherwise should collect comprehensive data on investment, production, raw materials used, export working results, employment etc., of all small scale industries registered with that Department annually. Arrangements should also be made to tabulate, analyse and publish the data within six months of the completion of the survey. The data should be tabulated for each district, giving industry-wise and Block-wise break-ups.
- (vii) Arrangements should be made to collect comprehensive data, on an annual basis from all types of industrial co-operatives like small scale industrial co-operative societies, Mini-Industrial co-operative societies, Women's Industrial co-operative societies, Coir Co-operative Societies, Handloom Co-operative Societies, Powerloom Co-operative Societies etc. The data should be collected for each year ending 30th June and should contain informations on membership, financial position, loan transactions, assets and liabilities, production, employment etc. The tabulation should be done for each district with break-ups for each type of society. Block-wise details should also be given wherever possible.
- (viii) Data on production and employment of industrial units aided by Khadi and Village Industries Board may be collected annually by the Board. The tabulation of the data should be done district-wise giving industry-wise and Block-wise break-ups.
- (ix) A sample survey on Village and Small scale Industries in the unorganised sector may be done once in five years. Data thrown up by the Economic Census can be used as the sample frame. The sample size should be not less than 20 per cent in order to provide reliable estimates at Block-level for each type of industry.

5. DATA BASE OF TRADITIONAL INDUSTRIES IN KERALA: THE CASE OF COIR AND CASHEW

Thomas Isaac
K. P. Kannan

Introduction

In terms of employment, traditional manufacturing constitutes the second largest sector in the Kerala economy, next to agriculture. These two together form the backbone of the rural economy of the State. Moreover, persons working in the traditional manufacturing sector constitute the poorest strata of Kerala's rural population. They are characterised by severe under employment, deplorable labour conditions, low productivity, low wage rates and low earnings. The development efforts have so far failed to bring about any significant change in the situation.

One main stumbling block to any realistic planning in this sector is the dearth of reliable data on almost any aspect of these industries. While somewhat reliable estimates of employment in this sector are available (or possible to secure) for certain industries like cashew, for a number of other industries it is still a matter of dispute (e.g., coir processing) or a wild guess (e.g., fishing). Without going into the merits and demerits of estimates, we give below approximate magnitudes of employment in some of the major traditional industries only to show the important and crucial nature of these occupations. It would seem that close to a million persons are dependent on the traditional industrial sector.

TABLE I
EMPLOYMENT IN SELECTED TRADITIONAL INDUSTRIES

Industry	No. of workers	Percentage of workers	
		Women	Men
1. Coir			
(a) Processing	250-300,000	95	5
(b) Manufacturing	15,000	5	95
2. Cashew Processing	100,000	95	5
3. Beedi making	100,000	10	80
		12	88
4. Handloom	60,000	25	75
5. Fishing	200,000	30	70
6. Toddy tapping	30,100	100	Nil
7. Others	200,000	..	..

The unorganised nature of production in many of these industries makes it difficult, if not impossible, to develop a proper data-base. Given the absence of any serious attempt at data collection, we analyse the data-base of two prominent industries, that of coir and cashew. It is significant that coir is, by and large, an unorganised industry while cashew is an organised industry accounting for more than half the employment in the factory sector. Through these two cases we hope to capture the problems in analysing the data in the organised and unorganised sectors of the traditional industries.

Coir Industry

The Coir industry is one of the most important traditional industries in the State, spread along the whole coastal belt employing 2.5 to 4 lakh workers. Thus it is the second largest single source of employment for the rural poor in Kerala after agriculture.

The industry may be broadly divided into two sectors: the coir yarn spinning sector and the coir goods weaving sector. In the former the fibre is extracted from the retted coconut husks and spun into coir yarn. A significant portion of the yarn production is still in the handspinning sector which presents a wide spectrum of pre-manufacture production organisations such as independent domestic producers, varied forms of putting out system and rarely direct use of hired labour in common sheds. Even in the spindle spinning sector of the industry the production process on the whole tends to be fragmented and petty. Coir weaving industry, though was once the premier manufactory industry, of the erstwhile State of Travancore, has today got decentralised into small scale cottage units. Thus the persistence and even accentuation of the lower forms of capitalism characterises the whole industrial structure. This nature of the industrial organisation has made the collection of data very difficult.

The industry has been facing a deepening crisis since mid fifties —, creating serious social problems and unrest. Given the importance of the industry, the Government has attempted to intervene and regulate both the production and marketing of coir and coir products in a very major way. However, the inefficient and bureaucratic implementation of the regulations has only contributed to the worsening of the crisis. One major reason for the failure of Government policies have been the fragile data and information on which they have been formulated and evaluated.

We may identify some of the aspects and areas where there exists virtually no information or data and therefore one is forced to rely on conjectures and guesstimates. It should also be noted that even the data which is available is often classified and analysed in most unscientific manner depriving them of much of their analytical utility. One glaring instance, for example, is Bureau's own study of 1976, where the basic criterion of classification of coir spinning units is the size of their land holding.

(a) The retting sector

Though it has been in the markets for raw and retted husks that the Government intervention has been most ineffective and chaotic, there exists virtually no current data on the number of retters, their scale of their operation, their regional distribution, the husks requirement of each region, the inter regional movement of husks etc. The available information relates to a very unreliable census of retters conducted in 1962. Further, though a dual

market system has come to operate in the husks markets and this has come to be accepted at all levels, there is no data as regards to the price trends in raw and retted husks.

(b) *The handspinning sector*

This is another area where one has to still depend upon a sample survey conducted in 1960.

(c) *Wages and Earnings*

The weaving sector till recently presented a bewildering variety of price rates which differed from establishment to establishment. Most of the wage rates in the industry has been now standardised by the Coir Industrial Relations Council. However, the standardised wage rates are not generally paid in the unorganised sector. Similarly, though the minimum wages for various operations have been fixed in the spinning sector also, their payment has generally been avoided by the ratt owners. The situation is even more complex with regards to the level of earnings given the serious fluctuations in employment and under-employment in the industry. Thus there is practically no reliable knowledge of the earnings of the workers.

(d) *Equipment*

The data on yarn ratts and rope ratts is based on studies conducted in the mid-sixties. The information as to the types of looms and production capacity in the weaving sector is available at Purchase Price Enforcement Scheme Office of the Coir Board at Alleppey. The major gap in this aspect of the industry is related to the mechanical defibring sector. There is no knowledge at all with

regards to the number of such mills, their capacity, the workers employed in them etc., even though their operations have been a matter of serious controversy.

The Directorate of Coir Industry provides production, employment and wages in the co-operative sector of the industry. Given the unorganised nature of the industry and its diversified production sectors, the data provided by Annual Survey of Industries (ASI) have little utility in understanding the industrial problems. There have been a number of studies with regard to the employment and production of the industry by official and non-official agencies. The basic source of reference has been the data provided by Coir Board. We shall attempt a brief critical evaluation of the Coir Board estimates of employment and production in the coir industry. We shall also attempt to compare these with the alternative estimates available from the other sources. Our analysis will reveal the inadequacy and unreliability of the data even on these basic aspects of the industry.

Data on Employment

The current official estimate of the Coir Board for the employment in the industry was initially made in 1973. It has continued to be used with marginal changes. Around 4½ lakhs workers are estimated to be employed in the industry. (A detailed break-down of the estimate is given in Sl. No. 11 of Table 2). It will be instructive to compare this estimate with the earlier estimates of Coir Board itself as well as those of other authorities. For the sake of brevity they are presented in the following Table 2.

TABLE 2
THE ESTIMATES OF EMPLOYMENT IN COIR INDUSTRY

S.No.	Source	Reference year Area	Employment	Methodology	
(1)	(2)	(3)	(4)	(5)	
1.	Coir Board (<i>Coir Economics and Statistics</i> (Vol. No. 1 July 1959))	Travancore-Cochin and Malabar District 1959	1. Employment in Travancore-Cochin	2,10,000	Item 1: was estimated on the basis of the total man-days requirement for the production of variety-wise estimates of coir yarn produced in T.C., made in the <i>Report of the Ad hoc Committee for Coir yarn</i> at 220 days employment an year as revealed by the <i>Report on the Census of Coir Spindles 1958</i> .
			2. Employment in the District of Malabar	1,28,000	
			Total	3,46,000	Item 2: was taken from the <i>Report of the Survey of Coir Industry in Malabar District</i> (Un-published)
	Coir Board (quoted in <i>Survey Reports on Coir Industry 1968</i>)	Kerala and Kanyakumari 1956	1. Employment in Spindle	97,874	Item 1: was enumerated by a Census of spindle spinning establishment in 1966 (<i>Survey Reports on Coir Industry, 1968</i>),
			2. " beating, cleaning fibre etc.	95,643	
			3. Employment in hand-spinning	1,19,166	
			4. Employment manufacturing	13,395	
			Total	3,26,078	Item 2: was estimated on the basis that for every working ratt around 3 workers were needed for these activities.
					Item 3: was estimated from a stratified sample survey of hand-spinning households conducted in 1960 (<i>Report on the Economic & Statistics Survey of Coir Industry</i>)
					Item 4: was estimated from the Registration Survey of Coir Industrial Establishment conducted in 1966 (<i>Survey Reports on Coir Industry 1968</i>)

(1)	(2)	(3)	(4)		(5)		
			Household	Non-household	Total		
3.	Census of India 1961 (Vol. II Kerala Part II B (1))	Kerala	1. Male 2. Female 3. Total	32,461 1,65,911 1,98,372	21,756 30,950 52,706	54,217 1,96,861 2,51,078	The total estimate it may be noted, does not include employment in the retting and trading sector of the industry. In the 1961 Census worker was defined to be one who was gainfully employed for at least one hour a day (excepting for trade, business, professions or services, for which it was speciall a fortnight prior to the day of enumeration) during the greater part of the working season'. Primary and Secondary activity of each worker was also collected. The data refers to the primary activity. Again employment figures refer only to the manufacturing divisions of ISIC.
4.	Census of India 1971 (Series : Kerala Part II B (1))	Kerala 1971	1. Male 2. Female 3. Total	13,263 50,732 63,995	36,250 58,362 94,612	49,513 1,09,094 1,58,607	In the 1971 Census the reference period was past one year. The worker was the defined to be one who spent major part of his time in economic activities. Main and secondary activities of workers were also collected and the data quoted refers to workers with their main activity in coir industry.
5.	Kerala Planning Board (Report of study group on Mechanisation in Coir Industry in Kerala 1973)	Kerala 1972	1. Employment in retting, beating, cleaning etc. 2. Employment in spinning sector 3. Employment in production of mats and mattings etc.			1,12,000 2,10,740 4,950 3,26,690	Item 1: The personnel needed for steeping and defibring 160000 lakh husks, and bundling and cleaning the fibre produced is estimated using certain work norms at 200 days of employment per annum. Item 2: The personnel needed for spindle spinning, drying and bundling 1,30,800 ton of yarn is estimated using certain works norms at 200 days of employment a year. Item 3: This includes only workers needed to produce 5000 tons of creel mats and 6000 tons of mattings on handlooms at 300 days a year employment.
6.	Bureau of Economics and Statistics (Reports on the survey of Unregis- tered Industrial Establish- ments 1977)	Kerala (Rural areas) 1973	Total employment in the unregistered sector of coir industry			1,42,170	The employment was estimated through a stratified sample survey of coir villages.
7.	LIM Bangalore (Coir Industry) 1977)	Kerala 1975-76	1. Employment in beating and cleaning 2. Employment in spinning 3. Employment in Drying and Dyeing 4. Employment in winding and weaving 5. Leave Reserve 20% (Others 5%) Total			47,327 81,664 630 8,000 27,402 1,65,013	On the basis of Coir Board figures for annual production of coir and coir products in India in 1975-76, the production in Kerala was estimated. 'After carefully observing each process of production the labour input required to produce each item was estimated'. Then the employment potential of coir industry was calculated on the assumption of 300 days of employment for a worker. If 200 days of employment for a worker is assumed the total employment poteitial is 2,43,521.
8.	Bureau of Economics and Statistics (Report on the Survey of Coir Industry in the Household Sector 1978)	Kerala 1975-76	1. Employment in the household sector of spinning & weaving 2. Employment in the retting and libring sector 3. Employment in the manufacturing sector Total			2,27,059 1,34,286 46,500 4,07,845	Item 1: is estimated on the basis of a stratified random sample survey conducted by the Bureau in 1975-76. Item 2: was estimated on the assumption that 130 man-days are required to process 10000 husks, 216 days of employment for the worker an year, and 22312 lakh husks were processed an year. Item 3: was an estimate supplied by Coir Board.
			3. Employment in manufacturing sector			46,500	Item 2: was estimated on the assumption that 130 man-days are required to process 10000 husks, 216 days of employment for the worker an year, and 22312 lakhs husks were processed an year.
			Total			4,07,845	Item 3: was an estimate supplid by Coir Board

(1)	(2)	(3)	(4)	(5)		
9. IAMR, Delhi (<i>Employment Study of the Coir Industry 1979</i>)	Kerala and Kanyakumari 1976-77	1.	Employment in retting husks and production of fibre	Persons 86,477 Standard 67,368	"Population of household establishments in Kerala in terms of retting and beating establishments and spindle spinning establishments is available from various sources. As for the sample the number of hand-spinning establishments are available as such. In case of retting and beating establishments, using an estimate of employment per retting and beating establishment (observed in the Report of Survey of Retters conducted by the Coir Board in 1962-63) and the estimate of employment in retting and beating activities of IAMR survey, estimate of retting and beating establishments in the survey is obtained as 10,173. Spindle spinning establishments in the survey are then derived as residual, knowing the total establishments in the IAMR survey. As a next step, using establishment—employment norm in each of these three categories from IAMR survey and the establishments in the population, employment (persons) in Kerala was estimated as 512506. Then using the conversion factor between employment (persons) and standard employment given in Annexure VII Table 1 standard employment in Kerala is derived as 3,99,256." (<i>Employment Study of the Coir Industry 1979</i>)	
		2.	Employment in Hand-spinning	1,94,223 1,51,355		
		3.	Employment in Spindle spinning	2,31,806 1,80,363		
				5,12,506 3,99,256		
10. IAMR Delhi (<i>Employment Study of the Coir Industry 1979</i>)	Kerala 1976-77	Employment in Coir Industry	4,96,307 3,86,636	This estimate was based on production, the total production is taken as 2,45,700 tonnes as estimated by IIM Bangalore study. 'In IAMR Survey estimates of production is obtained 69,829.59 tonnes. Then using employment output (in quantities) ratio from IAMR Survey, employment in the household sector of Kerala is obtained as 4,96,307 persons.' (<i>Employment Study of Coir Industry 1979</i>)		
11. Coir Board (<i>Annual Report of the activities of Coir Board 1976-77</i>)	All India 1973 to 1976-77	1.	Retting Sector (excluding the beater's retter's household) 50,000		Item 1: was enumerated by a census survey of retter's household conducted in 1962-63. (<i>Survey Reports on Coir Industry 1968</i>).	
		2.	Spinning Sector		Item 2: was estimated by a stratified sample survey conducted in 1960 (<i>Economics and Statistical Survey of Coir Industry 1962</i>)	
		(a)	Handspinning	1,19,000		
		(b)	Spindle spinning	97,000		
		(c)	Beating of husks of cleaning fibre	1,32,000		Item 2: was calculated from the census survey of spindle spinning units conducted 1966 (<i>Survey Reports of Coir Industry 1968</i>)
						Item 2: was estimated on the assumption that 3 workers per working unit are needed for these activities. To this the number of workers engaged in defibring and cleaning in retters households as estimated by the census survey of retters in 1962-63 was added. (<i>Survey Reports on Coir Industry 1968</i>)
		3.	Manufacturing Sector			
		(a)	Mats Weavings	15,000		
		(b)	Matting Weaving	4,700		
		(c)	Rehanking of coir yarn	2,700		
(d)	Rope making	12,000				
(e)	Rubberised Coir goods	1,100				
(f)	Allied items of work	11,000				
		Total	4,45,900	Item 3: Not known		

Serious criticism against the Coir Board report has been made by a study conducted by the Indian Institute of Management, (IIM) Bangalore. (*Coir Industry*. IIM Bangalore, 1977). Their independent estimate of employment potential in coir industry (247519 workers at 200 days of employment) is well below the Coir Board official estimate (See Sl. No. 7 Table 2). They have argued that the rise in the employment by over a lakh above the Coir Board's own estimate of 1966, (See Sl. No. 2 Table 2) in the current estimate of Coir Board is not justified, given the declining trend in the number of ratts between 1962-63 and 1966 as revealed by the 'Report of the Spindle Spinning sector of Coir Industry' (*Survey Reports on Coir Industry 1968*). They cite the Kerala Planning Board's estimate of 1972 (See Sl. No. 6 Table 2) and the Census figures for 1961 (See Sl. No. 3 Table 2) in support of their contention. Moreover, they argue that the data revealed in the 1971 Census (See Sl. No. 7 Table 2) confirm the doubts about the declining trend of employment in the industry.

Though we tend to share the skepticism of the critics of the Coir Board estimate (for reasons which we shall detail later), it must be pointed out that the above arguments for rejecting the Coir Board estimate have to be critically considered. Firstly, though it is true that there is a decline of 5.3% (i. e., from 38,484 to 36,274 ratts) between 1962-63 and 1966 in the total number of ratts; if we consider only the working ratts the decline is only marginal (i. e., from 33,285 to 32,566). And it may be noted that between 1958 and 1962-63 total number of ratts had risen by 23.53% (i. e., from 30,658 to 38,484 ratts). Therefore it is premature to forecast anything about the trends in the number of spindles from the coir establishments' census reports of the Coir Board. Moreover, the 1966 estimates of the Coir Board was exclusive of employment in the retting, transporting and trading sectors. The increase in the current estimate has been due to (a) the inclusion of workers employed in the retting, bundling and transporting activities and (b) due to the revision of the figures of employment in the manufacturing sector which were clearly under estimates.

And the use of Census data to prove the declining trend in employment in a predominantly household industry like coir is not warranted because of the significant definitional changes that have been made between the two Censuses. (See Sl. No. 3 and 4, Table 2). The new definition of 'workers' adopted in 1971 excluded all irregular or part time workers who did not spend the major part of the reference period (i. e., last one year) in economic activity. The economic activity of these 'non-workers' came to be entered as their secondary activity. But in the 1961 Census these workers as long as their main activity was in coir industry and spent a minimum of an hour over the major part of the working season in the industry, would have been counted as coir workers. This could be a major reason for the phenomenal decline in the number of workers in coir industry in the 1971 census.

It may also be noted that even the 1961 Census figures quoted refer to workers with their main

activity as coir industry. Information as to the number of workers with coir as secondary activity is not available. This could possibly account for some of the differences between the Coir Board Estimates and the 1961 Census figures for employment in Coir Industry. Moreover the Census figures refer to the employment in the manufacturing division of the Industrial Classification and therefore do not include employment in that trading and pure retting establishments.

However, the significant differences between the Coir Board estimates which include even workers who are only marginally employed in the industry (e. g., see para 114) and the Census estimates which include only workers with their main activity as coir industry, and the dramatic decline between the 1961 and 1971 Censuses due to the definitional change of a 'worker' to exclude even those with coir industry as their main economic activity but do not spend the major part of their time in it, reveals the severe under employment and the secondary and part time nature of the industrial activity for a significant section of the work force. Moreover it should be noted that according to the official estimates of the Coir Board, production of coir and coir goods in India has been steady around 150/160 thousand tonnes in the last two decades. But the available evidence from various studies indicate an increase in the extent of under employment in the industry. This together with the Census data seem to suggest that the secondary or part time nature of the coir industrial activity in the rural areas is increasing over time. This raises the importance of conceptually distinguishing between a head-count number of workers employed in the industry (including workers marginally employed) and the potential standardised employment in man days or persons available in the industry. In an industry such as coir the differences between the two can be very significant.

The study by the Institute of Applied Manpower Research (IAMR) has correctly attempted to make an explicit distinction between the two concepts. Their estimates of employment are made in terms of both persons and standard employment. 'The standard employment is worked out from the estimate of employment (persons) and a work norm of 8 hours per day and 200 days an year'. But surprisingly it is the IAMR employment estimate (standard) rather than employment (persons) that seems to be more in agreement with Coir Board estimate of employment. Therefore their estimate of employment (persons) has got to be carefully scrutinised. In Table 2 we decided to quote 'the IAMR report in detail because the methodology they have adopted is very confusing and it has not been possible for us to decipher the 'intricacies' of their estimation procedures.

The IAMR survey was to cover the whole of Kerala State and Kanyakumari District of Tamil Nadu. However due to limitations of time the survey was officially limited to (a) the 'areas of concentration which were identified in the earlier survey of spindle spinning households in 1966', (b) the spindle and hand-spinning households 'producing more than 0.5 Kg. per day' and (c) those households 'where

production activity (was) actually taking place' in the retting sector. A close perusal of the list of the villages and the employment in them as enumerated by the survey will make one conclude that except perhaps for the District of Alleppey the survey was haphazard and incomplete. Such being the nature of the survey, it was not possible to directly estimate the employment in the industry. Therefore employment coefficients for various establishments were derived from the survey. From these the employment in different sectors was estimated using the population estimates of the different establishments as revealed by various surveys conducted in the sixties (which incidentally are open to question). But one is struck by the absurdity of the whole exercise the enumeration of nearly 30,000 households selected arbitrarily. And the economic ratios they have worked out in their detailed tables are very misleading because of the clubbing together of totally divergent establishments such as rope making units, hand-spinning units and spindle spinning units.

As regards their estimate based on production, 'employment-output ratio for coir output as a whole is considered'. This has vitiated the exercise because the employment-output ratio is so widely different between different products such as hand spun yarn and spindle spun yarn. Therefore little reliability can be placed upon the total employment-output ratio based on their sample (which was not selected in any random manner) and consequently on the estimates of employment so derived.

The IIM Bangalore estimate also is an exercise based on certain standard work norms postulated by them. But a detailed examination of IIM estimate is not possible because their report does not reveal the work norms they have used in their estimation. And unfortunately, in spite of the primary data collected by them, the analysis of the data presented in the report does not allow one to derive the work norms actually prevalent in the industry, or ratios of employment (such as spinner, beater, etc.) in different activities which would have enabled one to estimate the actual total number of persons employed in the industry and thereby the extent of under-employment.

In the Planning Board estimate of 1973 perhaps, the work norms used are fairly close to those actually prevalent in the industry, but for the manufacturing sector 300 days of employment an year is assumed. However, it should be noted that this estimate of employment in the coir industry does not include workers engaged in the production of those varieties of yarn and mats and other coir products where mechanisation was not being considered. Thus the employment in hand-spun varieties of yarn and Muppuri yarn, mats other than creel variety, ropes and rubberised products and activities in the export and the related processing sector has been ignored.

The 1973 estimate of the Bureau of Economics and Statistics covers only the unregistered establishments in the rural areas and by their own admission has been a serious underestimate. 1975-76 study of the Bureau of Economics and Statistics closely approximates the official estimate of the Coir Board. But the estimation procedures of the Bureau of

Economics and Statistics in their 1975-76 study are very confusing. Firstly, household weavers are double counted. Though their estimate of employment in the household sector (227,059) also includes household weavers, they have also added, as another component of their estimate, the Coir Board figures for employment in the total manufacturing industry (inclusive of household weavers). Secondly, even after deducting household weavers from the 227,059 workers estimated to be employed in the household sector, when we work out the spinner/ratt ratio we get an unusually high figure of 6.78. Our guess is that the figure of 227,059 workers also includes beaters and cleaners in the spinning households. If so, serious double counting is involved in the Bureau's procedure of deriving the total employment in the spinning sector by adding the estimate of employment in the retting, beating and cleaning activities (based on the manpower requirements to process the total estimated quantity of husk consumed by the industry) to their estimate of employment in the spinning household after some marginal adjustments (the details of which have not been explained in the report).

Thus we find that the other alternative estimates are of little use in cross-checking the Coir Board figures for employment in the industry. We shall briefly examine each component of the Coir Board estimate. (See Sl. No. 11 Table 2) Employment in the retting sector is based on census survey of retters conducted in 1962-63. It is best to quote directly from that report: "49,600 workers were found to be engaged in retting. 59% of them were hired workers and 41% household. On an average these workers get a minimum of 12,800 husks an year. This may be enough to provide about one week's work for each worker. The quantum of work available for majority of workers in this category is deplorably low." (*Survey Reports on Coir Industry, 1968*). Thus a significant number of workers in the retting sector are marginal workers who are employed for a few days in an year in the industry.

The employment in the hand-spinning sector is also based on another study conducted nearly two decades back. It is generally believed that since then the production of hand-spun yarn has generally declined. The rural wage rates specially in the agricultural sector have been rising, and Calicut and Cannanore regions have registered higher wage rates even without commensurating unionisation of workers as in Alleppey and Palghat. This is not an atmosphere conducive for the flourishing of a sweated labour industry as hand-spinning. Again it may also be noted that while the introduction of mechanical defibering mills created violent social unrest and disturbances in the Travancore region, they were accepted and have come to stay in the Malabar areas.

The estimate of spindle spinning workers is based on the census of such establishments conducted in 1966. It is likely that the spindle spinning has since then spread to areas which were formerly the preserve of hand-spun yarn. Also the product mix of yarn has also undergone significant changes as is evident from the changing composition of coir yarn exports in the last two decades.

It is the Coir Board estimate of employment in the defibering and cleaning activities that is most suspect, 132,000 workers are estimated to be employed in these activities. This works out to be 4.12 workers per ratt. But according to the IAMR survey this ratio is only 2.06 workers per ratt. However, it must be admitted that this is a complex problem because strict division of labour is not maintained in most of the smaller establishments. We have compiled the following Table 3 from the IIM Bangalore study for the some of the spindle spinning taluks.

TABLE 3

THE DISTRIBUTION OF WORKERS IN BEATING AND CLEANING ACTIVITIES IN COIR SPINDLE SPINNING ESTABLISHMENTS

(Percentage distribution given in brackets)

Activity	Karthika- ppally	Karunaga- ppally	Quilon	Chirayin- kil
(1)	(2)	(3)	(4)	(5)
Total number of workers	303 (100)	127 (100)	188 (100)	246 (100)
Workers engaged exclusively in beating & cleaning activities	85 (25)	22 (17)	71 (38)	49 (20)
Workers engaged in beating and cleaning along with other activities	134 (44)	93 (73)	113 (66)	..
Workers who spent more than 50% of their time in beating & cleaning	130 (43)	14 (35)	88 (47)	..
Workers exclusively engaged in spinning	118 (39)	28 (22)	66 (35)	181 (74)
Workers engaged in spinning along with other activities	167 (55)	93 (73)	108 (57)	..
Workers who spent more than 50% of their time in spinning	167 (55)	83 (65)	100 (53)	..
Ratio of Workers with their main activity as beating and cleaning to corresponding workers in spindle spinning	0.77	0.53	0.88	..

Source: Coir Industry IIM Bangalore 1977

Thus we find that the workers employed in beating and cleaning activities is not more than 40% of the employment in the spinning households. In the IIM survey and IAMR survey the ratio of beaters and cleaners to spinners is around 0.6. This is significantly lower than the figures of the Coir Board based on the assumption that 3 workers are employed in beating and cleaning activities per ratt. This does not necessarily mean that the Coir Board figure is an over-estimate because (1) the survey ratios consider only the beaters and cleaners working in the spinners establishments; and (2) the greater incidence of casual labour in these activities make

it likely their numbers are generally under-reported. The Coir Board estimate is however open to serious question for adding the workers engaged in beating and cleaning retter households to the estimated figure of 96,000 workers (on the basis of the norm of 3 worker per ratt) to get a total employment of 132,000. (Though this is not explicitly stated anywhere, this seems to us the procedure adopted by the Board). This obviously involves double counting to the extent there exists a vertical integration of spinning and retting processes. Our guess is that at present a very significant portion of the nusks (perhaps more than 75% in the spindle spinning areas) is being retted in spinners own retting yards, and a still greater proportion of fibre production is conducted within the spinners own households. All workers except those who produce fibre other than for spinning yarn (a total of 4,440 tonnes according to the Coir Board estimate or less than 4% of the total production of coir fibre in Kerala) is taken care of by the three beater-cleaner per ratt norm adopted by the Coir Board.

Another very important factor that has to be considered while estimating the employment in defibering activities is the impact of mechanical defibering mills that have significantly replaced manual defibering in northern Kerala. However, since there is no information whatsoever on these mills not even their total number, it is not possible to make any statement on the impact of this important technological change that has taken place in the central and northern regions of Kerala.

The estimate of employment in the manufacturing sector is more realistic and reliable. The estimated employment of 19,700 workers in the mats and matting weaving establishments tallies well with the data available from the Purchase Price Enforcement Scheme Office which comes to around 2,000 workers. As regards the other items we do not know the exact procedures adopted for estimation, but it seems unlikely that these estimates differ significantly from the actuals.

Data on Production

The Coir Board estimate is the only source of information on the total production of coir and coir goods in India. The estimate of production of coir in India for 1979-80 is given below:

TABLE 4

PRODUCTION OF COIR (END-PRODUCTS) IN INDIA 1979-80

Items	Quantity (tonnes)
(a) Coir Products (mats, mattings, etc.)	28,000
(b) Coir Rope (a) Brown	13,000
(b) White	23,000
(c) Coir yarn other than those used for (a) and (b) above	50,200
(d) Curled Coir	2,500
(e) Rubberised Coir	1,500

Item	Quantity (tonnes)
(f) White fibre other than those used for (a), (b) and (c)	2,700
(g) Brown fibre other than those used for (b) and (d)	14,800
Total	1,65,180
Gross Production of White Fibre	1,51,600
Gross Production of Brown Fibre	32,300
Gross Production of Yarn	1,32,700

(Source: Coir Board)

We shall examine in detail the production estimates of Kerala which accounts for 87% of the white fibre produced in India.

The current method of estimating production of white fibre in Kerala consists of broadly two steps. Firstly the estimates of end products of white fibre is made. And then the total white fibre needed for their production is worked out allowing for 5 to 10% margin for wastage according to the nature of the product. Since the quantity of brown fibre is negligible (according to the present estimates 2500 tonnes) it is directly estimated based on the production capacity of the mills.

The estimate of the various end products of coir in Kerala is arrived at, by adding together (a) the shipments of coir goods from Kerala ports (b) the rail movement of coir goods from railway stations in Kerala to stations outside the State (c) the road movement of coir goods from Kerala to outside the State and (d) the estimated consumption of coir goods within Kerala itself. The details of these estimates for 1979-80 are given below.

TABLE 5
THE INTERNAL CONSUMPTION AND
THE MOVEMENT ON COIR PRO-
DUCTS TO OUTSIDE THE STATE
THROUGH SHIP, RAIL, AND
ROAD FROM KERALA
DURING 1979-80 (in tonnes)

Item	Shipment	Rail move- ment	Road move- ments	Internal Consum- ption
(1)	(2)	(3)	(4)	(5)
(a) Coir products	20992	3445	1000	500
(d) Yarn	25900	37250	2500	5000
(c) Rope	80	7300	..	8400
(d) Fibre	40	2700	..	..
	47012	50695	3500	13900

Source: Coir Board.

As regards the figures of shipment of coir and coir products there is no cause for any reservation. Statistics regarding shipper-war exports by destination is available on a monthly basis for each major variety of coir and coir products in Coir Board Publications. They are the most reliable components of the estimate. But with the declining trend in

exports, the internal market is becoming increasingly important, the estimates of which need closer scrutiny.

The figures for the rail movement of coir and coir products are collected directly by Coir Board from the railway stations in Kerala. It should be noted that the Coir Board figures for the rail movement refers to the Calendar year while the shipment data refers to the accounting year. However, this need not be considered a serious discrepancy if one is concerned with the trends over time. Again, we find that there exists some differences between the figures furnished by the Coir Board and the official data published by railway authorities.

TABLE 6

RAIL MOVEMENT OF COIR PRODUCTS FOR
KERALA (in tonnes)

Coir Board Figures		S. Railway authorities figures	
(1)		(2)	
Year	Quantity	Year	Quantity
1968	63299	1968-69	59000
1969	77759	1969-70	66000
1970	8069	1970-71	67000
1971	77389	1971-72	68000
1972	75529	1972-73	73000
1973	80507	1973-74	71000
1974	69207	1974-75	63000

Source: Column (2) Rail borne Trade Statistics of Kerala 1968-69 to 1974-75, quoted, in Inter-State Goods Trade and Balance of Trade of Kerala, (mimeo) State Planning Board, 1980.

Column (1) India's Production, Exports and Internal Consumption of Coir, Coir Board, relevant issues

The average annual movement of coir and coir products from Kerala between 1968-69 and 1974-75 according to the railway authorities is 66,710 tonnes while the Coir Board estimate of average rail movement between 1968 and 1974 is 74,910 tonnes i.e., 11% higher. We do not understand the reasons for this discrepancy between the two sources.

On the other hand, the Coir Board estimate for coir and coir products moved by road from Kerala seems to be severely under-estimated. In 1979-80, according to the official note supplied by the Coir Board to us, 1000 tonnes of coir products and 2,500 tonnes of coir yarn (i.e., a total of 3,500 tonnes) was transported by road from Kerala to outside destination. But according to the Report of the Survey on Inter-State Movement of Goods by Road prepared by Bureau of Economics and Statistics, Rs. 298.27 lakhs worth coir goods were moved from Kerala by road while Rs. 11.42 lakhs worth goods were moved into Kerala by road (from Kanyakumari District) in 1975-76. The report is based on a census of goods traffic through 12 check posts which accounts for around 85% of the goods that cross the

boundaries of Kerala by road. In Table 6 we have presented the coir goods moved out through each check post in the rank order of their importance. While the value of the coir goods are actual figures taken from the report, the quantity as well as product mix in some cases had to be estimated. There is a possibility that the quantity of coir fibre is slightly over-estimated, and to that extent coir products and

ropes under-estimated. (See Appendix 1). But however, the total quantity of coir and coir products may be taken to be a fairly accurate estimate. The under-estimation of movement of coir and coir products by road in the official statistics of the Coir Board needs no elaborate criticism if one compares Table 6 to Table 7.

TABLE 7

MOVEMENT OF COIR AND COIR PRODUCTS BY ROAD FROM KERALA TO OUTSIDE DESTINATIONS IN 1975-76

Name of the Check-post	District	Coir fibre (tonnes)	Yarn (tonnes)	Rope (tonnes)	Products (tonnes)	Total (tonnes)	Total (Rs. in lakhs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Walayar	Palghat	3695	3658	..	1421	8874	194.98
Gopalapuram	Palghat	903	798	..	348	2049	36.66
Manjeswar	Canmanore	..	904	430	..	1334	28.75
Aryankavu	Quilon	561	589	..	..	1150	20.89
Amaravila	Trivandrum	485	509	..	..	994	14.26
Muthunga	Wayanad	..	20	29	..	49	1.06
Koothupuzha	Canmanore	..	70	34	..	104	1.67
Total		5644	6548	493	1769	14474	298.27

Source: Bureau of Economics and Statistics.

The estimates of internal consumption of coir and coir products in Kerala are also under-estimated specially with regard to yarn. It is assumed that about 5,000 tonnes of yarn are consumed in Kerala itself. Some elementary cross checking is enough to reveal that this figure is too low. According to the 1971 Census report there were 2,534,360 dwelling houses with roof material of grass, cadjan leaves, reeds, bamboo, wood, etc. If one assumes that 4 kg. of coir yarn is required annually for the repairing or thatching of these houses, the yarn requirement of housing alone will be around 10,000 tonnes. Stunning as it looks, it is unlikely to be an over estimate because in 1,718,770 houses the predominant wall material also consists of grass, leaves, reeds, bamboos, mud, unburnt bricks or wood. It may also be remembered that we have not included the yarn used in the fencing of the compound, incidence of which is very high in Kerala given the peculiar habitat settlement pattern. Similarly we have not considered the yarn consumed in the agricultural and industrial activities.

An attempt has been made by the Coir Board to estimate the consumption of ropes, on the basis of the livestock Census of 1972 and the Population Census of 1971. While the estimate of rope for tethering animals does seem plausible, the estimate of consumption of ropes for lifting water seems to be an over-estimate. On the assumption that 1.44 kg. per goat more than one year old, rope requirement for tethering cattle is estimated to be 5,685 tonnes. It may be noted that these yarn requirement ratios are not based on any study but 'common sense judgements'. These also need closer scrutiny. The rope

requirement for drawing water from the wells is estimated to 2,712 tonnes on the basis of 1.82 kg. coir rope per well and that on the average every two rural households has a well. That every two houses has a well is highly improbable, given the fact majority of the rural households are supplied by water from ponds rather than wells, where the yarn requirement will be very much less, if at all necessary. However, the over-all estimate of 8,400 tonnes of rope need not be in serious error given the fact, the consumption of rope utilised in transportation, manufacturing or agricultural sectors has not been considered.

White fibre consumed in the production centres within Kerala is not considered in the estimation of white fibre production. Finally, the quantity of coir goods moved into Kerala from Kanyakumari district worth Rs. 11.42 lakhs has to be deducted from the estimated total of coir goods produced in Kerala.

To the total end product of coir yarn (70,650 tonnes) the estimate of yarn required for the production of coir products and ropes (43,800 tonnes) is added and the total production of yarn is estimated to be 114,450 tonnes. It is estimated that a total of 127,200 tonnes of white fibre is needed for the production of the above quantity of yarn and this estimate together with the estimate for white fibre as end product, yields a total 131,600 tonnes of white fibre production in Kerala. As we have pointed out earlier in detail, the Coir Board estimates of the end products are under-estimates and to that extent vitiate this estimate of total production of white fibre in Kerala.

Cashew Industry

From the point of the national economy, the importance of the cashew processing industry is in its role as an earner of foreign exchange. The industry has been earning more than Rs. 1000 million per annum by way of foreign exchange. But from the point of Kerala economy, its significance does not rely on its contribution to earn foreign exchange alone but more importantly on the employment and income of a large number of workers, mainly women. The industry has been called traditional though it has a history of only less than fifty years. It could be called traditional because the technology of processing does not require any modern skill, energy or capital equipment.

Because the industry depends on foreign markets for not only its products but even for a major share of its raw material requirements, changes in the world market and national policies on foreign trade does affect the industry profoundly. For Kerala these changes in policies and its consequences to the industry cannot be under-estimated. To assess these impacts to the industry it is extremely important that the State possess a sound data-base on the industry. In actual fact, however, the State is entirely dependent on data collected by the national organisations such as the Central Statistical Organisation which collect data on the organised industrial sector. The major sources of data on the cashew industry are:

Statistics of Foreign Trade published by the Government of India.

Annual Survey of Industries conducted by the Central Statistical Organisation, Government of India.

Census Reports

Data collected for specific purposes by agencies such as the Cashew Corporation of India, Institute of Foreign Trade, Kerala State Planning Board and Bureau of Economics and Statistics of the Government of Kerala.

Statistics of Foreign Trade gives data on exports, on a monthly basis, on the total volume, value, country of destination, etc. This is perhaps the only data on cashew which could be considered reliable. Compilation of these data according to various classifications is being done and published by the Cashew Export Promotion Council.

From the point of view of industry proper, the Annual Survey of Industries (ASI) conducted by the Central Statistical Organisation (CSO) and published with a considerable time-lag, is the most important source. It covers the census sector defined as those factories employing 50 or more workers with the aid of power or 100 or more workers without the aid of power and are completely enumerated. The other non-census sector covered are those employing 10 to 49 workers with the aid of power or 20 to 99 workers without the aid of power and are covered on the basis of probability sample approximately one third of the population. It gives

data on average daily employment, value of output, value added by manufacture, wages paid to workers and fixed and working capital, etc. While the data collected and processed in the ASI are extremely important and valuable, the immediate usefulness of such data, especially for purposes of policy formulation, is reduced by the time-lag in the publication of the processed data. Further, the correctness of the data is also hampered by certain practices in the industry such as illegal processing (called 'kudivarupp') leading to wrong reporting.

The volumes dealing with General Economic Tables of the Census Reports provide information only on the number of workers engaged in the industry for male and female according to districts. While it is a useful piece of data there have been several problems in using them. First they are provided only once in ten years and even then there is considerable time-lag in the availability of data due to the time taken for publication. More importantly and as mentioned in the case of coir, definitional changes in working force from census to census, especially those relating to women, have made inter-censal comparisons difficult. In any case, census reports have only limited usefulness for studying particular industries.

The other sources of data are designed for specific purposes and hence they are not periodic nor give all the details for building up a proper data-base. For example, the Cashew Corporation of India (CCI) had collected information on workers employed, raw nuts processed and kernels exported, etc., for 1969-71 for purposes of allocation of imported raw nuts. The State Planning Board conducted a study on the cashew industry in 1969 while the now defunct Labour and Industrial Bureau, Trivandrum, carried out a study in 1965. From a different point of view these latter studies did serve a useful purpose in that they helped in giving a picture of the 'State of the Industry' in its various aspects of production, employment, earnings etc.

Among the so called traditional industries of Kerala, cashew industry should be treated as one of the better placed in terms of the existence of any data-base. This is because the industry comes under the organised sector with registered factories as production is organised by employing large number of workers. However, there are several areas where the reliability of the data could be questioned. From the point of examining the whole question of the development of cashew in its various aspects one has to confront a number of problems relating to the collection and interpretation of data. Arising out of the problems encountered in a recently conducted study on the above lines, we attempt below an examination of the data-base on a few important aspects.

Data on Production

The data on exports being fairly reliable and systematically collected does present an actual

See K. P. Kinnan, *Cashew development in India: Potentialities and constraints* (Centre for Development Studies, Trivandrum, 1981, in print).

picture of the production in the industry. However this is only partial though exports account for about 80 per cent of the total production. The other component is that of internal consumption of cashew kernels. There is no data on this aspect. The "guesstimate" of the Cashew Export Promotion Council of about 10,000 tons per annum has been used for want of any other data. If actual production figures were available, internal consumption could be derived by deducting exports. However, due to a number of factors including illegal processing, such data are not quite reliable.

From the point of Kerala, there is the problem of finding out the production of cashew kernels within the State, share of exports and consumption within the State. As long as Kerala had a virtual monopoly of production of cashew kernels, the entire exports could be accounted for by Kerala. Since cashew factories have been set up in other States also, this is no longer the case. To compound the difficulties, the practice of illegal processing amounts to existence of an unorganised sector within the industry though not so recognised officially.

Number of workers employed and the level of employment

In an industry which is organised on a "factory" basis, it should not, in the normal circumstances, pose much problems in determining the number of workers. However, employment in the cashew processing industry is not regular nor do the employers have a permanent roll of workers. The practice is that of employing workers on a casual basis though entry into the industry has been regulated by the system of issuing cards to the workers. At a time when the Government of India decided to canalise the import of raw nuts, it had to resolve the issue of allocation of the raw nuts to the existing factories. For want of a better measurement of capacity, it was decided to determine the allocation on the basis of workers employed. This was a situation where correct data became necessary to examine the competing claims of factories. However, different sources presented different estimates, as shown in Table 8. The ASI estimates were lower than what the factories claimed and the latter differed from the actual verification conducted by the CCI. The census figures presented something quite different from the above three sources.

TABLE 8

ESTIMATES OF NO. OF WORKERS IN THE CASHEW INDUSTRY

Source	1969-70	1970-71	1971-72
ASI	97,000	99,000	..
Census, 1971	..	72,280	..
CCI	..	..	1,64,017
Factory muster rolls	..	..	1,86,344
As per information submitted to CCI by the factories	1,04,603	1,22,623	1,56,720

It was pointed out that the claims of factories did contain an element of overestimation because by showing higher employment they hoped to obtain a higher allocation of raw nuts.

A basic problem confronted in the collection of data in industries such as cashew processing is that there is no clear-cut basis for deciding the capacity of the industry. Being a very labour-intensive process "factories" could be set up by employing very little of fixed capital and enrolling a few hundred workers. This gives rise to a situation where "capacity" is created much above the requirements warranted by the availability of raw nuts. Employment therefore tend to fluctuate according to the availability of raw nuts.

This leads to another related problem of determining the level of employment, i.e., the average days of employment in an year. ASI data does not provide the average days of employment as such but it could be derived on the basis of the output-labour ratio. These then would depend on the correctness of output and employment data. There is no mechanism to cross check the output data given by the ASI to find out the State's share in output of cashew kernels and hence to decide on the reliability of unemployment/underemployment estimates. An indirect method of finding out the average days of employment has been attempted in Table 9. The estimates given are dependent on the correctness of Columns 2 and 6. Since the practice of "cottage processing" is prevalent in the industry, errors are possible.

The importance of estimating the level of employment in the industry cannot be viewed merely as a statistical exercise because there are claims and counter-claims on the earning capacity of workers.

Earnings of workers

This is dependent on the level of employment on the one hand and the wage rate (and other non-wage benefits) on the other. The industry has been included in the schedule of the Minimum Wage industries but these minimum wages rates do not represent the actual earnings since non-payment of minimum wages has been the rule rather than the exception in this industry.

TABLE 9

ESTIMATES OF AVERAGE DAYS OF EMPLOYMENT IN CASHEW PROCESSING FACTORIES IN KERALA

Year	Kernels produced in Kerala (Tons)	Total Ex- port of kernels from India (Tons)	Man-days required for processing (3) (in lakhs)	Man-days required for processing*(2) (in lakhs)	No. of workers in Kerala	Average days of employment (5) (6)
1962	34,512 (74)	46,436	223.822	166.317	68,930	241
1963	44,193 (82)	53,394	257.359	213.010	73,219	290
1964	54,131 (102)	52,645	253.749	260.911	76,316	341
1965	18,429 (90)	53,793	259.282	233.427	81,132	286
1966	50,170 (103)	48,616	234.329	241.819	76,907	314
1967	49,198 (94)	52,256	251.874	238.580	70,017	340
1968	48,914 (80)	60,491	291.567	235.765	79,186	297
1969	45,742 (72)	62,678	302.108	220.476	97,494	226
1970	48,692 (71)	54,074	260.637	186.495	99,034	188
1971	43,809 (73)	59,985	289.128	211.159	(99,031)	(213)
1972-73	N.A.	64,542	311.092	N.A.	..	N.A.
1973-74	38,927 (74)	52,293	252.052	187.628	98,780 (1,08,480)	190 (173)
1974-75	41,650 (64)	65,025	313.421	200.753	1,08,480	185

* Number of man-days required for producing one ton of Kernels = 482 days (worked out on the basis of data obtained from the Cashew Special Officer for 1975).

Source. Column (2) is obtained by dividing the value of out put (given in *Industries, Industrial Labour and Infrastructure*, State Planning Board 1975) by the price of Kernels.

Column (3) is obtained from *Cashew Statistics*, Cashew Export Promotion Council, Cochin.

Column (6) is obtained from *Industries, Industrial Labour and Infrastructure OP, Cit.* and from Cashew Corporation of India Cochin for the last few years.

This will be evident from a comparison of the minimum wage rates and the wages recorded in the ASI given in Table 10. However, there is practically no source to obtain reliable data on the actual earnings of cashew workers, both wages and non-wage benefits. The difficulties are compounded when one wants to find out the proportion of workers getting minimum wages and those unable to obtain them. Further, there are wage differences according to category of workers and between men and women. Therefore both inter-factory and inter-category earnings are difficult to obtain, especially on a time-series basis, for the workers in the industry.

Ability to pay of the industry

Lack of reliable data can lead to not only erroneous conclusions but erroneous claims and policies. The various malpractices in the industry are often justified on the ground that the capacity of the industry is limited and it becomes severe in situations of raw material prices. This could be so but it should be judged on the basis of reliable data on the relevant parameters. For example,

data provided by the ASI would show that the rates of gross profits in the cashew industry is higher than other similar industries such as coir manufacturing cotton textiles, tiles and tea. But it could be pointed out that these do not represent the capacity of the different factories. If one were to undertake a micro-level analysis of costs and returns at the firm level, it is possible to find out the shares of workers and employers in the value added. In Table 11, we provide as an illustration, the analysis of profitability for a two year period based on primary collection of data from factories. It shows that the share of labour in value added even under a system of minimum wages and other statutory benefits is only one-third and that a major share goes to capital as gross profits. However, in a situation of surplus labour the temptation to reduce wages of workers does not stop here. Therefore the firms which employ workers below the minimum wage rates (often at 56 per cent of the minimum wages) the profits are raised to three fourths of the value added. Data collection on such crucial parameters at the micro level, does help in many instances, to provide a clear understanding of the actual state of affairs.

TABLE 10
DIFFERENCE BETWEEN MINIMUM WAGE RATES
AND ACTUAL (AS PER ASI) WAGE RATES OF
CASHWAW WORKERS

Year	Average wage rate (as per Minimum Wages)	Average wage rate paid (as per ASI)
1953	1.26	..
1960	1.68	1.23 (73)
1961	1.83	1.28 (70)
1962	..	1.58
1963	..	1.40
1964	..	1.22
1965	2.31	1.56 (68)
1966	2.48	1.54 (62)
1967*	3.48	1.69 (49)
1968	3.71	2.15 (58)
1969	3.83	2.90 (76)
1970	3.96	3.12 (79)
1971	3.96	..
1972	4.18	..
1973-74	4.93	3.79 (77)
1974	6.34	..
1975	8.56	..

Note: Figures in bracket in the last column indicate the actual wage rate as a percentage of minimum wage rate.

*Year in which "cottage processing" was banned in Kerala.

TABLE 11
CALCULATION OF VALUE ADDED, SHARE OF
WAGES AND PROFITS AT THE LEVEL OF THE
FIRM FOR PROCESSING ONE BAG (80 KG)
RAW NUTS

Item	1975-76 Rs.	%	1976-77 Rs.	%
Value of output	131.31		816.18	
E. Cost of raw materials, etc.	258.69		395.69	
(a) Raw nuts	238.00		348.00	
(b) Raw nut clearance & transportation	5.34		5.34	
(c) Factory overheads	5.75		5.75	

Item	1975-76 Rs.	%	1976-77 Rs.	%
(d) Selling overheads	24.00		21.00	
(e) Administrative	3.80		3.80	
(f) Financial charges	8.80		8.80	
III. Value added manufacture (I - II)	148.65	100 (100)	420.49	100 (100)
IV. Payments to labour wages and non-wage benefits)*	100.00	67 (34)	100.00	24 (12)
V. Profits (III - IV)	38.65	33(-)	320.49	(76) (-)
VI. Profits without payment of minimum wages (III - 0.5 IV)	98.65	(66)	370.49	(88)

* Payments as per minimum wage rates and other benefits as per Factories Act.

Note: Figures in brackets indicate the Shares of wages and profits when payments are not made according to minimum wage rates.

Data base and the crisis in the industry

There is no doubt that the cashew industry in Kerala is now facing a serious crisis that of migration of the industry to low wage areas in other States. This has been an issue of serious concern both to the Government and to the workers dependent on the industry. A number of interventionist measures have been taken by the Government, the prominent among them being the monopoly procurement of raw nuts within the State, ban on movement of raw nuts to outside the State, allocation of the raw nuts to "eligible" factories, etc. How does one assess the efficacy of these measures? What data base exists for such an assessment? Data on the total availability or raw nuts and total production of kernels in the factories in Kerala are crucial for answering the above questions. However, it is difficult to obtain data on these parameters on a systematic basis. By putting together data collected by various agencies, both published and unpublished, for the year 1975 we estimated approximately the magnitude of raw nuts diverted from the factory sector. (See Table 12) It was found that the raw nuts diverted from the factories amounted to two thirds of the production of raw nuts in the State—Stunning enough for anybody connected with policy-making. What this indicates is that a system of collection and building up of data from various primary sources has to be undertaken if meaningful and effective policies were to be formulated and implemented. The consciousness, especially on the part of the "users" of the data at the Governmental level is however at a low point, if not totally absent. It also highlights, in a sense, the lack of interaction between "data collectors" and "data users" and failure to view the problem in an overall framework of proper formulation of development policies.

6. DATA GAPS AND PROBLEMS OF DATA COLLECTION WITH REFERENCE TO SMALL SCALE INDUSTRIES

V. Mohan Pillai

Introduction

Great emphasis has been laid by the Government of India all along in the industrial programmes and policies for the promotion and development of small scale industries with the main objective of solving the twin problems of unemployment and poverty. The severe constraints like inadequate resources of capital, technological skill, high growth rate of population and adverse land-man ratio were the main considerations that weighed with the Government to go in for rapid industrialisation through the development of small industries as this sector not only makes less demand for scarce capital resources but also provides much larger opportunities for employment including self-employment.

Small Industries Development Organisation (SIDO) with a net work of Small Industries Service Institutes (SISIs) in all the State, is a premier technical consultancy organisation. It has been set up the Government of India for the planned development of small scale industries in the country. SIDO as the apex body also assists the Central Government in formulating broad policies and programmes directed towards development and promotion of small scale industries. The programme and policies formulated by the Government are based largely on all types of economic data and information collected from time to time on a continuing basis.

This paper attempts to examine the availability, adequacy and reliability of data required for various studies conducted by this organisation for the development of small scale industries in urban, rural and backward areas of the country.

The major areas of studies undertaken by this organisation relevant to the small industries development include Industry Potentiality Surveys of districts/areas, Industry Feasibility Studies for products, Industry Prospect Sheets, Review Studies of Industries reserved for exclusive development in the small scale sector, proposals for reservation of industries, market surveys, Government Stores Purchase Programme and share of small scale sector in the total purchases, appraisals of project reports submitted by entrepreneurs, impact of exemption in Central Excise levies, evaluation of industrial estates and sick unit surveys, financial assistance etc.

Collection of monthly index of production of small scale industries of the State on a 2% sample on a continuing basis constitutes yet another vital component of our activity. The size of the sample, which reflects data on installed capacity, production, employment, raw material consumption is 6205 registered small scale SIDO units as on 30-11-1973 (E) (covered by the National Census of Small Scale Industries). The Census-cum-Sample Survey of small scale industries has now been taken up by

this organisation mainly to update the National Census conducted in 1973 on a 20% basis which proposes to cover all the aspects of the industry indicated above.

The data and information required for our studies by and large relate to the number of industrial units—large, small and village sector, their installed capacity, production, employment potential, investment etc., on all types of industries, actual consumption of products, gap in their demand, anticipated demand, market intelligence and marketing, competition etc. Besides data on geography, resources both human and material, infrastructure developmental plans etc., are also collected. The data thus built up are compiled and analysed for preparation of different reports as required by the Government. Relevant data are also disseminated to various promotional organisations for the development of small industries. Economic information including market intelligence collected and updated on a continuing basis is made use of for assisting entrepreneurs in the selection of suitable project ideas for setting up of small scale units.

It may be noted that the sources and content of data for different types of studies vary according to the requirement. These can be broadly classified into primary and secondary data. As regards the objective and scope of area potentiality surveys of districts, it should bring out inter-alia a blue-print for integrated development of the area. The study tries to establish the technical feasibility and economic availability of different items of manufacture in the small scale and traditional sectors. The study takes into consideration the integrated development among different sectors of the district economy viz., agriculture, industry, infrastructure, social services etc. Information on geographical aspects, resources, infrastructure, industry profiles, developmental plans envisaged, is required for the preparation of such reports. Publications brought out by official agencies, like census of India, Geological survey of India, State Government Departments, Trade publications, Financial Journals, periodicals, research papers etc., are generally consulted for the same. For collection of primary data besides employing questionnaires and interview techniques, discussions are also held with knowledgeable persons in the district including, administrative heads of the area, Government Officials, banking circles, chamber of commerce, panchayats/municipalities, industries association, prospective entrepreneurs, house-holds etc., Discussions, if necessary are also held with the heads of departments of the State. In the analysis of resources only those which are directly relevant to the industry in the district are considered. With regard to human resources, analysis of availability of various types of skills in relation to the industry is done.

Market information is a sine-qua non in most of the industry studies. The market studies are

undertaken with a view to assessing the present and potential demand. Demand projections are based generally on the sales data collected from a cross section of dealers, distributors, and institutional bulk consumers etc. The case of consumer products households/individual consumers are also contacted if need be. Resource analysis relevant to the industry, demand analysis, identification of growth centres, industries having scope for development etc., are undertaken on the basis of all the data and information thus accumulated.

For Product Feasibility studies and other industry surveys mentioned earlier, the details required are existing status of the industry under study including details on installed capacity, production, utilisation of the capacity, problems faced by the industry relating to finance, marketing, raw materials, etc. These are collected direct from the manufacturing units through questionnaires and discussions. For such studies the demand for a particular period, demand gap and demand projections, price structure, variation in prices are also essential to draw conclusions. Such details are gathered through market surveys contacting in the process, the major outlets, individual and institutional consumers including Government Departments, private large organisations etc. The important sources of data and methods of collection have already been dealt with earlier.

It is, however, important to note here that for all the above surveys, census method is generally adopted provided the size of population is amenable. But for special surveys like sickness in industry, financial assistance, impact of reliefs granted by the Government etc., where the population is large, sampling techniques are resorted to and the units thus selected are contacted and conclusions drawn accordingly. Samples are drawn based on random method from selected representative districts if the size is very large. The other method used is to draw deliberate sample of specified number of units from different turnover brackets or investment ranges.

Requirement and Availability of Data

The growth registered by the small scale units especially during the last decade or so is quite appreciable. Along with the quantitative growth there is perceptible increase in the range and sophistication of products and improvement in quality of the products. An accurate assessment of status of the industry is, therefore, essential for any planned development of the sector.

The major areas where this organisation requires reliable statistical information for promoting the small industries sector are number of units, capacity, production, investment, employment etc., of large/medium/small/cottage industries on the one hand and demand of various products and services on the other. It may be noted that lack of reliable information on the small scale and village sectors is one of the serious draw back for formulating policies for their planned growth. Small industry is a free sector where registration is voluntary. Small units come forward to register only when the

units want to avail of assistance offered by the Government in the form of raw materials, incentives and concessions, marketing etc. At present reliable data on all the aspects of the small scale and cottage sector from a single source are difficult to obtain mainly because of the involuntary nature of the sector and the absence of a permanent agency to collect and maintain data regularly. In the absence of such reliable up-to-date data regarding small scale units as a whole, steps to promote its planned growth in terms of development of further capacity and production of items, supply of restricted raw materials, requirement of finance, incentives and concessions etc., are rendered difficult. The Committee for Drafting Legislation for small scale industries in its report dated August 1972 (2) submitted to the Government of India rightly emphasised the need for compulsory registration of all small scale units by the State Directorate of Industries to build up adequate and reliable data base. The report said "One of the draw backs regarding the small scale industries is the lack of statistical information" The report pointed out "In the absence of adequate and up-to-date data regarding the small scale sector as a whole, we feel that the development programme have tend to become some what ad hoc"

While the National Census conducted in 1973 was confined to the registered units coming under the purview of SIDO, the National Sample Survey Organisation limits its collection to the factory sector only. The Directorate of Industries and Commerce which looks after the growth of this sector does maintain details of small scale units registered with them but these relate only to items manufactured, capacity, investment and employment. Though as per the procedure for registration of small scale industries all registered units should submit half yearly reports of the raw materials received/utilised, stocks on hand, production and sales to the Directorate of Industries in triplicate the availability often leaves much to be desired. While the registered number of small scale units may swell as time passes on, the reliability of data is eroded as regards the actual number of units functioning and the related aspects at a particular point of time. It is, all the more important that in view of the high mortality rate witnessed among the small scale units by way of closure for a long period, sickness etc., regular monitoring should be done in order to maintain up-to-date reliable information.

It may also be noted that the data on industry compiled by the Directorate of Economics and Statistics are limited to value of output by broad industry group and employment of the registered working factory sector only. Such data leave a large segment of small scale units in the non-factory sector as also information on capacity production etc., which are very vital for planned development of industries. The enormous gap in data can thus be gauged from the fact that while the number of small scale units registered was 15,974 as on 31-3-1980, (3) the corresponding figure for the registered factory sector was only about 9,104 as on 31-12-1980 (Provisional). (4) Coming to the medium/large scale units, the above source covers only the basic statistics of a small segment of Government of India

and State Government companies leaving a wide gap of useful and vital information about the much larger number of private sector units located in the State. If unit-wise data on capacity/production, employment etc., relating to the private sector units are not feasible at least product-wise details can be attempted to, in order to build up a complete industry profile of the State of factory sector units excluding the small scale industries falling therein.

It is, therefore, suggested that attempt should be made to compile and present data on large/medium sector industries and small scale industries separately from the angle of definition based on investment ceilings. This will not only provide a sound data base, but will also enable analysis of such aspects as rate of growth, share in the industrial production, employment and so on for each sector which will in turn help formulation policies for their development.

Now that each taluk has a functionary—the Industry Extension Officer, with supporting staff, who can, without difficulty ensure a regular flow of data from all the industrial units irrespective of whether the units are registered or not and keep a track of the healthy growth of the industry at the grass root level.

In the case of Khadi and Village Industries sector the availability of data is not total and is restricted mostly to the units coming under the assistance programme of the Board. Here again the gap is quite considerable.

Another handicap which we feel while trying to collect data for various studies is the poor response from the manufacturing units and under reporting by them. The hesitancy on the part of the units to part with factual information could perhaps be explained as the fear of utilisation of the same for other purposes despite giving assurances of maintaining secrecy. This naturally defeats the very purposes for which data are collected.

The demand or consumption of goods and services is also a very essential requirement to draw conclusions in the economic studies conducted by this Institute. The conclusions relate to identification and creation of additional capacity or otherwise in relation to current production, demand gap and demand projection, competition, price structure etc. The current demand is generally arrived at based on the formula: production import-exports. The imports constitute the flow of goods from sources outside the State. For collection of these details major points of contact are generally local sales offices of various large and small firms, dealers, distributors etc. Estimates of current consumption and future trend are arrived at on the basis of past sales trend. Competition, price structure and other market characteristics are also studied. Here again the response from such sources is often poor or negative. This could also be attributed to the fear of misuse of data by the investigating agencies. Thus the analysis of current and future trend in consumption based on the poorly gotten information provides only a distorted picture.

Sales-tax manuals brought out by the Sales-tax Department, of course, could give to some extent sufficiently reliable data. But items evaded or not covered under Sales-tax are left out as also goods traded by other clandestine practices including smuggling indulged in. Similar is the fate with data thrown up by bulk purchasers, the information being incomplete cannot be relied upon for any meaningful exercise.

The State Government have evolved certain schemes of incentives and concessions like reservation of items for exclusive purchases from the small scale sector, price preference upto 15% on all the Government purchases primarily to assist the small units in their marketing. Studies to collect data on the share of small scale units in the purchases of Government/Semi-Government Autonomous Corporations' lead us nowhere as such details are not maintained regularly by the concerned organisations. The lacuna in this aspect is due to the fact that purchases are often made both by the centralised agency as well as district heads and there appears to be no systems of compiling the data from the desired angle. Further there is no system for these agencies to note the purchases made from the small scale sector. Directorate of Industries (Marketing) Division maintains data which do not seem to be comprehensive in coverage. Under the circumstances what is wanted is that the purchasing agencies/organisations should be strictly instructed to sort out the purchases made from small scale units, item and quantity-wise and report the same to their central office from where data could be collected by the Industries Department and other users. Such data would reflect the share of local small scale units and efforts could be made to enhance their share suitably in the overall interests of the sector.

It is also desired that efforts should be made by the Directorate of Economics and Statistics, Kerala, the major source of suppliers of data on the entire growth of states activity, to reduce the time lag between data collection and compilation and availability to the users.

If the various gaps in data noted earlier could be plugged with concerted and co-ordinated efforts by the concerned departments, a better data base could be built up for a meaningful planning of the vital sector of the State's economy.

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7. DATA SITUATION IN TRANSPORT SECTOR—A RIEVIEW

B. A. Prakash

The purpose of this paper is to review the current data situation of Transport sector in Kerala, identify the areas in which there is gaps in data and to suggest steps for improving data situation. The paper also gives a brief review of the existing literature which comes under the category of official as well as academic studies. The review is presented in four sections viz., (1) Road Transport (2) Water Transport (3) Rail and Air Transport (4) Concluding remarks.

I. Road Transport

The data and literature coming under Road Transport are discussed under four heads viz., (1) Roads (2) Motor Vehicles (3) Public Sector Transport and (4) Private Sector Transport.

(1) *Roads*. The publications of Bureau of Economics and Statistics (3.41, 3.42 and 3.43) State Planning Board (3.42) and Motor Vehicles Department (3.49) are the sources from which we get information about roads in Kerala. From these sources we get the district-wise statistics of the different categories and types of roads maintained by different public agencies. The annual road statistics published by the Ministry of shipping and Transport also contain the same type of information except the fact that it gives a comparative position of roads in other States (3.25). A serious deficiency of the existing statistics is that it does not give information about the block-wise or Taluk-wise statistics on roads. And this stands as a serious data deficiency for preparing Block or District level plans or assessing the regional infrastructural requirement. The literature dealing with roads are also few in number. The NCAER Survey (2.54), two task force reports (2.40 and 2.41), a study on rural roads programme (2.28) were the reports dealt with roads. Only one study, which may be put in the category of academic study, traced the factors contributing to the growth of roads in Kerala since the second half of the 19th Century (1.7).

(2) *Motor Vehicles*. The position of the Motor Transport statistics is also not different. Till the publication of a handbook on motor vehicles in 1976 (3.48) the only major source of motor statistics was the administration reports of the Motor Vehicle Department. A Basic road statistics containing more information about motor vehicles was published in 1982 (3.49). Though the report was prepared in 1978, it took four years to get it printed. The publications of Bureau of Economics and Statistics (3.41 to 3.43) and State Planning Board (2.42) also contain similar statistics relating to Motor Vehicles. The annual statistics published by the Ministry of Shipping and Transport also give comparative statistics of motor vehicles among Indian States (3.32). A serious deficiency of the statistics on motor vehicles published by the above agencies was that it did not give Block or Taluk wise figures.

(3) *Public Sector Road Transport*.—On the basis of the availability of statistics, we can classify road transport into public and private sector. About 30 per cent of the passenger transport (bus transport) is under nationalised sector, while the rest of the passenger transport and the entire goods transport was under private sector. Compared to any other area, public sector road transport is the area for which we have a fairly good volume of information. Besides the statistical publications of K. S. R. T. C., a number of official reports and academic studies are available on the topic. The annual administration reports published by K. S. R. T. C. especially since its conversion to corporation in 1965 contain detailed statistics on managerial, operational and financial aspects (3.50). The two statistical hand books published by K. S. R. T. C. also give comparable statistics from 1963 to 1977 (3.51 and 3.52). For internal purposes the corporation also prepare a monthly Operational Review (3.53) and a cost Review (3.54), which give operational and financial statistics. The Corporation also had a good machinery to collect and process the statistics. The statistics published by the Ministry of Shipping and Transport also contain comparative statistics about the nationalised transport among states and union territories (3.27 and 3.32).

Public sector transport got much attention from the State Government as evident from the number of official studies available on the topic. The report by Collins is the first official study conducted by a transport expert about the working of the former Transport Department of Travancore-Cochin (2.5). Velu Pillai, who was appointed subsequently as a one man Commission to look into the affairs of Transport Department made a through examination of the working of the Department and gave 303 specific recommendations for improving the working of the Department (2.61). Though Kumara Pillai was appointed as an arbitrator to go into the question of revision of wages and related matters he also examined some aspects of the finances of KSRTC (2.49). Kunjukrishna Pillai another arbitrator, besides examining the revision of wages, also dealt in detail about the operational and financial performances and suggested certain recommendations (2.50). Though the Committee on public undertaking have conducted a study about KSRTC, the study has not attempted an in depth analysis of the working of the Corporations (2.22). The Committee on road transport which was asked to examine the whole operational and financial aspects of K. S. R. T. C. gave a number of recommendations connected with fleet inventory management, fuel use, staff pattern, fare structure organisation and management (2.27). The Statistical Quality Control Unit of Indian Statistical Institute has conducted a few micro studies on various aspects of the K. S. R. T. C. (2.43 to 2.48). These brief studies were mainly prepared on the basis of the secondary data available with K. S. R. T. C. Bharat Heavy Electricals prepared a project report on the feasibility of introducing trolley bus service

on the Ulloor to East Fort Route in Trivandrum City (2.1).

The topic of K. S. R. T. C. has also attracted the attention of a number of academic scholars. A few Ph. D. these were also prepared on the subjects related to K. S. R. T. C. Jayadevadas has studied the administration and organisation of K. S. R. T. C. (1.8) Prakash made an economic assessment of the performance of the undertaking during the period 1959-60 to 1970-71 (1.14). The study concluded that the financial loss incurred by the undertaking could be justified to some extent if we view this against the variety of social benefits produced by K. S. R. T. C. Balakrishnan traced the development of road transport and examined the operational efficiency of the services and organisational set up of the corporation (1.2) Vijayakumar after surveying the financial and cost structure of road transport, makes a critical analysis of the method of fixing fare structure and suggested a method for revising fare structure (1.18) Gopalakrishnan Nair examined the theoretical issues of city bus scheduling by conducting a case study of Trivandrum city services (1.6) Studies also dealt about the manpower management of K. S. R. T. C. (1.15) and Trivandrum City Services (1.16 and 1.17).

(4) *Private Sector Road Transport.* - Private sector road transport is the area for which we have very little statistical information. The only major source of information is from the publications of Motor Vehicles Department (3.47, 3.48 and 3.49). In the case of private passenger transport the statistics available are about the number of vehicles owned by permit holder, seating capacity of buses, persons employed and number of routes. In the case of private goods transport we do not have practically no information except the number of vehicles registered with R. T. O's. For knowing the goods transport sector, we require more information about the volume of services operated, the area served by the vehicles, the type of goods transported and the vehicles. In the case of autorickshaws, Taxis and other vehicles operating service again, our information is very meagre. The NCAER Survey is the only important work dealing with this sector (2.54). The inter-state movement of goods on road was also studied by B. E. S. (2.17 and 2.34). A committee appointed by State Government studied the need for revising motor vehicles tax, and suggested for a revision in the tax rates of motor vehicles (2.26). The Government also set up two working groups to examine the feasibility of nationalising the private bus transport in the State (2.24) and (2.25). These two working groups came to the conclusion that total nationalisation was not a feasible proposition and recommended for a gradual and phased programme of nationalisation. Another study which examined the scope of nationalisation of city and town services also arrived at the conclusion that by taking into account the age composition of fleet, organisational and management structure and financial position of KSRTC, it is not a desirable step to nationalise city and town services (2.56). This study gives a detailed account of the fleet and volume of operation of private city and town services.

II. Water Transport

The annual reports of State Water Transport Department, Kerala Inland Navigation Corporation

and KSRTC are the major sources from we get statistics about Inland water transport. The Ministry of Shipping and Transport's publications also contain information about inland water ways, inland water transport industry (3.31) and about the water transport undertakings (3.35). A few official studies also dealt with inland water transport. Of this NCAER study discusses about navigable water ways and gives an estimation about future requirement of fleet and traffic (2.54). The other studies include two task force reports (2.38 and 2.41) and a study on the working of ferry service at Ernakulam (2.37).

Though Kerala has a major port at Cochin and three intermediate ports, at Calicut, Alleppey and Neenakara, the bulk of the trading activities are taken place at Cochin. The annual administration reports of Cochin Port Trust is the main source of information about Cochin Port. Besides this, the publication of Bureau of Economics and Statistics (3.43) and of Ministry of Shipping and Transport gives statistics on ports (3.28), water transport (3.31), Indian Coastal Shipping (3.33) and overseas shipping (3.34). These statistical publications provide a fairly good amount of data about Cochin Port and the shipping activities of the port. The NCAER Survey on Cochin Port examined the existing port facilities and highlights the need for creating additional facilities for meeting the future traffic requirements (2.55). Bristow, who was the Chief architect and Chief Engineer for the construction of Cochin Port traces the history of the port and the problems he faced during the stage of its construction (1.3). Besides this historical review, a few reports and documents were also available on the history of the Cochin Port (2.2, 2.3 and 2.4)

In the case of minor and intermediate ports, we have only limited information. A few official studies dealt with Beypore Port (2.18) minor ports (2.35) minor and intermediate ports (2.36). The B. E. S. also conducted a survey to assess the traffic potential of Alleppey Port (2.21). The report gives a few recommendations to develop Alleppey Port into a full fledged major port.

III. Rail and Air Transport

The ministry of Railways has an elaborate set up for collecting and publishing railway statistics of the country. The ministry is publishing a number of annual, half yearly, quarterly and monthly statistical reports (3.5 to 3.24), which provide a very good coverage of railways of Kerala.

Statistics relating to the Air Transport of the State is mainly available from the two annual statistical publications of Director General of Civil Aviation (3.3 and 3.4). The B. E. S. also prepared two air cargo traffic surveys (2.19 and 2.20). The report (2.19) strongly recommended for establishing an air cargo complex at Trivandrum.

IV. Concluding Remarks

If we assess the current data situation of Transport sector on the basis of the data requirement for preparing Block, District and State Plans and

formulating sound policies and projects for integrated infrastructural development, we may have to conclude that our data position is not satisfactory. The data position is comfortable in the case of centrally controlled sectors like Railways, Air Transport and Cochin Port. In the case of State controlled sectors, public road transport is the only area for which we have a fairly good amount of statistical information. A number of official as well as academic studies are also available on the topic. In case of statistics on roads and motor vehicles a serious deficiency is the lack of Block-wise and Taluk-wise figures. For private sector road transport we do not have much information except the number of buses and other vehicles registered with Regional Transport Authorities. The data position on inland water transport is too poor and no single agency takes initiative to prepare detailed periodical statistics. Except the three intermediate ports we have practically no information about the activities taking place in the minor ports. The possible reasons for the deficiency in data may be the lack of proper machinery in the Departments and agencies to collect and publish data, and absence of any single agency to take responsibility for publishing the data.

In this context we propose a few suggestions on the following lines to improve the data situation of the Transport sector. (1) The Departments which are connected with roads and Motor Vehicles Registration may collect detailed statistics enabling them

to publish Block and Taluk-wise Statistics on roads, motor vehicles and other categories of vehicles; (2) In case of private passenger transport more statistics may be collected to cover aspects such as area of operation, volume of operations, quality of service, and adequacy of service; (3) Similarly in case of private goods transport information may be collected on area operated, volume of operations type of goods transported and adequacy of the service; (4) In the case of the other categories of vehicles like Taxis, autorickshaws, Tractor Tailor, Jeep etc., information may be collected about the volume of operations and the adequacy of the services operated; (5) Additional statistics may be collected in the case of inland water transport covering area of operations, volume of operation and adequacy of services. (6) Information may also be collected about the trade as well as other activities that are taking place in minor ports.

For collecting these additional data the statistical machineries of the Departments and public agencies may be strengthened. As a number of Departments and agencies are connected with Transport sector, it may also be advisable to entrust the responsibility of co-ordinating the data collection and publishing the data to a specialised agency like Directorate of Economics and Statistics. The agency can publish an annual Basic statistics on Transport sector covering all sub sectors of the sector.

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8. TRANSPORT STATISTICS—A REVIEW OF THE PRESENT DATA BASE AND SUGGESTIONS FOR IMPROVEMENT

A. ABDUL WAHAB

It is an accepted fact that no worth while planning is possible without a reliable statistical basis. Inadequacy of information system delays decision making process resulting in slow development. As transport has been recognised as a primary infrastructure for development it is very important that the statistical system should serve more effectively the growing needs of data for development planning at various levels.

Available Data Base -a Review

There are various agencies at regional and national level compiling statistics relating to the transport sector. The Ministry of Shipping and Transport (Transport Research Division) and the Central Institute of Road Transport (Pune) publish data on transport statistics at National level. The administration reports and occasional publications of various agencies and departments in the transport sector, occasional publications of the Directorate of Economics and Statistics and the annual 'Economic Review of Kerala' published by the State Planning Board are the major sources of data in the transport sector in the State. The particulars of transport statistics collected, compiled and published by the major organisations in the transport sector are discussed below.

(i) Roads

The Ministry of Shipping and Transport has been bringing out an annual publication entitled "Basic Road Statistics", since 1950-51. This gives detailed statistics for different categories and types of Roads and Bridges. In 1963 the Ministry created a separate Directorate of Transport Research to carry out research studies and collect transport statistics at the National level. As a result, the coverage of Basic Road Statistics has been improved. The publication provides detailed information on roads and bridges, traffic densities, expenditure on roads, road development under Five Year Plans etc. However, there is considerable time-lag in the publication of this basic statistics.

At the State level the main source for data on roads is the Public Works Department, some of which gets published through the Directorate of Economics and Statistics and the State Planning Board. The Directorate collects and furnishes to the Central Ministry the following statements on road statistics annually.

1. District-wise length of State Highways/other P.W.D. Roads/Zila Parishad Roads by surface and width
2. District-wise length of roads under Village Panchayat/Panchayat Samithies and C. D. & N. E. S.

3. District-wise length of roads under Municipal Corporation/Municipalities/Notified area Committees/Town Committees etc.
4. District-wise length of Roads under Electricity/Forest/Irrigation.
5. District-wise No. of culverts and bridges on State Highways/Other P. W. D. Roads/Zila Parishad Roads and Width.
6. Expenditure on Roads and Bridges in respect of State Highways etc., during the year as on 31st March.
7. Break-up of Expenditure on Roads and Bridges incurred on original work on State Highways.
8. Maximum Laden weights permitted on State Highways/Zila Parishad Roads/Other P. W. D. Roads.
9. Average daily traffic of vehicles at each count post selected on State Highways.

'The Economic Review of Kerala' brought out by the State Planning Board gives the date on the total length of roads maintained by various agencies in the State. The Village panchayats maintain road registers containing details of the roads maintained by them. Name of road, length, type of surface, expenditure on road works etc., are recorded in these registers. However, no such registers are maintained at the District or State Level. The volume of traffic at some important locations in State Highways and National Highways are collected by the Public Works Department twice every year. The Public Works Department maintains registers to record these statistics.

(ii) Road Transport

From the statistical point of view the transport sectors can be divided into three parts namely the State sector, the organised private sector and the unorganised private sector. The State sector is thoroughly covered by regular statistics the organised private sector only partly and the unorganised sector not at all. Adequate statistics are available only about the public sector road transport undertakings.

The financial and operational performance data of State Transport Undertakings are compiled by the Central Institute of Road Transport (Training and Research), Pune and are published annually (Report on the performance of nationalised Road Transport undertakings). It provides information on growth of commercial vehicles, quality of services, inventory levels, fleet growth, cost distribution, capital structure, motor vehicles taxation etc., relating to S. T. undertakings.

The Transport Research Division under the Central Ministry of Shipping and Transport brings out an annual publication entitled 'Motor Transport Statistics'. State-wise data relating to production, new registration, total registered vehicles in use, driving licences in force, regular and temporary permits granted for inter and intra-State commercial operations of vehicles, revenue from road transport, motor vehicles, accidents etc., are available in this publication. However, a time-lag of three to four years is observed in the publication of the document.

The State Motor Vehicles Department collects various data on road transport statistics monthly, quarterly, half yearly and annually from its district offices and few of them are published in their administration reports. Details such as the number of permits issued for passenger and goods transport, number of permits of different kinds of vehicles in force, number of vehicles plying on inter-State routes, revenue receipts and expenditure of the motor vehicles department and road accidents are published in the administration report. However there is considerable delay in getting this data published. In addition to this the statistical Unit in the Motor Vehicles Department publishes statistical data occasionally. Basic Road Statistics relating to Kerala, 1977 was published in 1982.

Another publication which presents useful information on transport is 'Industries, Industrial Labour and Infrastructure'. One such book prepared by the State Planning Board and the Bureau of Economics and Statistics was published in 1975. Revised edition incorporating industrial and transport statistics upto March 1980 prepared by the State Planning Board has been published recently.

Regarding Public Sector Road Transport, the Kerala State Road Transport Corporation provides useful information required for planning. A monthly operational review of the Corporation provides various information on the physical and financial performance during the month under review. Their Monthly and quarterly progress reports mainly deal with the progress of implementation of plan schemes showing physical and financial achievements during the period. The annual administration report of the corporation also provides various information regarding the physical and financial performance of the Corporation during the year under review. In addition to these, the Corporation publishes "Statistical Handbook" on the performance of the Kerala State Road Transport Corporation occasionally. Two such books were published in 1972 and 1978.

Data on road accidents in the State are collected by the Inspector General of Police. The following quarterly Statistical statements are collected from their district offices.

1. Statement showing the particulars of Motor Vehicles Accidents brought to the notice of the authorities in the State of Kerala during the quarters.
2. Class of motor vehicles involved.
3. Nature of accidents.

4. Primary cause of accidents.
5. Time of the day.
6. Features of the road.
7. Particulars and responsibility of driver of motor vehicles.
8. Particulars of motor vehicles.
9. Particulars and responsibility of pedestrian or other person involved.
10. Particulars of casualties.

(iii) *Inland Water Transport*

The main agencies in the public sector dealing with the traffic operations, goods as well as passenger traffic through inland water ways in the State are the State Water Transport Department, Kerala Inland Navigation Corporation, Kerala State Road Transport Corporation and the State Public Works Department. An annual review of the performance of these agencies is published in the 'Economic Review of Kerala' of the State Planning Board. The total length of navigable waters, number of boat services operated, number of routes, passengers carried, cargo handled, revenue receipts/expenditure etc., are available in this document. The administration reports of the State Water Transport Department and Kerala State Road Transport Corporation also provide information regarding the physical (largely on passenger transport) and financial performance of the respective Department/Corporation. Apart from the Report of the National Council of Applied Economic Research and the Brochure on Inland Water Transport of the State Public Works Department brought out in the past no regular publication is available on the Inland Water Transport sector in Kerala, especially in respect of total movement of goods and passengers through Kerala's Waterways.

(iv) *Minor Ports*

Details regarding the port operations in India are published annually by the Transport Research Division of the Ministry of Shipping and Transport, Government of India in their publication entitled 'Ports and Shipping Statistics'. It contains data on growth of coastal shipping tonnage, particulars of coastal shipping companies and vessels owned by them, passenger and cargo traffic carried, earnings, and other operational statistics. Prior to 1975-76 the Transport Research Division used to publish the "Water Transport Statistics of India" every year. It included statistics relating to (a) coastal shipping (b) charter Trade, (c) Inland Water Transport (d) Ship Building and Ship Repairing and (e) Overseas shipping in a single consolidated form. With effect from 1975-76, the publications was split into four parts. The Division has recently brought out publications entitled "Economic Statistics of India's Overseas Shipping Industry 1980-81", and "Economic Statistics of Indian Coastal Shipping Industry 1980-81". However, statewise detailed annual statistics on minor ports are not published by any Central Government Agency.

The State Port Department prepared a guide book on minor ports entitled 'Minor Ports of Kerala' and published in 1969. It contains data relating to the location of ports, port limit, working season, port facilities, workshop facilities, traffic handled etc., for all the intermediate and minor ports of Kerala. The occasional paper, entitled 'Minor Ports of Kerala', prepared by the State Planning Board also provides data on the various aspects of minor ports of Kerala. Development programme of minor ports through Five Year Plans number and tonnage of steamers and sailing vessels called at these ports, export/import tonnage of cargo handled etc., upto the year 1978-79 are furnished in it. In addition to these, Report on the traffic Survey of Beypore, Azhikkal and Neendakara Ports, prepared by the Bureau of Economics and Statistics during 1969 and 1970. Provides useful information regarding the pattern and volume of traffic in the hinterland, the traffic potential etc., of the corresponding ports.

An annual publication providing information on minor ports of Kerala is the 'Economic Review of Kerala' prepared by the State Planning Board. The export/import tonnage of cargo handled, number and tonnage of steamers and sailing vessels which called at the ports, revenue receipts etc., are published annually. The administration report of the Port Department also provides information regarding the various activities of the ports. The number and tonnage of steamers and sailing vessels called at the minor ports, commodity wise traffic handled, revenue receipts, number of crafts owned by private parties registered at the ports etc., are available in the administration report. However, there is a big time gap in getting this report published.

Report of the Working Group, set up by the Ministry of Commerce, Government of India, on minor and intermediate ports of Kerala, prepared in 1981, also provides a statistical profile of each minor and intermediate port of Kerala. The report throws light on the existing facilities at each port and suggests development programmes for a few selected minor and intermediate ports of Kerala with a view to increasing export/import traffic through these ports.

Gaps, Time liness and Reliability in the Publication of Transport Statistics

An efficient information system demands timely and uninterrupted flow of data without gaps. There should be adequate data base at district and lower levels for planning at the grass root level. At present the data in the transport sector are collected and compiled only at the level of the revenue districts. The data gaps experienced at Taluk or Village levels have to be filled in and the statistical system adequately improved so as to serve more effectively the process of development planning at various levels.

Regarding road statistics, a number of departments like the State P. W. D. (B & R), National Highway Wing Project Wing, Panchayats, Municipalities, Corporations, Kerala State Electricity Board, Forest Department, Railways etc., are involved in providing data. It is observed that for these agencies there is no regular and systematic flow of

data from the lower levels and there is no system to register and maintain basic data at these levels. These deficiencies have to be rectified. The data relating to the volume of traffic at some important locations in State Highways and National Highways collected by the P. W. D. through Traffic Surveys are not presented in any publication. Publication of this data would be helpful for planners and administrators. A few more useful items in the Schedules can also be added.

With respect to road transport, very little information is collected and published on goods and passenger transport in the private sector. Though there is some data on passenger buses and goods vehicles. There is no effective system to collect the performance data relating to goods and passenger traffic. The registration of goods vehicles in the State is the only indicator of the growing volume of goods traffic by road. There is little information regarding the output of goods vehicles in terms of the tonnes carried and tonne kilometres performed. These are not collected and presented by any agency in the State on a regular basis. Goods transport statistics collected by Sales-tax Department through their check posts are also not compiled and published at present.

There is considerable gap in the availability of data regarding the passenger transport operations in the private sector especially data on physical and financial performance of private transport industry. This gap has to be covered by instituting suitable machinery for the purpose. Collection and presentation of statistics on road accidents also need improvement especially in respect of reducing the time-lag to the minimum in the matter of publication of data.

A brief description of the performance of the State Department and agencies engaged in Water Transport is provided in the 'Economic Review of Kerala' published by the Planning Board. The State Water Transport Department complies and furnishes all required data. The Kerala Inland Navigation Corporation keeps registers to record the movement of Cargo transported by them. In respect of boat service however they only loose sheets in the form of daily/weekly reports for the purpose of management review. But relevant information can be obtained from them. What is lacking here is data relating to the operation of country crafts. Statistics relating to Country Crafts is to be collected and presented at regular intervals of time. Reliable information on the volume of traffic handled by private agencies involved in traffic operations through inland water ways has also to be obtained.

Detailed annual statistics on minor ports was not published by any Central Government Agency. 'The Economic Review of Kerala, is the only regular publication which provides some information in this regard. There is considerable time-lag in the publication of the Administration Report of the Port Department which gives information on the operation by the State's Minor Ports. Timelines in the publication of this report is important for planning purpose.

Summing up

For improvement of Road Statistics it is necessary that all the agencies concerned with the construction and maintenance of roads in the State maintain registers at District Taluk, Block and Panchayat levels to record relevant data on roads. The Directorate of Economics and Statistics in collaboration with the Monitoring Cell in the Office of the Chief Engineer (B & R) may co-ordinate, compile and process all data on roads at State level and bring out a publication viz., 'Basic Road Statistics of Kerala annually. The data collected by the P. W. D. through traffic count surveys should also be published. More varied and useful data can also be realised through these surveys.

Data collection in regard to goods transport needs further improvement. Goods transport

surveys are to be conducted every year at important locations in State Highways and National Highways. Data collection relating to Private Sector operations can be improved through Regional Transport Authorities. All data on Motor Transport Statistics need co-ordination at State level.

The collection and compilation of Statistics of Water borne goods by country crafts might be explored. Registration points may be fixed at suitable places for collection of data. Annual conduct of Inland Water Transport Survey will be useful. An annual publication incorporating all important data on inland water transport and port statistics at the State-level will be helpful for the purpose of Planning.

9. EXPORT-IMPORT STATISTICS

R. P. NAIR

I. Introduction

The data needs of the country/state have changed since our Government have committed to economic planning with social justice. For economic and social policy formulation more accurate more prompt and more relevant data are needed. In this background it is worthwhile to examine the changes or restructuring that may become necessary for the present data collection and reporting machinery to suit the need of the present day.

II. Scope

This paper is intended to review the procedures of collection and compilation of trade statistics and to suggest to the extent possible steps which may be necessary to speed up the availability of the data to the users and to enhance the utility of the data. It is to be expected that since the data originate in the process of administrative dealings of the exporters/importers with the Customs as well as the banks, all the deficiencies which have to be observed to meet the rigorous requirements of statistics from the various angles of comparability, coverage, timeliness, valuations etc., may not be completely met. Evidently the machinery for getting comprehensive, quick, accurate and comparable statistics have not yet been fully established. This is because of the increasing volume of work, larger demands for more varied types of information and apathy towards use of speedier processing equipment when it is available. Perhaps the general lowering of the norms of work and standards of efficiency have also come in the way.

III. Exports and Imports by Sea

Customs are the major primary source of foreign trade data compiled by the Director General of Commercial Intelligence and Statistics. For exports/imports by parcel, post etc., DGCIS depends on the foreign postal department. Customs prepare Daily Trade Returns on the basis of shipping bills for exporters and DTRs are sent to DGCIS for compilation. Reserve Bank of India obtains all its data through the banks acting as authorised dealers in foreign exchange. While the accent on the DGCIS compilation is on detailed classification of exported/imported commodities and quantity and value thereof. Reserve Bank's primary concern is with the earnings/payments of foreign exchange in different currencies and from/to various regions of the world. One should not, therefore look for detailed commodities classification in the Reserve Bank data nor for precise quantities

In the case of imports, there are four sources of data. These are: the Customs, the Exchange Control Department of the Reserve Bank, the Chief Controller of Imports and

Exports in regard to import licensing data and the Ministry of Finance in respect of operations of loan accounts.

DGCIS publishes monthly figures in Volume II of the publications Monthly Statistics of Foreign Trade.

In Kerala, the export-import trade statistics are published by (i) the Department of Economics and Statistics, (ii) Chambers of Commerce and Industry and (iii) the Export Promotion Councils of the Government of India. Majority of the foreign trade of the State is handled by sea and these data are available from 1950-51 onwards. Up to 1965-66 the main source of data for export-import trade statistics are the reports published by the Chamber of Commerce, Cochin, Calicut and Alleppey. From 1965-66 onwards, the computerised data supplied by the Director General of Commercial Intelligence and Statistics, Calcutta were made use of. This was a coded statement containing commodity-wise exports imports showing the quantity and value and place of destination/origin. From 1975-76 onwards DGCIS had stopped supplying State-wise data. Afterwards, the Directorate of Economics and Statistics was utilising the daily list supplied by the Collector of Customs, Cochin. This data are being used at present.

In the case of sea-borne trade, export-import data are also being published by the various Chambers of Commerce and Export Promotion Councils of the Government of India. The main source of data utilised by these agencies are Customs returns. A comparison of the export-import data published by these different agencies reveal that some differences do exist and these may perhaps be due to the differences in classification. A co-ordination of the data producing agencies and evolving a common tabulation programme will bring in uniformity in the export-import statistics published by various agencies.

The data supplied by the Collector of Customs, Cochin (Daily list) corresponds to the quantity and value of commodities exported/imported from the port of Cochin. Though the details supplied from the Customs indicate the place of origin of exports/imports from the addresses given in the list tabulation is not being done at present to bring out the place of origin of exports/imports. At present the entire quantity exported or imported through the port of Cochin is taken to be exports/imports relating to Kerala State. Necessary alteration in the tabulation programme can bring out data on origin-wise exports/imports.

IV. Coastal Exports|Imports by Sea

A sizeable portion of exports|imports from Kerala to other States goes by Sea. Cochin Port handles most of the foreign exports|imports from Kerala while other intermediate and minor ports handle most of the coastal exports|imports from Kerala. The coastal exports|imports data are published regularly by the State Port Officer in the Administration Report of the Port Department. The data indicate commodity-wise value and quantity of coastal exports and imports.

V. Rail-borne Statistics

The time series data relating to movement of goods by rail relating to Kerala State are not available. Formerly the Bureau of Economics and Statistics was collecting these data directly from all railway stations situated in the State utilising the field staff of the Department. This process of data collection continued upto 1968. Afterwards the enormous delay in getting data from the stations and the non-availability of complete information relating to incoming and outgoing of goods by rail compelled this department to discontinue the collection of rail-borne statistics. From 1969 rail-borne statistics are not systematically collected and processed by any single agency on a regular basis. The Data Bank of the State Planning Board utilising the computerised data obtained from the Southern Railway headquarters published the Rail Borne Trade Statistics relating to the year 1978-79. But this data indicate only the quantity of exports and imports. The value of goods imported|exported by rail is not available from the report of the State Planning Board. The possibilities of obtaining value of exports|imports by rail may have to be explored. Also efforts should be made in consultation with the Southern Railway to obtain and publish import|export data by rail from 1969 onwards.

VI. Inter-State Movement of Goods by Road

Data relating to movement of goods by road from the weakest link in the whole system of export-import statistics. Time series data for the movement of goods by road are not available. The only source of data in this regard are the two rounds of survey on Inter-State movement of goods by road conducted by the Directorate of Economics and Statistics, on important border check posts in the State. This survey was conducted in pursuance of the recommendations of the Gulatti Committee on Commodity Taxation. The first round of the survey was conducted during 1975-76 and the second round during 1980-81. Prior to 1975-76, no data on the movement of goods by road were available. The declaration forms filled at the check posts by the vehicle owners form the main source for the two rounds of the survey. The results of the first round (1975-76) of the survey alone is available at present. The results of the second round of the survey is in the advanced stage of completion and will be ready within a couple of months. Though the survey was conducted only

twice, the source from which the information was available (Declaration forms) can be obtained throughout the year at all the border check posts. The data contained in the declaration forms are not being tabulated regularly and this wealth of information is lying unused at present in all the border checkposts in the State. A regular arrangement with the Board of Revenue (Taxes) to utilise the data contained in the declaration forms will definitely help to build up time series data relating to inter-State movements of goods by road. Urgent action may have to be initiated in this regard.

VII. Air-borne Trade

In the realm of export-import traffic the share of air-borne trade is in the increase. In India, the volume of air-borne trade is increasing considerably from year to year both in volume and magnitude. The share of air-borne exports to the total value of the country's exports touched the all time high percentage of 17 in 1976-77. Percentage share of imports come to 8 in the same year. Kerala State, well known for her high value of export products with her consideration contribution towards the foreign exchange earnings of the national economy has also considerably felt the need of getting increased facilities for boosting up her air-borne trade. Though exports from Kerala had always exhibited an upward trend, the availability of well organised traffic services were often very limited. In the meeting of the 'standing Committee on Promotion of Exports by Air' (scope Air) held at Bangalore in May 1977 the need for an early establishment of an Air Cargo Complex at Cochin Air Port was considered. The meeting requested the Government of Kerala to undertake a traffic survey to assess the potentialities of import|export Cargo Traffic through Cochin and Trivandrum Air Ports. Subsequently the Directorate of Economics and Statistics had conducted a Survey in 1978 to assess the potential export|import traffic that would be diverted from Kerala as Air Cargo direct to and from the destinations abroad. The most important products that will be available for air lifting from the aerial hinterland are cardamom, spices and spices. Oils, Marine products, handicrafts, cotton hosiery, instant tea and coffee etc. The Survey had estimated the value of such Cargo available for air lift from the hinterland as Rs. 48 crores in 1979-80. Similarly the imports of cargo (monthly chemical and chemical preparations drugs and medicines, machinery and parts, precision equipments etc.) was estimated as Rs. 1.50 crores in 1979-80.

Conclusions

The basic aspect needing some stress is the need for constant and continuing inter-departmental and inter-institutional co-ordination in the matter of foreign trade statistics. Any changes made in procedures, systems and various other features of work should be made in consultation with departments and institutions concerned.

Related to this aspect is the general apathy of the administrative machineries to give some attention to the Statistical aspects of the administration work. This is particularly so where, as in the case of imports and exports, statistics emerge as a by-product of administrative process. Lack of awareness has always resulted in having untrained or unwanted staff in statistical sections, lack of supervision over this

work and more or less complete indifference to accept and pursue suggestions or improvements of statistical series. In no small measure this aspect has been instrumental in impeding improvement of their own series as well as bringing about some measure of comparability of two or more similar series from different sources. The basic importance of Statistics needs to be recognised.

10. COMMODITY FLOW STATISTICS

R. Ramalingam

Kerala is one of the States in the country which have a well organised statistical system covering different sectors of the economy. But statistics on commodity flows is one of the areas where there is data gap. Commodity flow studies covering the inter-state movement of goods as well as foreign exports and imports help to throw light on the structure of the regional economy and the nature of the inter-industry transactions taking place in the economy. Owing to the geographical position of Kerala viz., the southern most tip of India, it has the benefit of all the four modes of communication—rail, road, waterways and airways for the movement of commodities. Inter-state movements of goods takes place mainly through rail and road. Several factors account for large volume of inter-state movement of goods in the state. Firstly the state is deficit in the matter of food grains production. Slightly more than 50 per cent of the requirements of foodgrains and about 75 per cent of the consumption of pulses and other provisions are met through purchases from other states. Secondly as the state is industrially backward, majority of the manufactured consumption goods have to come from other states. Thirdly the state has no mineral resources like coal, iron etc., and this necessitates bulk transportation of these items from their supply sources in other states. The major part of the demand for cement in the state is also met through purchases from neighbouring states. This too requires facilities for bulk transportation. The hinterlands of Cochin Port stretches to the neighbouring districts of the states of Tamil Nadu and Karnataka, requiring large scale inter-state traffic in goods like tea, coffee, sea-foods, etc., for export to foreign countries and in imported goods like petroleum products, foodgrains, machineries etc. Thus it is clear that to study the state of the economy of Kerala during a particular period it is necessary to have reliable rail-borne statistics as well as statistics on the movement of goods by road. Regarding the importance of statistics on exports and imports, Kerala is one of the few states in the Indian union which contributes a sizeable share to Indian export earnings. The state being a major producer of export commodities like tea, coffee, cashewnuts, cardamom, pepper, ginger, marine products etc., the volume of trade with other countries every year is substantial. The major part of foreign trade takes place through Cochin Port.

It may be mentioned that when Public Agencies are involved in any of the commodity movement activities basic information required for building up a data base will be generated in the normal course of their functioning. Such information will be collected for a specific purpose at a point of time and if arrangements for

documentation of the data are not properly conceived such data will not become available to the users at a later date.

Fairly accurate statistics relating to foreign trade are regularly published in the 'Monthly Statistics of the Foreign Trade of India.' This covers foreign trade registered by the customs authorities at Indian sea ports, air ports and land customs stations. The figures of quantity are based on the declaration made by importers on the bills of entry and those made by exporters on shipping bills, as subsequently checked by the customs officers. The quantity figures represent net weights. The value of goods represents "(i) the whole sale cash price less trade discount for which goods of the like kind and quality are sold or are capable of being sold at the time and place of importation or exportation, as the case may be, without any abatement or deduction whatever, except in the case of goods imported, of the amount of duties payable on the importation thereof or (ii) where such price is not available the cost at which the goods of the like quality could be delivered at such place without any abatement or deduction except as aforesaid". The import valuation thus corresponds to cost including freight (c.i.f.) and the export valuation to freight over-board (f.o.b.). The monthly statistics of foreign trade of India is published in two volumes. One covers exports and re-exports and the other imports. Monthly figures are available in every issue of the publication. Annual figures are available in the March issue of every year. These statistics are based on returns received from the customs authorities concerned in respect of the custom zones. The Customs Authorities prepare Daily Trade Returns (DTRs) showing full particulars of each consignment exported from or imported into the Country. Cochin Port is considered as a separate custom zone. These details are also published every year in the Administration Report of the Cochin Port. The chief information covered refers to entrance and clearance of cargo. Thus detailed statistics are available with regard to the volume of foreign trade.

Regarding the coastal trade of India the movement of merchandise and treasure is covered statistically by the publication statistics of the Coasting Trade of India. These statistics represent the trade between one state on the one side and all other states plus certain other ports on the Indian Coast on the other as well as the trade among ports within the same state. Kerala State is categorised as a separate Maritime Block and the statistics of movement of commodities between blocks are published every quarter.

The Directorate General of Commercial Intelligence and Statistics, Government of India

publishes the "Accounts relating to the Inland Trade Consignments of India (Rail and River Borne)" every year. For the purpose of these data the Country is divided into 35 trade blocks which are with the exception of coastal states coterminous with the jurisdiction of the states. The basic source material for the statistics are the invoices relating to consignments of the commodities received at each railway and steamer station from trade blocks other than the one in which it is situated. Only import figures for each trade block are collected. The export of any one block is the sum of the imports of the other blocks from the block. One of the limitations of this publication is that the statistics is published with respect to selected commodities which are important from the all India point of view. Only 67 commodities are covered in this publication. Many of the commodities which are important from the point of view of Kerala economy do not find a place in this publication.

Data on quantity of goods transported by rail are available with the Railway Authorities. The movements recorded by the railways relate to freight traffic only. The copies of invoices relating to consignments received at each railway station are sent to the Railway Computer Centre at Madras and the data on commodity flows are stored in magnetic tapes. On the basis of this information it is possible to compute the statistics on originating traffic and terminating traffic in respect of each Railway Station in Kerala. The Railways supply this information provided charges for the computer time are paid. It is therefore necessary to make standing arrangements with the Railways for obtaining the Rail traffic data regularly. This will facilitate making available the annual figures of Railway station-wise originating and terminating traffic within three months after the close of the year.

Regarding the commodity flow data by roads there is no source which can supply the information regularly. It may be mentioned that a substantial portion of the interstate movement of goods is by highways. Usually the road flow data is collected through origin-destination surveys by interviewing truck drivers. Such a Survey could be organised by selecting the entry points into the state on the Highways for investigation. There are 23 border check posts all over the state. During 1975-76 a survey on inter state movement of goods by road was organised by the Directorate of Economics and Statistics confirming it to 12 important check posts. The details were collected for one year. Investigators were in position round the clock in each check post. The data required were mostly extracted from the declaration forms (Form 27 B) furnished by the vehicle owners. Under the Kerala General Sales Tax Rules, 1963 the vehicle owners will have to furnish the details of goods three copies of the declaration forms in the checkposts. One copy will be returned to the transporting Agency, another copy will be retained

in the checkpost and the third copy will be sent to the sales tax office located in the place of termination of the goods. Some of the details available in the declaration form are the registration number of the vehicle, type of vehicle, name of commodity transported, quantity, value, place of origin and place of destination.

The above study has shown that nearly Rs. 1200 crores worth of commodities pass through the checkposts in an year. It is therefore important that an arrangement should be made for the regular collection of statistics on goods transported by road. It is suggested that the transporting agencies should be asked to furnish one more copy of the declaration form at the checkposts. The checkposts in turn should make available this copy to the statistics section in the Board of Revenue (Taxes). According to the above study about 1500 vehicles pass through the twelve check posts daily. This means an equal number of declaration forms will become available everyday in the headquarters office. Arrangements will have to be made for processing the data in the university computer. This will help to ensure the regular collection of data on the inter-state movement of commodities by road.

In view of the importance of commodity flow statistics it is desirable that the Directorate of Economics and Statistics may bring out an annual publication "Commodity Flow Statistics Kerala" which could give the rail-borne and water-borne statistics of Kerala, inter-state movement of goods by roads, and statistics on export-import through Cochin Port.

Sometime back an exercise was undertaken in the State Planning Board to study the pattern of commodity flows by compiling the volume and value of goods moved through all the four modes of transport viz., road, coastal, rail and air. It may be mentioned that out of the total volume of goods brought into the state including those imported from foreign countries some of the goods brought into the state including those imported from abroad would be moved out of the state as re-exports. Therefore when the difference between the total value of incoming goods and total value of outgoing goods are worked out, the value of the commodities meant for re-exports will automatically get cancelled and the resultant value would represent the trade balance of the state. Thus without compiling separate statistics on the value of commodities brought into the state solely for consumption within the state as well as those of commodities moved out of the state from production within the state it would be possible to work out the balance of trade of Kerala by the above method. The following table gives the figures relating to the trade balances of Kerala.

		<i>Rs. crores</i>		
<i>Mode of Transport</i>	<i>Outgoing</i>	<i>Incoming</i>	<i>Balance of Trade</i>	
1. Inter State Trade				
Rail	126.99	458.77	..	
Road	578.79	755.06	..	
Water	45.29	7.14	..	
2. Foreign Trade				
Sea	326.94	322.16	..	
Air	0.03	0.46	..	
Total:	1378.04	1543.59	(-)165.55	

According to this exercise there was an adverse trade balance of Rs. 165.55 crores during that year. Based on a single year's data it is not possible to come to any firm conclusions. In order to have a time series data it is necessary to introduce the system of compilation of

statistics on the inland trade carried by road regularly as suggested earlier.

The composition of the commodities brought into the state clearly shows that for many of the essential consumption items and for basic goods, the state depends heavily on other states. These details will be useful in formulating the production policies of the state. The consumer items which now find a place in the import list but can be produced in the state with proper investment programme should get top priority in the production plans of the state. Similarly in respect of export items as far as possible the export of primary agricultural commodities should be discouraged. Agro-based processing industries which are oriented to export products should be given necessary incentives in the industrialisation programme of the state.

**SESSION III
IRRIGATION**

1. IRRIGATION STATISTICS IN KERALA

C. J. Joseph

Irrigation statistics in Kerala by itself seems to be an area fit for an independent research. Even today adequate and reliable information an important components of irrigation statistics such as the total area benefited under irrigation total area benefited under different categories of projects, the number of different types of minor irrigation projects (district-wise) in the state over a reasonably long periods of time etc., is certainly lacking. The different sources that generate data employ different concepts thereby rendering the comparability between them rather difficult. Some other sources which can normally be expected to be in possession of break-up results release documents full of irrelevant details of irrigation, while at the same time leaving out such an important item as benefited area in irrigation statistics. These make irrigation statistics in Kerala a problem area for researchers. This paper aims to assess the availability of irrigation statistics in Kerala, to examine its adequacy, reliability and comparability to locate the data gaps in irrigation statistics and to suggest ways and means to improve the quality of the same. We bifurcate the exercise into two periods: (a) data availability prior to the formation of Kerala² (b) data availability after its formation in 1956.

(a) Data availability prior to the formation of Kerala State

Data base of irrigation for this period, as period, as represented by total benefited area, total number of irrigation projects their break-up and the like, is certainly limited in extent. This is due to the following two reasons: (a) Historically, the role of the state in constructing and maintaining irrigation works is governed by

the purpose or need. In as much as state uses this as a tool for the collection of taxes it needs to maintain statistics of land benefited by irrigation; if the rates of taxation are different for different types of irrigation, statistics would be maintained by types. These might be maintained by different wings/departments of the state depending upon the complexity of the state apparatus and the importance of irrigation in the economy concerned. In Kerala, irrigation particularly minor irrigation was not a subject of major concern for the Governments in the 3 regions constituting the present Kerala State. Hence collection and maintenance of irrigation data were almost ignored. (b) the system of irrigation practised traditionally in these regions, the machinery and the manner of execution of irrigation projects and the system of maintenance in vogue all impeded the generation of proper data on irrigation. Traditionally, it has been an age old custom in Travancore Cochin and the district of Malabar to bund small streams and divert the water by gravity-flow, for irrigating the surrounding low-lying lands. There were also ponds, reservoirs, tanks, pools etc., in all these states, the genesis of many of which is even now shrouded in obscurity. As B. S. Ward has pointed out, these works performed several functions besides irrigation.³ The several uses to which the same work was put, introduced an element of confusion in deciding whether it was an irrigation project. Needless to say, they were in a state of neglect, selves. The maintenance of the work was mostly the responsibility of the ryots themselves. Needless to say, they were in a state of neglect, dispair and improper maintenance. This in turn adversely affected the generation of correct irrigation statistics by the Government. The Government

¹ I place on record, my gratitude to Dr. K. Narayanan Nair and Mr. D. Narayana, Research Associates, Centre for Development Studies, Trivandrum for their valuable suggestions on an earlier draft of the paper.

Irrigation has two components a source and a destination. Destination is the crop land benefited and has a uniformity across the globe and a such as broad concept is adequate for clarifying the information. But as far as the sources are concerned, variation owing to environmental diversities are many. Consequently, the sources and the types of irrigation are different in different parts of the world, and this leads to inadequacies in the use of concepts for classification.

² The present state of Kerala was formed out of three political units each of which had a separate identity in the British period, namely the Princely State of Travancore and Cochin and the Malabar district of the erstwhile Madras Presidency. It came into being in First November 1956, following the Reorganisation Act of States in the same year. The State of Travancore-Cochin itself had been formed earlier in 1949, by the integration of the Princely States of Travancore and Cochin.

³ A number of reservoirs and ponds are constructed in the vicinity of pagodas, chuttrums and about the habitation of higher classes, some extensive, faced with stone and having steps leading down for bathing and amusements of the upper classes, more than serving the purpose of irrigation. There were reservoirs at pagodas for Brahmin's use only, who have nothing to do with agriculture and irrigation.

was not in a position to state correctly the number of minor irrigation works functioning properly, the number partially or wholly silted and have fallen into partial or full dis-use, the number of works repaired and so on and so forth. These circumstances would account properly why the actual number of minor irrigation works and the area benefited thereon could not be generated for this period. Even prospects of generating them again afresh are also dim. The position of irrigation works even in the first half of the present century was not very conducive to a proper/generation of data. Because, reliable information on the growth of irrigation facilities in terms of projects or area irrigated was not available for the 3 regions. One has now to collect the bits of information lying scattered in the various governmental reports, studies travel accounts, gazetteers of districts and Administration Reports of the states to form some general idea of the pattern of growth of irrigation facilities. Also, any attempt to improve the quality of the data is bound to fail simply because indications are that reliable data for the period prior to formation of Kerala state do not exist at all at present.

This period is blessed with certain favourable conditions for the generation of irrigation statistics. Development planning, introduced after independence, involved the use of data on the different sectors of the economy. The stress on agricultural development, resulted in the Government encouraging collections and maintenance of statistics in irrigation as well. Here, we consider the important documents emerging from leading sources of data for assessing data availability. (see appendix I). The Agricultural Statistics in Kerala (1975) can be regarded as simply containing both the Fact Book on Agriculture and Statistics for planning 1972. Because, the estimates of net area irrigated (source-wise) and the gross area irrigated (crop-wise in the latter two documents are merely reproduced in the former (see appendix II). Of course, the coverage of the data is slightly more. These estimates are based on Land Utilisation Statistics, collected by the Department of Agriculture. As such these estimates are susceptible to all the limitations inherent in the estimates arrived at basing land utilisation statistics. It has sampling error and the error arising from the differences in

the concept of irrigated area. Enquiry revealed that the sample size chosen for this was small. The errors arising from this smallness could not be minimised by increasing the sample size, owing to the resource constraint. Again land utilisation statistics collect irrigated area relating to crops; conceptually irrigated area is that which receives water supply by artificial means of any kind, by machines or by manual labour at least once in a year. This concept of irrigated area is certainly different from that accepted P W D in Kerala.

The Statistics for Planning, 1977 gives more or less the same type of information on irrigation. The source of this data is recorded to be from the office of the Chief Engineer (Irrigation and Projects). But this is wrong. When this data and its source were brought to the notice of the concerned officials in the Chief Engineers Office, they simply disowned the data and pointed out quite truly that they had not so far achieved a source-wise classification at all. Again it can be seen that it is a repetition of the land utilisation survey estimates, contained in the Agricultural Statistics in Kerala, 1975, which is already shown to be unreliable. One may be tempted to dismiss this as merely a printing mistake. But it has other implication that it might mislead a researcher who comes to think that so many hectares had been brought under irrigation in Kerala under the public sector.

The Statistics for Planning, 1980 is an improvement over others since it provides a district-wise area irrigated under Minor and Lift Irrigation Schemes (appendix I) and District-wise distribution of area irrigated according to source of irrigation for the years 1976-77 and 1977-78 in addition to others given in earlier documents. The coverage of the data can be split up into two periods 1960-61 to 1969-70 and 1969-70 to 1978-79, on the basis of the source supplying the data. The data for the former period is supplied by the L.U.S. and for the latter, the office of the Chief Engineer of Irrigation. The concept of irrigated area is different for the two periods; for the former it is already described. For the latter it is the area irrigated effectively for most of the cropping season by the different categories of irrigation schemes

* The Statistics of Travancore, an official documents of the Government for this period gives only the total mileage of channels and the area irrigated under the Kodayar irrigation system in South Travancore. It does not give data pertaining to minor irrigation works in the state.

It is a sample survey where Taluk will be a stratum; within which sample of census village will be chosen. From each such village clusters of plots will be selected. The number of clusters in a village and the number of plots in a cluster will vary with villages and clusters. Estimates for paddy are made at the Taluk level and for other crops at district level.

executed by P.W.D., in the state. This conceptual difference partly explains the paradox of the larger size of the irrigated area in the former period than that in the latter. Normally it ought to be the other way round since schemes after schemes (both major and minor) have been commissioned as years elapsed since independence. Another reason for the difference is that L.U.S. estimates provide the total irrigated area including that of the private minor irrigation works as well, whereas, the latter contains only the benefited area⁹ coming under irrigation works executed by the Government. This account for the smaller magnitude compared to the LUS estimates. The net irrigated area is found to increase gradually from 64220 hectares in 1973-74 to 93140 hectares in 1973-79. The district-wise distribution of irrigated area according to source of irrigation for the years 1976-77 and 1977-78 given in this document are estimates based on T.R.S. reports⁷ and hence seems to be more reliable.

The Statistical Abstract, INDIA, another source of irrigation data, is not a basic or original source and hence not important⁸.

The published documents of the Public Works Department, (irrigation) Government of Kerala provide another important source of irrigation statistics. The Irrigation Projects of Kerala—1974, an important document in the series, gives mainly details of major projects such as estimated cost, actual cost, years of commencement and commissioning of the project, the catchment area and so on. The ten completed projects claimed an ayacut of⁹ 92823

hectares in 1972-73 which got reduced to 78844 hectares in 1979-80. (see appendix II). This document is valuable in that it gives break-up details of individual major projects with respect to ayacut, cost, details of construction and so on. In the case of minor irrigation, the document gives plan-wise total of cost, benefited area, and number of minor irrigation works upto the Third Plan, and year-wise details of these parameters for the Annual Plans and the First four years of the Fourth Plan. These are a repetition of the information given out by Minor Irrigation Works in Kerala State published by P.W.D., in 1971. Both documents have limited utility from the point of view of researchers, to the extent they have failed to give the year-wise and project-wise details of benefited area for the early plan periods. As authoritative sources, researchers would naturally fall back upon only these sources for the break-up data on aspects like costs, benefited area, number of schemes in each category for each year and so on. It appears that department of irrigation, (Kerala) does not possess exact data on the benefited area under irrigation.¹⁰ This is more likely in the case of minor irrigation works where even the number of schemes functioning properly in the state is not accurately known. It is confirmed by the following: The Department claimed that 71,000, 1,14,000, 1,71,000, 1,93,070¹¹ hectares had been brought under minor irrigation by the end of first, second, third and annual plans respectively. But this got reduced to 74467 hectares (as on 31-12-1976) at the end of the joint verification¹² in 1976. Even this data was proved to be bogus and hence another joint verification¹³ was ordered on 2-7-1980 which is

⁷ The benefited area refers to the ayacut which according to the project report, will be the possible benefited area. In actual experience, this has been found to be much less than the ayacut.

⁸ T.R.S. (EARCS in this state) started in 1975-76. It is a scheme to improve the quality and coverage of Agricultural Statistics in the state. The scheme envisages complete enumeration of all the villages in the state over a period of six years, so as to collect data on land use, area under crops, area under irrigation etc.

As in L.U.S., Taluk is the stratum and revenue village the unit of sampling. The sample size was 10% in 1975-76, 15% in 1976-77, and 20% in 1977-78. For the purposes of convenience in conducting field work, each revenue village was divided into a number of investigator units, depending on the number of investigators available in the Taluk. An investigator, assigned to each unit, visited the Wet lands three times to collect data on seasonal and annual crops. In the last visit (summer) he collects data on land-use, irrigation and perennial crops were collected. This data collected during summer on irrigation will be certainly more accurate than collected at any other season of the year. The sample size is also larger than L.U.S., which helps to minimise the error of sampling.

⁹ For years prior to independence data is available to Madras Presidency and Coorg only. There is no break-up available for the Princely State of Travancore and Cochin or for Malabar district of Madras Presidency. The area under irrigation is compiled from the return of Agricultural Statistics, India and hence not very reliable. As for the post independence period, the data on irrigated area upto the year 1960-61 is higher than the L.U.S. estimates; they are estimates supply by the Directorates of

¹⁰ There is no separate benefited area given. Hence it can be taken as the benefited area. If it is not, the document can be alleged to be evading the publication of that data. (See statement No. 1, p. 21).

¹¹ Water Resources of Kerala, 1974 (P.W.D.) gives details of irrigation potential, both major and minor, projects proposed and those under execution etc. But it does not give the actual benefited area of even the major projects. The document contains two tables. They include all details of irrigation statistics except benefited area.

¹² P.W.D.—Minor Irrigation Works in Kerala—1971, p. (10-11).

being done now. This emerged from the fact that Department of irrigation was mainly concerned with the construction phase of the project viz., preparation of estimates, assessment of ayacut, execution of the scheme etc., water cess collection was the responsibility of the Board of Revenue. Hence Department of Irrigation did not feel the necessity of pursuing the matter once the project was commissioned. However generation of reliable data on benefited area is necessary for further research and for policy formulation by the Government. This is, I feel, a serious data gap, which should be filled up at the earliest. Again, the department of Irrigation, Kerala had not achieved source-wise classification, which other states had already. This should be done following the All-India pattern of classification.¹⁴ It would provide comparability of Kerala data with those of other states and of India. The Directorate of Economics and Statistics, Kerala provides source-wise classified data on irrigated area; this also does not enjoy comparability due to conceptual difference.¹⁵ This should also be suitably adjusted to further the cause of research.

Minor Irrigation works act as the chief villain of piece in the irrigation statistics in Kerala. The total irrigated area represents the sum of the areas under major, private and minor irrigation works. Government can accurately determine the total irrigated area if only it can generate data on area irrigated by minor irrigation also. Unfortunately minor irrigation works were executed by various agencies of the

Government at different intervals of time.¹⁶ This simply aggravated the difficulties in generating accurate data on net area irrigated under minor irrigation. The private minor irrigation works and the net area benefited by them are perhaps inestimable. Therefore any attempt to improve the quality of the data relating to irrigated area should certainly focus on generating accurate data with regard to minor irrigation in Kerala. Any effort in this direction is beset with obstacles.¹⁷ The statistics collected in Travancore or Cochin does not throw adequate light on this issue.¹⁸ All these points towards one thing: Minor irrigation schemes certainly existed prior to 1956; but data pertaining to them is almost absent. This rules out the possibility of generating the data afresh from existing documents. As on the spot physical verification alone is the remedy.

We have stated earlier that TRS estimates are more reliable than LUS estimates. Having discussed the availability of statistics pertaining to Major and Minor Irrigation schemes, we are now in a position to examine the case better. Let us consider the major gap in the irrigation statistics, viz., benefited area. In 1979-80, the total net area irrigated under Government sector was 1,81,591¹⁹ hectares. When the latest TRS estimates for private works are added to the above 1,81,591 hectares we got a general total of 2,33,000 hectares. The corresponding TRS estimates for the year 1977-78 is 2,28,184 hectares, a divergence by 2 percentage points more. This higher computed value should be

¹² The water cess agitation by ryots in the State concerned the Irrigation Department of the bogus nature of the benefited area. Hence the Officials of Revenue and Irrigation Departments conducted a joint verification of area in 1976, which brought out this result. Even this was proved to be bogus later and hence another joint verification.

¹³ Wide G. O. M.S. 240/80/AD dated 2-7-1980.

¹⁴ The All-India pattern of source-wise classification is into Government canals, private canals, tanks, wells and other sources: this was recommended by First Irrigation Commission (1901-03).

¹⁵ Government Canals in All-India pattern refer to area benefited under major and medium projects. Here it is not.

¹⁶ In Cochin, at the time of accession with Travancore, the Panchayat Department was found to have its own engineering wing to execute minor irrigation works. In Travancore, the village unions and panchayats executed it at their own responsibility. The Department of Agriculture issued pumpsets as a drought relief measure in T. C. State. Therefore, the Administration Reports of these departments were also source of data on irrigation.

¹⁷ Indeed, minor irrigation schemes were in existence during the period, prior to 1956. The most authentic

record to this effect, seems to be the Administration Report of the Department of Panchayats, Agriculture and Community Developments in Travancore and Cochin. All these departments executed minor irrigation works at one time or another. Even the Administration Report did not provide uniform pattern of information over years. Some provided Taluk-wise data on the number of works, and the costs, some only the number of works and perhaps none gave the area benefited by the minor irrigation works. Even from the list of works, one could hardly distinguish which constituted an original work and which, repair or improvement.

¹⁸ The Statistics of Travancore, a publication of the Statistics Department, Travancore university gives under irrigation, the mileage of channels and the area irrigated under the Kodayar Project for years 1928-29 onwards. The area of old wet lands irrigated and the area of dry lands converted into wet lands (Taluk-wise) are available. The capital expenditure for irrigation is only for Kodayar project. The subsequent publications adopted the same procedure in recording the data pertaining to irrigation until Kerala state was formed.

¹⁹ As per the records maintained in Office of the Chief Engineer, Irrigation, Kerala, the net benefited area under major works was 79,944 hectares and that under minor irrigation, was 101,647 hectares in (1979-80). Both together give 181,591 hectares.

regarded as emanating from the data supplied by the Government sector for 1979-80, the TRS estimates being for 1977-78. The LUS estimates of total area irrigated for 1973-74 was 456,780 hectares which is more than double the computed figures. Thus judged by any standard LUS estimates are highly exaggerated and hence not reliable at all. TRS estimates seems to be nearer to reality and hence relatively reliable and acceptable.

TRS=Timely Reporting Survey (ECARS in this State)

LUS=Land Utilisation Survey.

Conclusions

The conclusions emerging from this paper are as follows: Data base of irrigation prior to the period 1956 is limited in extent. This is due to (a) minor irrigation was not a subject of serious concern to Government of the period and (b) the system or irrigation in vogue, the manner of execution of work, and the modus

operandi of maintenance of minor irrigation works impeded proper generation of data. Hence reliable data is almost non-existent for this period. A physical verification of the scheme and related details seems to be the only solution.

The data-base position is certainly better for the period after 1956. The estimates basing land utilisation survey are all exaggerated and hence not reliable. The TRS estimates seems to be nearer to reality. There is reason to believe that Public Works Department (Irrigation), Kerala does not possess the actual benefited area of their schemes; this is certainly true of minor irrigation. This is a serious data gap which should be remedied at once. Again, the Public Works Department (Irrigation) Kerala, had not so far achieved source-wise classification, following the All-India pattern. This is necessary to ensure comparability with those of India and other states. The Directorate of Economics and Statistics, Kerala achieved a source-wise classification; but they too do not enjoy comparability owing to conceptual difference.

APPENDIX I

Sl. No.	Document	Source, Collecting the data	Methodology	Period	Date coverage	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	The Fact Book on Agriculture	B.E. & S.	Sample study estimates, prepared from returns on Agricultural statistics	1955-56 to 1964-65	Provides net and gross areas irrigated (source-wise) and gross area irrigated (crop-wise)	
2.	Statistics for Planning Serial No. 1 Agriculture, 1972	B.E. & S. and S.P.B.	do.	1955-56 to 1969-70	do.	It repeats the data in 1, for years till 1964-65.
3.	Agricultural Statistics in Kerala 1975	B.E. & S	do.	1955-56 to 1973-74	do.	It repeats the data in 2 for years till 1969-70
4.	Statistics for Planning, 1977	B.E. & S	do.	1957-58 to 1974-75	In addition to what given above provides district-wise distribution of irrigated area, according to source of irrigation for 1975-76.	It repeats the data in 3 for years till 1973-74. The Land utilisation estimates are wrongly reported as emerging from office of the Chief Engineer, Irrigation & Projects.
5.	Statistics for Planning, 1990	Directorate of E & S Kerala	Sample study	1960-78	It gives details of Minor and Lift Irrigation, viz. gross area (crop-wise) and net area irrigated (source-wise). District wise distribution of area irrigated (source-wise) is also provided.	

(1)	(2)	(3)	(4)	(5)	(6)	(7)
6. Statistical Abstract of India	C.S.O. New Delhi		Reproduced the data supplied by the directorate of Statistics, Trivandrum till 1960-61. Thereafter repetition of the L.U.S. and T.R.S. data.	..	Net area (source-wise) an gross area (crop-wise) are provided	..
7. Seasons and Crop Report	Till 1960-61 Directorate of Statistics, Trivandrum for 1960-61 onwards, B.E.S.		Sample study. Estimated from the returns of Agricultural Statistics for T.C. State. For Malabar portion, the data was supplied by the Revenue Staff	Available for the various years before and after independence	Same as above	The data published by the Directorate of statistics was found to be 33% higher than L.U.S. estimates of B.E & S.
8. Season and crop report Madras Presidency for Malabar District)	Office of the Director of Industries, Board of Revenue, Economic Adviser, and Director of Statistics		..	Not available till 1953-54	..	In 1953-54, the percentage of net irrigated area to net sown area was 0.4% as against the Madras state average of 31.9% Table III A-p.34.
9. Irrigation Projects of Kerala 1974	Office of the Chief Engineer (Irrigation), Kerala		Census data collected through department staff collected separately for (1) completed (2) continuing and (3) projects under investigation	..	Estimated cost, actual cost, years of commencement and commissioning and net and gross area irrigated until 1973 74	..
10. Minor Irrigation Works in Kerala State —1971	Office of Chief Engineer (Irrigation), Kerala		Collected through the department staff	..	Plan-wise total of cost benefited area and number of M.I. works upto Third Plan then year-wise details of these for the Annual Plans and the first 2 years of Fourth plan.	..

APPENDIX II

(Area in hectares)

(1)	(2)	Initial year			End year		
		Year	Net area irrigated (ha.)	Gross area irrigated	Year	Net area irrigated	Gross area irrigated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Fact Book on Agriculture		1955-56	247676	349442	1964-65	351640	494095
2. Statistics for planning, 1972		1955-56	247676	349442	1969-70	422969	589329
3. Agricultural Statistics in Kerala, 1975		1955-56	247676	349442	1973-74	456780	637639
4. Statistics for Planning, 1977		1957-58	262832	373149	1973-74	456780	637639
5. Statistics for Planning 1980		1960-61	318711	456266	1978-79	93140	113629
6. Season and crop reports—Kerala 1957		1955-56	328326	L.U.S. and	T.R.S. estimates for year after 1960-61		
7. Irrigation Projects of Kerala, 1974		1972-73	92823	..	1979-80	79944	..

2. DATA ON IRRIGATION STATISTICS

S. Sthanukrishna Iyer

The nation's economy as well as the State's economy depends mostly on agriculture which forms the chief livelihood of people. Kerala is essentially an agricultural State. About 70 per centage of population of the State adopts an occupation connected with production of agricultural commodities. The natural facilities suitable for growth of variety of crops as well as the slow progress in industrialisation paved the way to accept cultivation as an occupation. 56% of the geographical area is under cultivation.

The individual, the community and the Government invest with the aim of getting better returns. Hence the characteristics which govern the production of agricultural commodities deserves consideration.

The major items for consideration are:

1. Availability of land and its suitability.
2. Climatic condition.
3. Irrigation.
4. Availability of seed especially high yield and short duration.
5. Wages for Labour or Production Expenditure.
6. Value of the produce.

Bounded by Western Ghats on the east and Arabian sea on the west, the State lies as a narrow strip of land with width varying from 32 to 130 Km. and is divided into three natural divisions:

- (i) Coastal region with its backwaters—Lowland.
- (ii) Hilly tracts on the west of western ghats covered with forests—Highland.
- (iii) The midland plains between the above two intersected by number of rivers—Midland.

The three distinct natural divisions have contributed to the diversity of agricultural crops in the State. Paddy, Coconut and arecanut are grown in lowland and midland; pepper, ginger and sugarcane are additionally grown in midland and tea, coffee, rubber and cardamom are grown in highland.

The nature of soil in the above three regions are also different. Hilly and forest soil is found in eastern portion; sandy soil in the coastal belt and laterite soil in the midland area. The alluvial soil is seen along the coast of Vembanad lake in Alleppey and Kottayam district and Karisoil in Alleppey district. In the extreme tip of Trivandrum district red soil is found.

The diversity of physical features is exhibited in the climate also. The state has a fairly salubrious climate. The highland region has a cold climate while the rest of the State has a temperate climate. The temperature in plain varies from 70° to 80° while in ghats it goes upto 5°. The atmospheric humidity is generally high.

The south west and north east monsoons control the seasons by developing four seasons and they causes major portions of rain in the State.

1. Dry weather from December to February.
2. Hot weather from March to May.
3. South west monsoon period from June to September.
4. North east monsoon period from October to November.

Situated in a belt suitable for catching the monsoons the State enjoys a good rainfall and this results in the existence of numerous rivers and streams all over the State. There are 44 rivers with innumerable tributories of which 41 are west flowing.

The rains form the sources of water for the crops. The State is blessed with fairly heavy rainfall of about 3014 mm. per annum. 90% of the precipitation occurs during the south west and north east monsoons period which confine to about 6 months from June to November. Even during these period there will be dry spell during September and October. June and July months experience heavy rainfall while the period from December to May has only little rain. This uneven rainfall does not guarantee perennial water supply for cultivation.

Irrigation of land is thus felt a necessity to protect the crops against the vagaries of nature and to stabilize cultivation. This will enable additional crop being raised during summer season also.

Being a deficit State in the production of rice, the staple food of the people, Irrigation projects are mainly aimed at providing water to the lands to enable the cultivation of paddy. Main paddy crop pattern adopted in the State is:

1. Virippu crop which coincides with S. W. monsoon.
2. Mundakan crop which coincides with North Eastern monsoon, and
3. Punched which are cultivated in Summer months.

The first is mostly a broadcast crop. Pre-monsoon sowing is done in April and harvest is done in August. The heavy rainfall provides enough water but in some areas flood causes damage.

The Mundakan crop is a transplanted crop. The cultivation is started in September and harvest in December. Wetlying of land is necessary during last months.

Puncha crop is cultivated in low lying areas such as kole and karilands where cultivation is impossible during the other months when the land is under water. Watering is also necessary during the months.

Irrigation facilities are available at present only to cover a portion of cultivable land. Here irrigation is taken to mean the process of letting water into the plot, for the benefit of crops grown which involves some artificial either mechanical or manual effort. Thus rainfall areas are not included under irrigated area. Total cropped area in the State is about 29 lakhs hectares and of this paddy is cultivated in 8 lakh hectares during the three seasons. The area under paddy irrigated is 36% of area under paddy and 10% of total cropped area.

Irrigation to cultivable lands are provided by the existing major irrigation projects, lift irrigation schemes, minor irrigation works consisting of small storage works, diversion weirs, wells, irrigation canals, salinity control works, etc. executed and maintained by the State P.W.D. (Irrigation). In addition there are minor irrigation works owned by private parties or co-operative societies.

Data on irrigation are available with P.W.D. (Irrigation) Department and are also obtained from the Timely Reporting Survey conducted by the Directorate of Economics and Statistics.

Data relating to the project such as the irrigation potential, ultimated requirement of water for irrigation wet and garden land in the basin and the area under irrigation relating to each project are available with P.W.D. The Timely Reporting Survey provides data on the irrigation source-wise and crop-wise. The data obtained from the Survey includes all sorts of work whether maintained by Government or other-wise.

The area that can be irrigated by a project is estimated at the time of planning of the project by the P.W.D. (Irrigation) and this is

updated to know the position of irrigated area at any point of time.

So far on the data of T. R. S. is concerned, this is estimated on the basis of the sample survey conducted each year. 20% of the revenue village is selected each year and the land utilisation, area under different crops, area irrigated are collected for every survey sub-division by the investigators. The estimates are prepared district-wise.

The following definitions are adopted for different kinds of irrigation sources:

1. Canal Irrigation:—Canal is an artificially built one for conveying water from a river, lake or reservoir.
2. Tank Irrigation:—Irrigation from tanks may be through small canals (field bothies) or pumpsets or other means. Water obtained from tanks through such canals (field bothies) will be considered as tank irrigation and not canal irrigation. But if the source of water in this tank itself is from canal then the source will be canal irrigation and not tank irrigation.
3. Wells:—If water obtained for irrigation is from wells either through pumpsets or lifting by other means, it is termed as well irrigation.
4. Other minor and lift irrigation schemes:—This includes Government minor irrigation schemes such as lift irrigation, diversion channels, deepening of thodu, construction of cross bars etc.

It has been pointed out that the State has a fairly heavy rainfall. There are two distinct rainfall seasons in Kerala viz. south west monsoon known as Edavapathi from July to August middle and north east monsoon known as Thulavarshem from September to November. About 90% of this annual rainfall is precipitated during these two seasons. The coverage normal annual rainfall of the State is 3015 mm. Maximum rainfall of 3796 mm. is in Kozhikode district and minimum of 2001 in Trivandrum district.

The rainfall is measured and reported from 128 centres to Revenue authorities, Tansildars, Village Officers, Divisional Forest Officers, Junior Engineers, Block Development Officers, Medical Officers of certain institutions, Agriculture Research Officers etc. are engaged in different centres. The details are collected by the Directorate of Economics and Statistics from the Revenue authorities.

3. LINKING IRRIGATION WITH DEVELOPMENT—THE KERALA EXPERIENCE

K. Narayanan Nair
D. Narayana

Introduction

Disproportionately high investment in irrigation projects has been an important aspect of Kerala's planned efforts for agricultural development. The need for and objectives of such investments are best evident from the following extract from an official document.

In view of the variability of rainfall in the State, high priority has been accorded to irrigation projects in the State's Five Year Plans. These projects help the State in stabilising food productions and an increasing production of non-food crops (Government of Kerala 1982)

Certain features of the investment in irrigation in the State are the following:

- (a) Bulk of the investment has been for constructing medium and large-scale irrigation projects;
- (b) There has been long delay in the completion of the projects leading to significant escalation of costs;
- (c) Even for the projects completed the area irrigated is seen to be far less than the targeted command area.¹

While these reflect the basic maladies of Project Planning and implementation in the State an important issue which calls for careful study is the extent to which the objectives of investment in irrigation are getting fulfilled by the projects which have been commissioned. In this process, it is also important to highlight the factors which hinder the proper use of water in stabilising and increasing agricultural production. This paper propose to take up some of these issues.

The paper consists of two sections. Section I analyses the impact of irrigation in stabilizing and increasing the yields of paddy crop. The analysis is confined to paddy simply because, the irrigation projects are designed to benefit the paddy lands. Section II attempts at going in to the factors hindering the proper use of water for paddy cultivation.

I

Impact of Irrigation on Paddy Yields

This section attempts at analysing the influence of irrigation on paddy yields. First we provide an overall picture and then go on to take up the differences across the agro-climatic zones within the State.

Data and Method

The data on yields used for the analysis is taken from the crop cutting surveys conducted by the Directorate of Economics and Statistics. As our concern was with the ten major irrigation projects commissioned in the mid to late sixties, data for the years 1969-79 was taken. Since the definition of irrigation adopted by the Directorate of Economics and Statistics is too general, we haven't done any independent analysis of the data for irrigated and unirrigated plots.² In order to analyse the data we used the following methodology.

At the very outset taluks were classified into irrigated and unirrigated categories; irrigated taluks are those which predominantly fall within the command area of the projects and the rest are unirrigated. To get an overall picture of the stabilisation of crop yields coefficient of variation of crop yields were calculated and the taluks were classified on the basis of the range of variation. Three intervals were taken: less than 12 per cent, between 12 and 18 per cent and greater than 18 per cent. (The cut off points as such are arbitrary).

In order to carry out the analysis at the 'micro' level taluks were grouped into agro-climatic zones. The agro-climatic zones as approximated by the Committee on agro-climatic zones were taken as the basis (Government of Kerala 1974). It called for some modifications as grouping the taluks into one twelve zones would have left many zones with no irrigated taluks and many others with only irrigated taluks. The modification was worked out taking into account rainfall patterns and topographical models. The zones with the taluks are presented in Appendix A.

Except for zones III and IV, other zones were ignored for this analysis as most of the irrigated taluks are concentrated in these zones. The seasonwise yield was divided by the average yield for the 1969-79 period. These were plotted on graphs. It was thought best to use the ratios because they could be used to provide some idea about the trend in yields, if any. Further the bounds within which these observations fall may be used to get an idea about the variations. If there exists any trends in yields the observations should get concentrated on the left hand lower and the right hand upper quadrants. Similarly, regarding variations bounds could be defined and the proportion of observations falling outside the bounds may be found out.

Results and Discussion

The estimated values of the coefficient of variation of paddy yields across taluks are given in table I. It is seen that the proportion of irrigated taluks with relatively lower coefficient of variation of yields (less than 18 per cent) are much higher (9|10 and 10|16 respectively for autumn and winter) than the proportion of unirrigated taluks (17|36 and 31|43 respectively for autumn and winter). But when it comes to summer, bulk of the irrigated taluks (5|8) also show very high coefficient of variation of yields. As regarding the summer crop, while the overall (for all the taluks of the State) average coefficient of variation of yields is about 27 per cent, that for the irrigated taluks is about 20 per cent. Here again one observes wide regional variations. The irrigated taluks of Trivandrum district show an average coefficient of variation equal to the State average.

TABLE I
COEFFICIENT OF VARIATION OF PADDY
YIELDS ACROSS TALUKS—SEASONWISE
(1969-79)

Seasons	Coefficient of variations	Less than 12 per cent	Between 12 to 18 per cent	Greater than 18 per cent	Total
Autumn		3+(3)	6+(11)	1+(19)	10+(36)
Winter		5+(17)	5+(14)	0+(12)	10+(43)
Summer		1+(0)	2+(1)	5+(24)	8+(25)

The above figures point to the conclusion that irrigation hasn't had much of an impact in stabilising the summer crop. As regarding the winter crop it is difficult to draw any valid conclusions because though one finds a low coefficient of variation of yields for the irrigated Taluks it is true of a large proportion of unirrigated taluks as well. Coming to the autumn crop it does seem that irrigation projects did make some kind of a stabilising effect on yields. Since these conclusions did not take in to account the specificities of agro-climatic zones, in particular rainfall and topography which have definite bearing on the availability of moisture for crops, we have done analysis at the level of the zones.

When the observations corresponding to the taluks in zone III are plotted on a graph the following picture emerges. If there had been any increase in yields over this period owing to irrigation, the values in the left lower and right hand upper quadrants should have been high. No such pattern is observed. Hence we may conclude that the impact of irrigation on raising yields is minimal.

TABLE 2
PERCENTAGE OF OBSERVATIONS ON DIFFERENT
QUADRANTS (ZONE III)

	Autumn		Winter	
	26(20)	26(33)	22(25)	26(25)
	24(27)	24(17)	23(25)	24(25)

Moving over to the question of stabilization effect of irrigation table 3 gives data on the percentage of observations falling outside various bounds. It is seen that the values are marginally higher for the unirrigated taluks. It may be noted here that this corresponds well with our overall findings.

TABLE 3
PERCENTAGE OF OBSERVATIONS FALLING OUTSIDE
THE BOUNDS (ZONE III)

Bounds	Seasons	Autumn	Winter
Greater than 18%		18(20)	10(13)
Greater than 12%		42(45)	22(27)

A similar exercise was carried out for zone IV. The results are presented in tables 4 and 5. Table 4 gives a preponderance of observations on the right hand upper and left hand lower quadrants. The autumn season figures point to a clear upward trend in yields for the irrigated taluks and the winter figures point to a general upward trend. Thus one could conclude that irrigation has some influence on improving yields in the autumn crop; but the winter figures point to causes other than irrigation. However this is in marked contrast with the picture presented for zone III.

TABLE 4
PERCENTAGE OF OBSERVATIONS ON DIFFERENT
QUADRANTS (ZONE IV)

	Autumn		Winter	
	17(26)	37(20)	17(18)	33(32)
	33(24)	13(30)	33(32)	17(18)

Moving on to the question of stabilisation of yields, the results further confirm our overall findings, that the impact of irrigation on stabilising yields is minimal.

TABLE 5
PERCENTAGE OF OBSERVATIONS FALLING OUTSIDE
THE BOUNDS (ZONE IV)

Bounds	Autumn	Winter
Greater than 18%	40(40)	27(20)
Greater than 12%	60(56)	37(44)

In sum it seems that at a very general level, irrigation has some impact on stabilising yields during the autumn crops³. Leaving the overall level and moving over to the level of agro-climatic zones no such stabilising effects of irrigation may be seen. But one does observe marginal increase in yields during the first two crops-solely for the irrigated taluks in autumn and both for the irrigated and unirrigated taluks in winter-thereby pointing out that the increases have much less to do with irrigation.

II

Constraints on Irrigation Development

The absence of any visible impact of investment in irrigation in stabilising and increasing yields is owing to the interactions among various factors in Kerala's economy. The first set of issues pertain to the forces operating in the rice economy within the agricultural sector. The second set of issues pertain to the working of the organisations responsible for conservation and allocation of water resources of the State. The above issues are thrown up granting a particular model--large scale irrigation projects for paddy cultivation which has been followed so far. This very model needs to be questioned in the light of the agro-climatic specificities of Kerala.

We begin with the rice economy of Kerala. During the last two decades the performance of this sector has been deteriorating. The area under rice as a percentage of the gross cropped area has been declining. It stood at 35.33 per cent in 1952-53 and declined to about 29 per cent by the mid seventies (P. P. Pillai 1982). Obviously the area under other crops has been expanding at a much faster pace than that of rice. Further, the area under rice has been shown a marginal increase during the 1960-75 period. During the latter half of the seventies, it has shown a sharp decline.

The decline in area since 1974-75 has been steady. There have been year to year fluctuations in area during the earlier periods though of a mild order, but a steady decline over four consecutive years is unprecedented. The extent of decline over the four crop years works out to 82 thousand hectares, i. e., by about 10 per cent. The decline in area is registered in both the main paddy seasons, Virrippu (Autumn) and Mundakan (Winter) though the area under Punja (Summer) increased slightly by less than 5000 hectares or 5 per cent (P. G. K. Panikar 1981).

This has come about owing to the unfavourable movement of price of rice along with increasing costs and the lack of any significant gains in the productivity of the crop⁴. The typical policy instrument adopted for solving the farmers' problems was that of subsidy without any concerted effort at bringing about changes in the techniques of production. It is

well known that the instrument of subsidy can have some impact within the narrow bounds of the movement of price of rice relative to other crops given the movement of wages. Given the specificities of Kerala where the price of rice had to be kept low in view of the social welfare measures while the prices of other major commodities are subject to forces of international trade the assumption of a narrow bound does not hold. Consequently the impact of subsidy on maintaining the health of the rice economy has been minimal. The only solution in this context seems to be in working towards some far reaching technical changes in the rice economy.

The potential for increasing the productivity of paddy is very high in Kerala. The prevailing levels of productivity are much below the levels reported from other regions of India and abroad. However, the introduction of the new technologies of rice production in the State calls for considerable improvements in the structure and efficiency of water management in the State.

Any efforts at water management call for certain changes at the crop-land end. In order to make the best use of water fields must be properly levelled and shaped and must also be provided with proper drainage facilities so as to avoid water-logging. The provision of these services requires a great deal of technical competence as well as large financial outlays and the willing co-operation of the farmers concerned. The ideal way would be to consolidate holdings and re-draw field boundaries in accordance with the lay out of the land in a way which would facilitate the construction of channels and drains for the best use of water. As far as land management at the end of crop land is concerned the constraints needed to be overcome are numerous (which are partly institutional and partly organisational). Most of these difficulties are highlighted in a report on the consolidation of holdings prepared by the State Revenue Board in the early sixties (E. N. Jayachandran 1965). According to this report, consolidation of garden lands in the State is an impracticable proposition; But it is not clear why consolidation of wet lands is not practicable. Actual implementation, however, may require strong political will and an efficient organisation set up. It is unfortunate that the institutional reforms which are essential for releasing the best out of the irrigation projects are neglected in the State.

Coming to the question of water management it calls for proper conservation and distribution works at the infrastructural level and proper storage and allocation throughout the year so as to meet definite needs of the crops. As to the infrastructures, medium and large scale storage works have been built over the years. But how far has the building of proper field channels progressed?

In none of the command areas of Irrigation Projects, on farm development works

necessary to adopt scientific water management practices have been carried out. In many blocks of rice fields, in the absence of field boothies, water is let into the natural drainage channels with all its attendant evils. Field to field irrigation is finalised in the absence of field irrigation channels (CWRDM 1981).

One of the important reasons for the slow progress, it seems, is the low budgets of these works as compared to the budgets of the major works.

Equally important are the works for maintaining the catchment areas. This is all the more important because of the peculiar structure of the catchments and the rainfall pattern prevailing in Kerala. The reservoirs are getting silted up at an alarming rate due to the large scale deforestation taking place in the catchments. And the latter has come about owing to the large scale encroachment of forest land. The State policy during the last two decades has been one of encouraging such encroachments. No one in this State seems to be bothered about these aspects of the projects.

Moving on to the questions of regulating proper storage and allocation for irrigation throughout the year some imaginative thinking is called for. Owing to the peculiarities of rainfall and cropping pattern in the State allocation of water calls for very careful planning. We have no evidence that such careful planning has been adopted for regulating the waters of the completed irrigation projects. The lethargy of the irrigation bureaucracy and the lack of any strong farmer's organisations seem to be responsible for this sorry state of affairs.

The discussion so far has proceeded granting a certain model of irrigation and agricultural development. The two pillars of the model are (i) large-scale irrigation works; and (ii) irrigation mainly for paddy. Now, we would like to question this very model of irrigation and agricultural development. One of the important reasons for raising this question is the specific features of Kerala and the attendant high costs involved in erecting large-scale projects;

..... The cost of irrigation water comes to 4.5 paise to 10 paise per cubic meter while the cost of making one hectare of land irrigable works to Rs. 5000 to Rs. 10,000. The high cost of irrigation projects and the low sponges to irrigation is attributed to the *topographical features peculiar to Kerala* and to non-adoption of scientific water management practices (emphasis ours) (CWRDM 1981).

Large-scale works are not cost effective when intended for supplying water to small valleys spread over a vast area. Here it would have been best to choose a particular model of irrigation after carrying out some comparisons of cost and effectiveness across various irrigation methods.

The questioning of the policy of irrigation mainly for paddy also arises from the peculiar topographical features specific to Kerala. The proportion of garden and uplands in most parts of Kerala are very high compared to the paddy lands in the valleys. Given this feature cost effectiveness could only be achieved by providing water to crops other than paddy as well. But such an approach would call for very careful planning of storage and regulation of flows through the months of the year as the water requirements of the different crops are different in the various months of the year.

In sum, for deriving optimum benefits from the projects completed and projects under construction it may be best to evolve a comprehensive water storage and regulation plan. Further, for the best use of the financial resources it may be best to think in terms of various methods of irrigation, the interests of technicians and contractors notwithstanding.

III

Concluding Observations

The objectives of this paper, as we stated in the beginning was to provide a critical assessment of the impact of irrigation on agricultural production in the State and also to identify the major constraints on irrigation development. An attempt of this kind can be carried out only to a limited extent because of the lack of adequate data on the irrigation sector of the State. However by making use of the data on paddy yields in the irrigated and unirrigated taluks we have tried to provide some idea about the impact of irrigation on paddy production. The following are our main findings.—

(1) The impact of irrigation in terms of stabilising productivity of paddy lands and increasing it overtime is seen to be only marginal in the State.

(2) The lack of any significant influence of irrigation on crop yields is due to the poor management of irrigation water.

A variety of factors are responsible for the inefficient management of irrigation water. On the one hand, no attempt is made so far for improving the management of agricultural land with the result that more than helping to stabilize and increase production, irrigation projects are contributing to waterlogging and in this process there is considerable wastage of irrigation water. On the other hand, the management of irrigation projects are inefficient in terms of (a) supplying water from the main canals to the farmers' fields (b) regulating the storage and discharge of water from the headworks taking into account the intensity and spread of rainfall in the command area and the crop-water requirements. It also appears to us that even if the management of irrigation projects are made more efficient, unless and until it is accompanied by significant improvement in the

management of agricultural land, irrigation projects are not going to add anything substantial in terms of increasing agricultural production and productivity.

NOTES

1. The details of the physical achievements of the major and medium irrigation projects are given below.

Number of Projects	Command Area (in Hectares)		Cumulative Total as of 1980-81 (in Hectares)	
	Net	Gross	Net	Gross
Completed 10	133416	167758	79159	146596
On-going 18	296749	574548	70103	148766

Source: State Planning Board, K. E. R. 81.

2. The definition of irrigation adopted by the Bureau of Economics and Statistics:

"Irrigation is defined as the process of letting in water for the benefit of crops grown which involves some artificial or mechanical or manual effort for at least one wetting". So a crop which received watering at least once will be included under irrigated crop even if it is affected by drought before or after it received watering. Moreover irrigated crop includes those with insufficient irrigation also. It may also be noted that there is another limiting factor in comparing the figures as the number of crop cutting experiments based on which the average yield is calculated is comparatively low in the case of irrigated crop.

Since this definition in no way helps us to assess the impact of irrigation by medium or major projects we have not used the data on irrigated yields provided by their crop-cutting surveys.

3. Our results differ from the results of George and Nair (George and Nair 1982) for the following reasons. George and Nair have used the data provided by the Bureau on yields of irrigated and unirrigated paddy. Owing to the reasons mentioned in 2 above it is questionable as to what valid conclusions could one draw from the data. Moreover this exercise has no direct bearing on the impact of irrigation by the projects under consideration.

The exercise carried out for six taluks (three benefited and three control) also are subject to various limitations. First of all we fail to understand the justification for taking the data for 10 years while the projects were commissioned from the mid-sixties onwards and it takes some pre years before farmers get used to the changed situation. Secondly the yield figures used are for all the seasons which further limit the validity of the conclusions drawn. Thirdly,

the selection of the control taluks ignores the agro-climatic specificities of the benefited taluks which might vitiate the results.

4. As to the price movements it is best to see Panikar's table. We reproduce parts of its (P. G. K. Panikar 1981 a).

TABLE 4

TRENDS IN PRICES OF PADDY, WAGE RATES AND PRICE OF NUTRIENTS (STATE AVERAGE)

Year	Farm Price of paddy Rs. per kg.	Kg. of paddy required to buy one man-day of labour	Kg. of paddy required to buy one kg. of		
			N	P2O5	K2O
1960-61	0.41	4.51	..	..	..
1961-62	0.44	5.00	..	..	..
1962-63	0.41	5.90	..	..	..
1971-72	1.00	5.43	2.02	2.91	0.90
1972-73	1.19	4.86	1.75	2.44	0.77
1973-74	1.87	3.57	1.32	1.60	0.60
1974-75	2.30	3.38	1.83	2.24	0.86
1977-78	1.30	6.67	2.66	2.38	1.03
1978-79	1.02	7.49	2.73	2.59	1.12

5. 'The proportion of area under HYVs of rice in Kerala, viz. 30.9 per cent, was less than the all-India average of 34.6 per cent, and far below that in Tamil Nadu (92.3), Punjab (85.0), Haryana (57.4), Jammu and Kashmir (75.7), Andhra Pradesh (55.5), etc.'

See for details (P. G. K. Panicker 816) we reproduce parts of Table 1

TABLE 1

AREA UNDER HYVs IN KERALA,
SEASON WISE

(Area in Hectares)

Year	All seasons combined percent under HYVs
1969-70	15.57
1970-71	18.20
1972-73	23.96
1973-74	28.38
1977-78	34.90
1978-79	34.94

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APPENDIX A

Zones	Rainfall	Topography	Taluks	Rainfall
I	Pattern I	Model I	Chirayinkil, Quilon, Karunagappally, Karthigapally, Mavelikara, Ambalapuzha, Shertalai, Vaikom, Kanayannur, Cranganore, Parur, Cowghat, Ponnani.	Pattern I Both the South West and North East monsoon moderately distributed. South West monsoon with June maximum
II	Pattern II	Model IIb	Nedumangad,* Kottarakakara, Kunnathur, Chengannur, Tiruvalla, Changanacherry, Kottayam, Quilandy, Badagara, Tellicherry, Cannanore, Taliparamba.	Pattern II III distributed rainfall. South West monsoon with July maximum and concentrated in 3 months.
III	Pattern I	Model IIa	Moovattupuzha, Kunnathunad,* Alwaye*, Trichur,* Thalappally,* Ottapalam, Perinthalmanna.	Topography Model I Extensive valleys with level but raised garden lands
IV	Pattern II	Model IIa IIc	Chittur,* Alathur,* Palghat,* *Tirur, Ernad, Kozhikode, Hosdurg, Kasargode.	Model IIa Valleys less extensive. Hills with moderate gradients and slopes having mild gradients Model IIb Valleys less extensive, hills with moderate gradient and with egg shaped bump. Slopes are steep Model IIc Valleys less extensive, Hills with table tops. Slopes are steep.
V	Pattern I	Model III	Pathanapuram, Pathanamthitta, Kanjirappally, Peermade, Devicolam, Udumbanchola, Thodupuzha, S. Wynad, N. Wynad.	Model III Narrow valleys and hills with steep gradient
IV	Pattern I	Model IIb	Neyyattinkara, *Trivandrum.	

*Irrigated Taluks.

SESSION IV
POPULATION HEALTH AND EDUCATION

1. POPULATION PROJECTIONS FOR DISTRICT AND LOWER LEVELS

Dr. R. S. Kurup

Introduction

This is the era of projections (and predictions too; projections, demographic, statistical, economic and what not, all topical adjectives. "The time has come" the Walrus said, "to talk of many other things—of ships and shoes and sealing wax, of cabbages and Kings. And why the sea is boiling hot and whether pigs have wings" (Lewis Carrol, through the looking glass)

With the emphasis on district planning and planning at the grassroot level, estimation of future population for sub-state areas is assuming importance. Population being the fundamental variable in all developmental equations, the knowledge of its future behaviour is of utmost importance. In India we usually deal with projections for the State, zones and the country following the component method of projections and though rarely, the logistic and other mathematical formulations. This paper attempts to examine the feasibility of providing population projections at the District level and Block level for the State of Kerala.

2. Availability of Information on the Population Variable

Population change is brought about by fertility, mortality and migration. Data on fertility and differentials are provided by the sample registration scheme, the contribution of demographic variables alone having been included in the same, apart from special and secular trends. The recently conducted study on determinants of fertility change in Kerala sponsored by the World Bank in the three districts of Alleppey, Ernakulam and Palghat provides a wealth of information on fertility differentials by agro-socio-economic variables besides demographic variables. If one can find out districts, similar to the three, it would be possible to use the data for projections of the population of other districts. The surveys for evaluation of family planning programme in the districts and the special demographic surveys in some of the districts throw out a lot of information on fertility which can be profitably utilised.

There is a time series on registration of births and deaths which yields figures by districts and lower units; these are not utilised for any useful purpose now except for some studies on trend and seasonal variation. One of the defects of these figures is that they do not provide a complete record of births and deaths. The Department is however conducting spot

checks in municipal areas which give an estimate of under-registration. The registration is de facto while for purposes of projection, de jure rates are necessary; this is also taken care of in the municipal areas where the events and rates of events to normal residents are worked out. In the rural areas of the districts, the sample registration data can be used to provide a correction factor. It may be argued here that the sample registration scheme provides estimates only for population groups and natural divisions. But it is possible to work out multipliers for each sample so that district estimates can be obtained. This is being done. If, however, one wants to provide fertility and mortality hypothesis, age-sex specific rates have to be obtained. For this an assumption that the original registered data suffer from incompleteness in the same proportion in the districts and lower units is necessary. This is a workable assumption though not quite true to fact. A way to get over this is get the age-sex distribution of the unregistered events also from spotchecks. More will be said about this while dealing with the methodology of projections.

The most important source of data is the decennial census of population. In some of the censuses details of births and deaths have also been collected on a sample basis. These will also provide necessary data for forming fertility and mortality hypothesis.

A neglected factor of demographic thinking is migration which has assumed enormous importance in recent years in Kerala. The 1981 Census count has shown beyond doubt the importance of this demographic variable. As against the projected population of 260.63 lakhs in Kerala, the Census showed only 254 lakhs; the difference is due to intercensal migration. Though the break-up of the migration stream will be available, it is not known how accurately the age sex composition can be obtained. The data can however be supplemented by information provided in a recent survey on employment and housing conducted by the Department. The details of migrants are available in the original schedules which are preserved in the district offices. These, it is thought, will provide a basis for forming a migration hypothesis at the district and lower levels though much thinking has to go in for forming a future strategy regarding the migration hypothesis which will have to take into account not only "the push" but also "the pull" forces of foreign countries as well as Indian States. Unlike in other States, the inter-District and rural-urban migration in Kerala in recent years is only

marginal. Except for Cochin, no other area is having any potentiality to attract unemployed youth and there is not much scope in the coming years also. The flow to Malabar areas especially to the hilly and uncultivated regions has also shown recessiveness. Any industrial or economic activity attracting people from outside the district is inconceivable now, as in each district there are lots of educated and uneducated unemployed.

3. The Methodology of Projection

One method of projection which is used by demographers is the component method of projection. In this method fertility and mortality hypothesis are framed for each component of population based on the knowledge of the phenomena as also their future behaviour as could be assessed from trends in the associated and causal variables. The hypothesis of migration will also have to be made in the present context of Kerala. Separate projections of males and females will have to be made. Short-term projections of district populations can be made by utilising the vital statistics data supplemented by corrections based on spotchecks. In the latter, the events that occur to normal residence both inside and outside the area of the survey will be enumerated. The events to normal residence as per registration records, will be separated out and compared to those obtained through spotchecks to find out the rate of under-registration. The percentage of events occurring outside can also be obtained.

Using the age-sex data thus obtained, age-specific fertility and mortality rates can be found out. The hypothesis for projections should also be based on the future targets of family planning and health measures to the extent that they are fulfilled.

If the number of samples under the sample registration scheme can be augmented to have a minimum 20-30 samples in each district with a population of 1500 in each sample, district-wise estimates of fertility and mortality rates can be framed with enough accuracy. A thorough study on migration in these samples will provide enough data for forming hypothesis on migration.

Another method suggested here is the use of the projected State population. The trend in the ratio of the population of a district to that of the State as a whole for the previous census years can be projected to the future. The projected population of the district will be obtained from that of the State by adopting the projected trend in ratio. Here birth and death rates are not necessary at all.

The method mentioned in the U. N. Manual, 8, on projection of urban and rural populations can also be adopted. The growth differential between the district under consideration and the rest can be worked out and the logistic transformation can be obtained. The assumption is that the growth

of a particular district is influenced by the population in the adjoining districts just as urban areas gain population from adjoining rural areas. Districts showing higher growth rates gain population from those which lose population. If this logic is accepted, then the growth differential method can be used for projection.

There are methods of projection like mathematical methods, symptomatic method etc. which are not mentioned here. The methods already mentioned take into account all the available data on population. These are being tried at some of the population research centres including the one in the Department of Economics and Statistics, Kerala State. It may be mentioned here that the projections for the districts of Kerala will have to take into account the pattern of out-migration to outside India as a special case.

Nothing can be said about the efficiency of these methods at the present juncture, though some preliminary projections have been attempted by the Registrar General for some of the States. It is however seen that the projections for the districts of Kerala for 1981 based on the figures in the earlier censuses show very wide variations in respect of some districts. As is known, the pattern of growth of population in the districts in the Travancore-Cochin area except Idukki District differs from that in the Malabar area, where the growth is comparatively more in the recent decade and is likely to be so for some more time in view of the fall in the death rate; in the Travancore-Cochin areas this happened before 1971 for a number of decades and now the death rate having already reached a low level, whatever reduction in birth rate is there, is fully reflected in the growth rate.

4. Trend in State Population Growth and Plausible Hypothesis.

The population of Kerala has already started showing a declining trend in growth during 1971-81. The decennial growth was 19% giving an annual geometric growth rate of 1.7%. Here though fertility decline was one of the factors, migration also played an important part. But for migration, the population in 1981 would have been 260 lakhs or more. Birth rate has declined to 25 per 1000 in 1978; in 1979 and 1980 the trend is one of stability though the rate in 1981 has shown a decline to 24 (provisional). With the increased acceptance of family planning methods, the rate will come to 15 per 1000 by the next decade, when there will be only 2 children on an average to a couple. The contribution of family planning in reduction of birth rate is nearly 65% and that of increase in age at marriage and change in marital status distribution 35%; it may be borne in mind that age at marriage of females cannot increase indefinitely having reached 22 by now and hence future declines in birth rate have to

be accounted for mostly by family planning practice. Because of increase in years of schooling, the effect of health, land reform measures, cost of rearing of children, unemployment (the male should be employed by the time of marriage) housing problem, dowry problem etc., there will be increased acceptance of family planning and slight increase in age at marriage. The attitude of the young girls is also conducive to acceptance of family planning and limiting the number of children. With two child families, the replacement of population will be fulfilled. But as time passes the family size norm will still undergo changes and in about 2 generations (60 years as of now) the norm that is being propagated in China, of one-child families will be accepted; the birth rate will then be 8 varying upto 10.

On the side of mortality, even now Kerala has reached a low level of death rate, 6 per 1000 and an infant death rate less than 50 per 1000 live births. There are the fatal diseases of cancer, heart diseases, T. B. etc., for adults while diarrhoeal diseases take its toll from children. It would be possible to control the deaths from these to some extent but death rate may not fall much below 5 per 1000. During this period the expectation of life at birth will increase from 61 and 64 years for males and females respectively as observed in 1978 to 76 and 80 by the turn of the century. It is likely that death rate will thereafter increase to the range of 8 to 10 as the old people will have to die eventually.

A stage will then be set for an equality of rates 8-10 of births and deaths, so that the rate of natural increase will be zero. This will happen most likely by the middle of the next century. The population will be stationary thereafter.

What has been said in the previous paragraphs are the best predictions based on the data already available. In the meantime, these can be the hypothesis or even targets for future work. How far such hypothesis can be framed for districts and rural areas depend upon availability of data and a thorough analysis. The population projections will however, require information on fertility, mortality and migration for all the intervening years so that the hypothesis can be tested and put to proper use. In the future years, it is necessary to know the blocklevel statistics on births and deaths by improving vital registration. The decennial censuses should attach more emphasis to collection and compilation of migration data not only by place of birth statistics but actually enquiring with the households about migrants, their age-sex status destination and purpose. The details of in-migration to Kerala should also be collected. The gaps in population statistics especially as regards the demographic variables should be filled in at the earliest on a regular basis. Attempts should be made to frame district level estimates of birth and death rates from sample registration.

Limitations

The author has not listed the references here, this will be done when the paper is to be published, if at all it is accepted for publication. It has not also been possible to include all methods of population projections, thinking that most of these will not be useful for sub-state projections. There may be a test-tube baby boom in place of baby boom which was there in the developed countries after the Second World War. Perhaps the role of women in reproduction may undergo changes, which are also not considered in the paper.

2. DATA BASE FOR THE STUDY OF GROWTH AND STRUCTURE OF POPULATION OF KERALA

R. Ramkumar

The relevance and utility of information on the size, structure and distribution of population in developmental planning and administrative decision making need no elaboration. At a time when the adverse consequences of uncontrolled growth and unfavourable composition of populations on the social and economic fronts are being increasingly realised, no Government or agency involved in the collective good of the people can ignore the need for current, accurate information on the different aspects of demographic change and the underlying causes thereof. All modern nations collect demographic data periodically or otherwise to meet the growing demand not only from the Government but also from several other agencies including commercial concerns. The census, civil registration, several forms of official statistics like the school enrolment, electoral rolls and taxation registers, and sample surveys provide much of the needed data.

The direct information needed to study the size and structure of population are provided by the Census and Vital Statistics, and occasionally by specific sample surveys. In Kerala, as in India, the only main source of information available is the Census. The Vital Statistics system is not yet well organised as to provide the needed data on births and deaths. However, the Sample Registration System fills this gap to a certain extent.

The purpose of this paper is not to analyse or assess the procedure adopted and the quality of the data collected by these agencies. The intention here is to indicate the gaps in the total data system and the inadequacies that make it difficult for a researcher to derive continuous and comprehensive pictures of the changing demographic profile of Kerala, with the available data.

Types of Information needed:

The demographic data usually needed to study the growth and structure of population are:

1. Population size—from State level upto the smallest areal unit
2. Distribution by age, sex, marital status.
3. Number of births and deaths for specific periods like an year, at all levels right from the smallest areal unit, and details relating to the events.
4. Volume of displacement of population with details of the places of origin and destination and characteristics of the migrants.
5. Households—size and type

6. Details on the size and characteristic of specific groups like working population, school going population, etc.

Sources:

The main sources of data on size and structure of Kerala's population are the decennial census and the sample Registration System. Vital Statistics Registration System does not publish regularly data on births and deaths. The National Sample Survey covers the State, but results of several rounds are yet to be released.

Kerala has a record of continuous Censuses from 1871, noted for efficiency and fairly high precision. The final results on the size and distribution are made available within a few months by the recent Censuses, but data on population composition are published much later. Data on migration are given low priority in the publication scheme of the Census.

The Sample Registration System covers the State, both rural and urban areas, on a sample basis. Though certain inherent biases are possible, Kerala data have been found consistent and results of other independent sample surveys show that SRS data of Kerala are reliable. When compared to the rest of India, the quality of the SRS data of Kerala is fairly high. The SRS publishes the birth and death rates without long delays.

Inadequacies in the data system:

1. *Boundary Changes:*

The first and foremost difficulty in studying the size and structure of Kerala's population particularly of its sub-regions is created by the several changes in the political boundaries that occurred between Censuses. The first enumerated population for the State as it is at present was the one of the 1961 Census. For periods prior to 1961, we have only estimates arrived at by adding and subtracting populations of areas that were added or separated during the State Reorganisation in 1956. This approach does not appear to be perfect, as we find different estimates for the earlier periods. Although the differences between the estimates are not very wide, the choice of an appropriate figure is a problem for the researcher.

Unlike the States like Punjab and Assam Kerala's State boundary remained unchanged since 1961, except perhaps for minor changes due to surveying errors. But during the decade

1961-81 new districts were formed and consequently the neighbouring districts and taluks underwent boundary changes. New Districts were formed not by grouping the defined taluks of earlier Censuses but by cutting across villages and taluks and piecing them together, so much so that they lost comparable population figures of the previous Censuses. And adjustment of population as was done in the case of Kerala cannot be attempted.

The procedure adopted however, to obtain comparable data of previous decades was to evolve some multipliers based on the size of area and density of the regions that were transferred from one district to another. As density of population is not uniform over space—definitely not between rural and urban areas,—the multiplier method is a crude approach. Its serious limitation is that the same multipliers were to be used to arrive at population by characteristics also. Despite the knowledge about the inappropriateness of common multipliers, the 'comparable' figures are calculated using them because there is no alternative method except to repeat the counting using the original slips of the previous Censuses, if they are available. The loss of comparable data for districts and taluks makes the result of any study on trends questionable and consequently regional planning and comprehensive area development cannot be based on correct information. That new districts are continuing to be carved out of existing ones, creates a sense of helplessness in the user of demographic statistics. As political boundaries may continue to change in the future as well, it may be advisable to form Statistical Areas, with fixed boundaries to collect and report data.

2. Civil Registration

Efficient civil registration system that is complete as far as reporting is concerned exists in all societies where the level of education of the people is high. And so, there is no reason why Kerala should not have one. Kerala's Civil Registration is below expectations and below par when compared with the other states of India. It is unfortunate that this system has received only minimal attention in spite of the fact that many decisions regarding the distribution of welfare facilities like schools and hospitals, are to be based on regional birth and death statistics, if objectivity is a criterion.

Presently the information on birth and death rates are obtained from the Sample Registration System. The sampling plans restrict the system to publish the rates at the State level only (rural-urban classification is also available). District level rates are not published. It has to be explored whether any attempt at it could provide reliable figures. Success is doubtful because the small sample size at the district level would tend to enlarge the standard errors of the estimates.

There is no alternative to Vital Registration System and it is high time that we improve its

coverage and efficiency and get the data on births, deaths and marriages published periodically and regularly for areas upto the lowest unit. NSS and SRS data are expensive and at the most are only estimates and are not helpful for studies at the lowest areal unit.

3. Current Population Studies

Census counting occurs once in ten years and information for the intercensal period is usually estimated on the basis of certain assumptions on the course of birth and death rates, drawn from the experiences of similar population of the past or on the basis of some indirect evidences such as school enrolment or electoral rolls. Birth and death rates may fluctuate and internal migration could offset regional balances. Interestingly these changes are intimately related to economic conditions. "Echo-effects" of past changes also can occur during the intercensal periods. Direction of migration may change suddenly to create housing and commercial problems. If not adequately warned sufficiently early, the reliefs to such situations can reach only after the harm has been done. Periodic information is therefore *sm qua non* for administrators. At present although the NSS aims to provide the needed information its voluminous data do not get analysed in time due to inadequate infrastructure to handle them effectively. Small scale regional sample studies conducted over short periods on problems of current and local interest alone can fill the gap. Such studies are common in almost all developed countries. The current population survey of the United States is an excellent example to cite. For instance long before the 1980 census they knew, thanks to CPS, that new streams of migration have started towards the sunny South. This process of information not only helped the administration and commerce but also the local bodies to get prepared to receive or resist the new-comers. The 1980 Census too was planned taking this new change into consideration. It will be very helpful if we too, can have a similar arrangement in Kerala.

4. Sampling frame

A serious handicap a researcher now finds is in constructing a sampling frame. Despite the large data available, record keeping appears to be inadequate so much so that for selecting a sample a researcher will have to conduct a preliminary survey to prepare a sampling frame. If stratification is an essential requirement of the study, then the problem gets further complicated. The census houselisting is confidential. The only records usually available are registers of houses maintained by local bodies. For example, the best variable to classify households on the basis of socio-economic status will be the rental value or the assessed tax as per the municipal/panchayat records, although we know that this information is poorly correlated with the real socio-economic status of the occupants. The problem of constructing a sampling frame

becomes more difficult if other unrecorded characteristics are the criteria. For instance, for constructing a frame of scheduled castes of an area a preliminary survey alone can't identify the households. A system of household listing that will be current, is a need. It may be advisable to have a sample survey agency to look after such needs.

5. *Change of Definitions*

Change of definitions between censuses and lack of uniformity among sample studies often leaves the data useful only on a current basis. Definitions of urban areas, workers, etc., have undergone changes at every Census. The Census usually publishes figures adjusting for definitional changes. But as cross classifications are not made available, structural changes over time cannot be easily understood. This defect may continue in the future Censuses as well.

6. *Data on Caste*

Data on certain crucial variables are not collected for reasons other than scientific. For instance caste is an item not included in the census and so no tables are available with caste as a variable since the 1941 census. But sample studies have shown that caste distinctions are manifested in the differentials with respect to most of the important variables like, births and death rates, school enrolment rates, labour force participation rates, etc. It is surprising that caste is not included for secular reasons for data collection while in every aspect of life, whether it be Public Service Commission appointments or admissions to professional colleges, caste considerations exist. The information on caste if included in the Census, would be used only for statistical purposes but the usefulness will be very high. For instance, identification of needy sections would be easy and the progress of their development could be watched and assessed objectively. As legal restrictions prevent the State from gathering information on Caste, it may be appropriate that independent agencies be requested to explore the possibility of conducting statistical studies on caste differences.

7. *Working Population*

Keeping the population employed in some economic activity is an essential responsibility of any Government. At present we do not have any reliable source to watch the employment/unemployment rate of the state. Both the numerator and the denominator of the rate, namely the number of employed-unemployed and the population of the working age groups are unknown. The information available at the employment agencies plus sample surveys to obtain independent estimates of size of the actual

labour force could help us to understand the dimensions of unemployment and its nature in the State.

8. *Population Projection*

Some of the difficulties enumerated above may not be seriously felt when dealing with current problems. But when one tries to assess changes in the past in order to draw lessons for the future, the helplessness is keenly felt. Often one is left with no basis to assume future trends. For example what would be the possible number of school entrants for the next 10 years for the taluk of Kerala? We have, no information on the age-sex distribution at taluk levels. Also, no reliable estimates of the birth and death rates of the recent past exist. Further, Kerala is a State where inter-taluk migration is not negligible. But we have no system to gather information on migration. Under these circumstances any estimate of the demographic parameter at best could only be guesses. Therefore, as subjectivity will reign dominant in such exercises, projected population figures will have only limited credibility and will have to be taken merely as indications of future trends, rather than basis for action.

It is unfortunate that population projections cannot be attempted with confidence for the State especially for its small sub-national areas. How can planning for the future succeed without reliable projected population figure? Perhaps, it is for this reason that urban planning does not make an impact on urban life, housing colonies get established in already crowded areas, and schools and colleges get located where people wrangle for them.

General Suggestions:

Voluminous data get collected and much of them are published too. But due to certain gaps and inadequacies, their utility gets reduced leaving a feeling that data are collected because they have to be collected. Through judicious considerations and scientific assessment of needs and objective planning of analytical possibilities, the quality and content of demographic information of this State can be improved. Data delayed is equivalent to no data. Let sample sizes be reduced if processing and publication are likely to be prolonged. Computerisation is again, a technological development which handles big jobs within short periods and is an inevitable innovation that cannot be ignored. Increased use of computers must be planned without any further delay in order not to waste the information we already have. Finally, R & D programmes could help to improve the quality of data in the long run.

3. POPULATION STATISTICS

M. K. Bhaskara Pillai

1. Introduction

Planning for economic development requires the details of population statistics. In all the sectors of economy viz. Primary Secondary and Tertiary sector, population statistics is essential. Statisticians, Economists, Scientists, Educational Statisticians, Health Statisticians and other scholars requires population statistics for their use. Morbidity and mortality statistics is essential both for launching public health programmes and for the appraisal of the impact of public health measures. Even for the public population statistics is useful.

In order to collect population statistics the main source is conducting census in almost all countries once in ten years. The data so collected are used for different purpose during the intervening period also. The expert committee on population will prepare projected population.

It is seen that census had a long tradition. The Babylonians had instituted a system of revenue returns before 4000 years which was developed into an efficient machinery for the estimation of their wealth. Similarly the Egyptians had introduced the collection of labour statistics between 2900 B. C. and 2750 B. C. The king David of Israelites ordered the population census in 1000 B. C. to 973 B. C. Greeks and Romans had under taken the census periodically in ancient time. In India also the rough census of population called Khanashumari was taken under the Indian Princes. The census in the components territories of Kerala was conducted along with Madras State in about 1687. There after the Census were conducted in 1802, 1822, 1826 etc., till the first imperial census of 1871. The first census of former Travancore State was in 1816 to 1820. There after regular census in Travancore State was conducted in 1836, 1854 etc., until the first imperial census in 1871. The census of 1981 is the 12 decennial census of India and 4th one after independence and in the case of Kerala this is the 3rd census after the formation of Kerala State.

2. Indian Census

In India the first census was conducted in 1872. From 1881 India had regular censuses in every ten years. The last census was conducted on first March 1981. Prior to 1961 census there was only limited staff for attending the census work. From 1961 census onwards the staff strength was increased and more details were collected. For the purpose of conducting the 1981 census draft questionnaires were developed on the basis of

past experience, current needs and International recommendations, suitable modifications have been made in the questionnaires on recommendation of the data uses. The final questionnaires were 1. House list, 2. Household scheduled, and 3. The individual slip. The details as per these schedules were collected and census conducted throughout India.

The Provisional Population figures of India as on first March 1981 was 683810051 consisting of 353347249 males and 330462802 females. The Decennial population growth from 1971-81 was 24.75% (absolute figure 135650399) and density of population was 221 per Sq. K. M. The sex ratio was 935 females per 1000 males and the literacy rate was 36.17% while 46.74% was for males and 24.88% for females. In addition to this several population statistics relating to different states and union territories were published. The final population statistics for 1981 has not been published yet.

The growth of India population during the decade (in percentage) and the growth rate over 1901 are as follows:

TABLE I

Year	Growth of Population Population	Percentage decadal growth ratio	Percentage Progressive growth rate over 1901
1901	238396327	..	..
1911	252093390	+5.75	+5.75
1921	251321213	-0.31	+5.42
1931	278977238	+11.00	+17.42
1941	318660580	+14.22	+33.67
1951	361088090	+13.31	+51.47
1961	439234771	+21.31	+84.25
1971	548159652	+24.80	+129.94
1981*	683810051	+24.75	+186.84

* Provisional

There was growth in population except a slight fall in the decade 1911-1921. The percentage of increase was higher from 1951-61. The percentage of growth rate during the decade 1961-71; and 1971-81 is seen to be nearly equal. The overall* percentage of growth rate over 1901 has been 186.84. India has the second largest population in the world. In case of Kerala State the decadal growth rate during 1971-81

* Progressive

was less than Indian growth rate during 1981. The decennial growth rate for Kerala was 19% during the decade 1971-81.

3. Census in Kerala

Along with the 12th decennial population of India-Kerala State had conducted its 3rd population census on first March 1981. It is seen that the first census of Travancore and Cochin conducted from July 1816 to the end of 1820. In the Travancore State Census was held in 1836 and 1854 while in Cochin, it was conducted in 1820, 1836, 1849 and 1858. The census was conducted in 1875 in both the States. In the Malabar district and portion of south Canara district the census was conducted in 1822 and 1836. It was followed by quinquennial returns in 1851-52 1956-57, 1961-62 and 1966-67. In 1871 census was conducted in the Madras presidency. The census was conducted in the State from 1881 onwards along with the all India census. In order to conduct the census in 1982 preparations were made from 1974 onwards. Based on the experience gained from previous census and from some pilot studies and under the guidance of the census commissioner, 1981 census was conducted. For conducting the study the schedules House list, enterpricelist, Household schedule, individual slip (universal) and individual slip (sample), were canvassed. The details were collected in these schedules and provisional figures have been published.

According to 1981 census, population of Kerala was 25403217 consisting of 12487961 males and 12915256 females. The decadal population growth during 1971-81 was 4055842 (19%). In absolute terms the population growth during the decade 1971-81 was 4055842. The density of population was 654 persons per sq. k. m. As regards the sex ratio there were 1032 females per 1000 males. The literacy rate during the period was 69.17%. The literacy for male was 74.03% and that for females was 64.84%.

The growth of population of Kerala from 1901 and the decadal growth rate are as follows:

TABLE II
GROWTH OF POPULATION

Year	Persons	Male	Female	Decadal increase(%)
1901	6396262	3191466	3204796	..
1911	7147673	3559125	3588248	11.75
1921	7802127	3879458	3922669	9.16
1931	9507050	4702951	4804099	21.85
1941	11031541	5443296	5588245	16.04
1951	13549118	6681901	6867217	22.82
1961	16903715	8361927	8541788	24.76
1971	21347375	10587851	10759524	26.29
1981*	25403217	12487961	12915256	19.00

* Provisional

It is thus seen that the population of Kerala has been growing rapidly in recent years. During the 40 years period from 1901-1941 the population of the State almost doubled from 63.96 lakhs to 110.31 lakhs and almost doubled again in the next 30 years reaching 213.47 lakhs in 1971. According to the census conducted in 1981 the population (provisional) increased to 254.03 lakhs.

Though the area of the state is only 1.18% of the Indian Union its population from 3.71% of the Indian Population according to 1981 census. The high growth rate of population in the state has its impact on the density of population. The Pressure of population is highest in Kerala when compared to other States of the Indian Union. The density of population of the State was 654 persons per Sq. K. M. in 1981 as against 549 in 1971. The density of population was highest in Kerala in Alleppey district (1241) and lowest in Idukki district (192) during 1981.

A peculiar feature of Kerala's sex composition is that in all the census periods from 1901-1981, females out numbered males, while opposite is the case with most of the other Indian State. The sex composition has an impact on the characteristics of population with regard to birth, death, marriage etc. In 1981 census the sex ratio of the state was 1034 females per 1000 males, while during 1971 the sex ratio was 1016 females per 1000 males. The corresponding figure for all India was 935 during 1981. within Kerala, Trichur district has the highest sex ratio (1102 females per 1000 males) and Wynad district has the lowest (922 females per 1000 males). The literacy of the State is very high among the Indian States. According to 1981 census the literacy of the State was 69.17% as against 60.42% during 1971. The male literacy rate was 74.03% in 1981 and female literacy rate was 64.48%. During 1971 census the male literacy rate was 66.62% and female literacy rate was 54.63%. The all India literacy rate during 1981 was 36.17% of which 46.74% was male literacy and 24.86% was female literacy.

The Population in the urban area during 1971 census was 16.24% which increased to 18.78% during 1981. India's urban population has increased from 20.22% in 1971 to 23.73% in 1981.

4. Vital Statistics

Census is conducted only once in ten years In order to get birth rate, death rate, Infant mortality rate etc., Vital Statistics is being collected in the State through the civil registration under the registration of birth and death act 1969 At present the Director of Panchayat is the Chief Registrar of births and deaths in Kerala and the Additional Director (General), Director ate of Economics and Statistics is the Additional Chief Registrar. The Panchayat Executive Officers and Commissioners of Municipalities and Corporations are the local Registrars for the purpose of the civil registration in respect of Panchayat and Municipalities/Corporation

respectively. The local Registrars furnished the periodical returns on birth and death events in the prescribed forms to the Directorate of Economics and Statistics. The data so collected are analysed by the Directorate and reports are published. The periodical monthly return of

advance summary figures on births and deaths are sent to the Registrar General of India.

On the basis of the data received from the various local registrars the results of births and deaths rates from 1974 to 1977 are as given below.

TABLE III

	1974		1975		1976		1977	
	Birth rate	Death rate	Birth rate	Death rate	Birth rate	Death rate	Birth rate	Death rate
Kerala Total	20.41	4.91	22.42	5.56	21.78	5.49	19.93	4.29
Urban	48.20	9.06	52.24	10.26	50.62	10.30	48.72	9.49
Rural	16.69	4.91	18.42	4.93	17.89	4.84	16.02	4.16

The registration system of the state is incomplete. In the case of infant deaths still births and maternal deaths the coverage is far less. Therefore considerable efforts have to be made to stimulate and encourage compliance with the compulsory registration law.

5. Vital Statistics in Municipalities

As stated above the data on Vital Statistics are deficient in many respects. The events that occur in a town may not relate to the normal residence of the town. As a result of good number of events of rural population which occur in urban hospital are reported as urban events. Therefore a system of spot check is introduced in 3 Corporations 30 Municipalities and Gurusvayoor Town Ship in the State to estimate the correct residential vital rates taken into account the extent of under registration and the extent of events occurring outside.

6. Model Registration of Cause of Death

For the improvement of the Vital Statistics model registration survey of cause of death in rural areas has been introduced in the State in May 1965 in 18 Primary Health Centres. The scheme was extended to 36 Primary Health Centres in the State during 1978. *For this 40 head quarters villages are selected. Since the village are large a population of nearly 2000 is earmarked for the work. Data on all births, deaths and cause of death occurring in the village has to be submitted in the prescribed form to the Directorate of Economics and Statistics. The Medical Officer is to ascertain the cause of death per ten per cent of deaths every month. The data so obtained are sent to the Registrar General of India, New Delhi and reports are issued periodically.

7. Medical Certification of Cause of Death

Another scheme for Medical certification of cause of death has been introduced in the state by the Registrar General of India with a view to get reliable and accurate statistics on cause of death which occurred in 94 hospitals in 3 Corporations and two municipalities in the state during 1969. 11671 deaths have been certified during 1978. The cause of deaths certificates received from the Medical institutions are scrutinised and cause of death identified and coded by the Deputy Health Officer. Reports for the medical certification of cause of death is being proposed by the Directorate of Economics and Statistics. These data are very useful to identify the major cause of death and to take necessary steps to stop such diseases.

8. Sample Registration

In order to get reliable estimate of births, deaths and growth rate of population sample registration scheme was introduced in the state. The Scheme was necessitated due to the continued incompleteness and also due to the fact that under civil registration births and deaths are registered at the place of occurrence, there by rendering estimate of birth and death rate to usual residence in the particular area is possible. The scheme is in operation in all states in India under the direction of the Registrar General of India and in Kerala the full scheme is in operation from 1-7-1965.

In Kerala the survey in the rural sector is being conducted by the Directorate of Economics and Statistics while the Urban sector it is carried out by the census department of Government of India. For conducting the survey 150 rural samples have been selected by the Directorate of Economics and Statistics. The villages

in natural region viz. lowland midland and highland were stratified into 4 types according to population below 500, 500-999, 1000-1999, 2000 and above and the number of samples were allocated to different strata in proportion to the total population.

A complete census of all the persons with in the sample is being collected. Enumeration of births and deaths occurring to normal residence with in the sample area and also to visitors is done (by the enumerator). At the end of each half the age residential status and marital status on the age residential status and marital status on each and every person and symaltaniously preparing all the births and deaths that occured in the sample area by another persons. (Computer Supervisor). These lists are compared and finalised by the Additional District Officer (Economics and Statistics) supplementing the same by the births and deaths omitted by both of them. The finalised list are sent to the Registrar General. The annual report for the rural area of the State is prepared by the Directorate of Economics and Statistics. The crude birth rate, death rate and infant mortality rate of rural area of the State for the last 4 years are as follows.

TABLE - IV

CRUDE BIRTH RATE AND DEATH RATE
INFANT MORTALITY RATE FOR THE
YEARS 1977 TO 1980

Year	Birth rate		Death rate		Infant mortality rate
	Kerala rural	All India rural	Kerala rural	All India rural	Kerala rural
1977	26.2	34.3	7.3	16.0	50.7
1978	25.8	34.7	7.2	15.3	44.8
1979	26.8	35.1	7.2	14.1	48.5
1980*	26.9	35.1	7.1	13.7	42.5

*Unpublished and provisional for Kerala

It is thus seen that the sample registration data is more reliable for birth rate, death rate, infant mortality, estimated population for each year etc.

9 Population Research

The population of Kerala is growing rapidly. In order to check the population growth Family Welfare Programme has been introduced in the state from 1955 onwards. The ultimate object of the programme is to bring about a reduction in fertility and hereby the rate of growth of population. In order to achieve this objective apart from family welfare programme we have to bring about social and Economic development of the people. From the inception of the programme till the end of June 1982 a total number of more

than 16.8 lakhs sterilisation and more than 4.3 lakhs IUD incertions have been done in the state. Of the total number of eligible couples in the state about 35% of the couples have been protected by the different methods of the programme and birth averted by the above programme till the end of June 1982 was about 26 lakhs. The population Research Centre of the Directorate of Economics and Statistics is conducting various population research studies in the State.

10. Conclusion

It is seen that population statistics is essential in all the sectors of our country. The planners require population statistics in all fields. The scientist in the field of education require age-wise population statistics. Planners in the agricultural field require population statistics in the agriculture sector. Similarly for Health, Industry and other fields population statistics is a must. The population statistics through the census is available only once in ten years. For estimating birth rate, death rate and the annual estimation of population we have to depend on sample registration data. The civil registration data is in complete due to illiteracy of the people. The majority of population in the rural area are agriculturist and have lack of knowledge about civil registration. Therefore the efforts should be made to make the people knowledgeable about civil registration. A state level co-ordination committee has been constituted for ensuring proper co-ordination and smooth functioning of the registration machinery Government have also constituted district level committee for evaluating the progress of civil registration. The compulsory production of birth certificate at the time of admission in school may also be introduced. *The sample registration data was also utilised for the census evaluation study using the data from the 1971 census. The studies of related the estimation of the extend of under enumeration of the census of younger age group (0-4 years) and extend of age distribution of these age these estimates were required for smoothing and adjustment of age data for preparation of life tables.

Registration of births and deaths was viewed in the past as of relevant of public health administration alone. In the wider context of dynamics of population growth is over looked by this view. The Registrar General of India took into consideration this long term aspect of process of improvement of civil registration system and immediate needs of vital statistics. The measures taken for the improvement of civil registration system were strengthened and several measures are introduced for improving the system throughout the state. The same registration system has been established and it is the main source of reliable data on mortality and fertility rate. The scheme model registration has also been providing useful data on cause of death. However improvement of civil registration is the most important for the purpose of planning and administration.

*The certification of cause of deaths should also be pursued

4. HEALTH STATISTICS IN KERALA

P. G. K. Panikar

1. Introduction

The need for health statistics has always been there. Health administrators require the relevant information to guide their planning and to evaluate the effectiveness of their services. The case for health planning and weighing of alternative strategies to maximise the cost-effectiveness of medical care programmes have become more imperative with the latter claiming an ever increasing share of the national income of all countries, irrespective of the institutional arrangements for the delivery of the services. These in turn call for more detailed data. On the other hand, health statistics has remained a comparatively neglected area till recent times.

"The crucial and complex subject of statistical information often suffers from neglect of those whose chief motive is treating the sick, performing laboratory and clinical research, or providing technical advice and instruction. More significantly, the collection, dissemination and utilisation of health data are sometimes not considered matters of urgency, even by persons charged with administration of health services. Data cost money, and as with most other things, the higher the quality, the greater the cost. In developing countries, where the need for preventive and curative services is acute, and funds are perpetually inadequate, the amounts allocated for acquisition and flow of data must always fall short of requirements."¹

Health, as defined by the World Health Organisation, "is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."² In this wide connotation, health is a non-quantifiable concept. However, as an approximation, we may identify three sets of data which either reflect the health status or influence it. First, health status is generally reflected in the level of nutrition, rate and pattern of morbidity and mortality; thus health indicators such as types

of diseases, their rates of incidence, and the general and age-specific mortality rates represent one set of health statistics. The various physical and environmental factors such as housing, water supply and sanitation determine the health status; and information on these health-governing factors comprises the second category of health statistics. Thirdly, health care facilities and their utilisation, health man power and their distribution, supply of drugs, financial allocation to health services, etc. contribute to the health status. Data on these items constitute the third category.³

Health statistics in India was one of the main themes of a recent seminar—The fourth in the series under Data Base of Indian Economy—Jointly organised by the Indian Association for the Study of Population and the Indian Econometric Society. The papers presented at the seminar covered a wide range of topics such as morbidity statistics including communicable diseases, mortality and causes of death, nutrition, hospital statistics, etc.⁴ The sources of available data and their lacunae in terms of coverage and reliability were examined in depth in these papers. A case study of Kerala presented at that seminar examines the data position in this State, its coverage and reliability.⁵ In the following we will attempt to take a closer look at the health statistics of Kerala.

II. Scope and Limitations of the Data

(a) Population and Vital Rates

Needless to say, data on the size and composition of the population, its distribution according to age, sex and rural-urban areas, which are required for health planning, are available for Kerala, as for other States, in the decennial census reports. Statistics on vital rates like births and deaths are collected under the Sample Registration System (SRS) and published quarterly in the Sample Registration Bulletin. The SRS data on birth and death rates in Kerala seem to be fairly accurate, as confirmed by the close conformity between the rates of natural increase in population derived

¹ Paul F Basch, *International Health*, Oxford University Press, New York, 1978, p. 167.

² World Health Organisation, *Official Records* No. 2, 1948, p. 100.

³ An exhaustive list of the categories of health statistics is given in the 18th report of the W.H.O., Expert Committee on Health Statistics;

See also Papov, G. A., *Principles of Health Planning in the USSR*, World Health Organisation, Geneva, 1971, p. 15.

⁴ Ashish Bose, et al (ed) *Social Statistics. Health and Education*, Vikas Publishing House, 1982.

⁵ P. G. K. Panikar, "Health Statistics in India: A Case Study of Kerala" *ibid.*, pp. 21-29.

from this data and the 1981 census results, though there is significant difference between the rates for some other States.⁶

(b) *Medical Care Facilities*

(i) Comparatively detailed data on the Government Medical Institutions belonging to the allopathic and indigenous systems like the number of beds, medical and paramedical personnel, etc., are readily available in the various official publications such as Statistics for Planning (Social Services), Economic Review, etc. The Five Year Plans and annual budget documents contain information on Government expenditure under medical and public health. The annual Administration Reports of the Health Service Department include data on the number of patients treated, and duration of illness of in-patients (in major hospitals), etc. Thus, one can get a fairly detailed picture of the medical care facilities in the public sector in Kerala. But, there is an equally large private sector belonging to the western and indigenous system of medicine. Details on the facilities, bed strength, personnel, the number of patients treated and their ailments, charges levied, etc. have not been collected.

(ii) While data on Government expenditure on medical and public health are published, that on private expenditure is not readily available. The NSS in its various rounds on consumer expenditure has been collecting household expenditure on this item also; however the data on medical expenditure is not usually included in the published reports. Unfortunately, this important item is clubbed together with various others under the 'miscellaneous' category. For the few years we could collect the relevant information, it was found that private medical expenditure was more than twice the Government expenditure. This would bring out the gravity of the omission.⁷

(c) *Morbidity*

(i) Obviously, the types of illness prevailing and their rates of incidence reflect the health status of a population. And, it is this set of data which continue to be the most unsatisfactory segment of health statistics. The two main sources of information on morbidity are statistics on the causes of death and medical records on patients treated in hospitals and other institutions. The cause of death statistics admittedly suffered from incomplete coverage and low

reliability. The system of civil registration has several loopholes such as under reporting of deaths, the short lists of diseases and their un-specific indications, lay reporting without proper guidance and instruction, etc.⁸ The Registrar General's Office has been conducting surveys on causes of death. However, the coverage is comparatively small—858 PHC villages in 1978, having a total population of 2.7 million—and of the total deaths reported under the scheme only a little over 7 per cent was medically certified.⁹ True, the Model Registration Scheme introduced since the mid-sixties on a pilot basis using the paramedical staff of the PHCs in the rural areas and guided by a manual of instructions marks an improvement over the former scheme of registration of deaths. But the scheme is yet to cover all the States, and the reliability of the information regarding the causes of death so far collected has been questioned.

"First, the PHCs, where the scheme is operative, are not at all representative of the States. Then, the coverage is doubtful as all events are not netted. As for the quality of data, the broad headings of the causes of death rule out specificity."¹⁰

(ii) Morbidity data on patients treated in hospitals and dispensaries of different States, classified in accordance with the WHO Intermediate List of causes, are published in the Health Statistics of India. The reported cases include only those in Government allopathic hospitals and dispensaries, and, evidently, the coverage is incomplete. Presumably, the PHCs are omitted. Further, in Kerala, the number of patients seeking medical aid in the private clinics under the allopathic system and those belonging to the indigenous systems of medicine should be equally large. As for the reliability of hospital morbidity statistics, researchers have expressed serious reservations. For instance, Ramachandran has pointed out:

"Proper maintenance and reporting of hospital statistics is an exception rather than the rule in the country. Even when data are reported, they lack quality and uniformity. A vast majority of hospitals lack a set-up for medical records, and hospital statistics are, therefore, neglected. Further, medical personnel do not generally appreciate the need for statistics in hospitals due to lack of proper orientation. In addition to these admini-

⁶ Pravin Visaria and Leela Visaria, "Indian Population scene after 1981 Census: A perspective," *Economic and Political Weekly*, special number, 1981, pp. 1739-1741.

⁷ P. G. K. Panikar and C. R. Soman, *Intersectoral Action for Health—Kerala study*, Centre for

Development studies|World Health Organisation, 1982 (unpublished), Chapter IV.

⁸ P. Singha, "Statistics on Causes of Death", Social Statistics Op. Cit. p. 94.

⁹ Registrar General's News Letter, Vol. XIII November 1 & 2, 1982,

¹⁰ *Ibid.*, p. 100.

strative difficulties, there are technical shortcomings. Uniformity in definitions to be used and procedures to be followed in compilation are absent. No manuals are available to the staff who are employed in collection and compilation of patient statistics."¹¹

(iii) Some data on communicable diseases such as cholera, gastro enteritis, small pox, leprosy, tuberculosis and sexually transmitted diseases are included in the annual Administration Reports of the Health Services Department. These statistics relate mostly to patients treated in hospitals and clinics catering to these infectious diseases and do not, therefore, fully reflect their prevalence rate. Reports on the occurrence of notifiable diseases and of surveys of communicable diseases are the other sources of data. The availability of statistics on communicable diseases has certainly improved in recent years though they need substantial qualitative improvement. The authors of a recent study on this problem sum up the situation thus:

"..... statistics on communicable diseases suffers from serious inadequacies. There is no correlation between various statistical indices, i.e. mortality rate, morbidity rate. Various statistical indices with respect to communicable diseases need to be evaluated in relation to growing population, environmental changes, socio-economic infrastructure and meteorological conditions. Data retrieval system is very poor. Processing of statistical data at the central level involves considerable delays."¹²

(iv) Under the National Sample Survey (NSS), data on morbidity were collected, on an experimental basis for testing methodology, from the seventh round to the thirteenth round. Though the data were tabulated, the results were not published in full. Presumably, the concerned authorities had some reservations. After a long interval, the NSS resumed collection of morbidity data in its twenty-eighth round (1973-74). The preliminary results published in their journal, *Sarvekshana*, (1980), contain state-wise data on the incidence and prevalence rates of temporary ailments and chronic diseases.¹³ It is interesting to note that the incidence and prevalence rates of temporary ailments as well as of chronic diseases in Kerala are far

higher than the national average, and also generally the highest among all the States. But it also deserves mention that more than half of the total incidence/prevalence of diseases in Kerala is under un-classified groups like "Others" and "not recorded". On the other hand, the incidence and prevalence rates of various diseases in relatively poor and backward State like Assam, Bihar, Madhya Pradesh and Uttar Pradesh are below the national average. Given the fact that the data have been collected by lay investigators, and the nature of the problem under investigation, one cannot rule out a significant margin of error. The likely errors in morbidity statistics collected by lay investigators and the hazards of using such data which are not examined or certified by competent pathologists or epidemiologists have been pointed out by some authors.¹⁴ The NSS organisation itself on an earlier occasion had struck a note of caution in using the morbidity data.

"It is felt that excepting sickness with clearly marked symptoms like smallpox, reliable information on the causes of sickness is difficult to obtain through lay interviewers. Even with medical investigators and detailed probes but without clinical and laboratory examinations, it has been seen from the West Bengal Health Survey that a high proportion of cases (56 per cent) is likely to be misclassified as compared to the actual hospital records..... Thus while reliable information on the demographic and socio-economic aspects of morbidity, for example, age, sex, days lost, expenditure on medicine, etc., could be collected through the interview survey, a diagnostic survey with a fully equipped team is required for clinical and laboratory examination to supply information on causes of sickness;....."¹⁵

(v) Another dimension of morbidity is the difference in the pattern of diseases and the rates of occurrence among different socio-economic classes. The available data do not enable one to get a perception of such differences. Admittedly, occupational hazards are a side effect of industrial development. But no attempt has so far been made to collect the data on the morbidity pattern of workers employed in different industries.

¹¹ Ramachandran, "Health Statistics in India - An Overview", *Social Statistics Op. Cit.*, p. 5.

¹² B. B. Gaitonde and D. M. Renapnkar, "Statistics on Communicable Diseases", *Social Statistics, Op. Cit.*, p. 178.

¹³ See for example: Mark Perlman, "Economic

¹⁴ See for example: Mark Perlman, "Economic History and Health Care in Industrialised Nation",

Economics of Health and Medical Care, Proceedings of a Conference held by the International Economic Association, (ed), Mark Perlman, 1974, p. 28.

¹⁵ Cabinet Secretariat, *The National sample survey, Report on Morbidity*, No. 49 Government of India, New Delhi, 1961, p. 55.

Conclusion

We have observed that there are several gaps in the health statistics. It was also noted that the quality of the available data leaves much to be desired. These perhaps reflect the lack of interest on the part of health planners as well as researchers. Generally, the quantum and quality of data improve in response to an increased use of the statistics. The persons in charge of collection, collation and dissemination of health statistics have to become aware of the uses to which the data are put, and of the shortcomings in the data. In other words there has to be feed back from the users of the data to the generators of the data.

We have noted that the most glaring gap in health statistics is in respect of morbidity. Both the coverage and quality of morbidity statistics have to be improved. Since Kerala has a wide net work of medical care institutions

in the public sector, and the rate of their utilisation is high, it should be possible to generate the necessary morbidity statistics of reasonable accuracy through toning up the process of record keeping and compilation at the institutional level. Sufficient home work has already been done with technical assistance from WHO in the development of appropriate formats for keeping medical records and their compilation. True, these would cover only part of the population who resort to Government allopathic institutions; but such data should be fairly typical of the pattern of morbidity in the State. After all, data costs money, and there is no justification for conducting large-scale morbidity surveys, using lay investigators, particularly in the light of past experience here and else where about the reliability of such data. To supplement the data from hospital records, we may organise micro level surveys using technically competent investigators.

[...]

5. EDUCATIONAL STATISTICS OF KERALA

P. R. Gopinathan Nair
Joseph Thomas

Kerala has during the past quarter of a century witnessed educational expansion at a rate unprecedented in the history of the area. Schools, Colleges and Universities have mushroomed; the number of teachers and the administrative personnel at the different stages of education have increased several fold; and there has also been sharp rise in the number of students at all the stages, but most spectacularly at the stage of higher education. Besides the regular educational institutions, there have come into existence thousands of tutorial colleges, parallel colleges and other coaching shops to meet the burgeoning educational demand. With the advent of the 'Gulf boom' of the recent past, several types of institutions dispensing job oriented, short-duration technical courses have also sprung up throughout the State.

In a planned economy, one would expect the expansion of the educational sector to form part of the overall economic planning. Surprisingly, in Kerala the high rates of growth at the various stages and in the different branches of education have taken place with little planning and less conscious policy. In such a situation, educational data may not be of great importance. The uses to which educational statistics would be put in such a situation may be only academic research and day-to-day administration of the education department. The available statistics

on the educational system in Kerala are extensive and extend for a long period in the past; it is possible on their basis to conduct useful research on different issues pertaining to the educational sector and to take decisions administratively. However, the adequacy of the data has to be judged in terms of planning needs since the objective accepted in India is to move on to better and more comprehensive economic planning over time.

Supposing that the functioning of the educational sector has to be on a planned basis, we would require data on various aspects of the educational sector and on the relationship this sector has to have with the rest of the sectors in the economy. This is so because the educational system forms but a sub sector of the entire economy.

In an economy, there take place two types of flows: one, the material flows and two, the population flows. The total economic plan is primarily concerned with the material flows: the production and consumption of goods. For production to take place, man has to interact with nature and capital goods, employing available techniques. The degree of the extent and quality of participation by man in the process of production is determined by the material

resources available, the technology in existence and the quality and quantity of manpower. The amount and quality of manpower in turn depends upon the size and composition of the population, the birth rate, intake of the educational system, outflows from the educational system from its different stages, the experience acquired out-of-the job and on-the-job, the capacity for the material production sector to absorb manpower of varying qualifications, skills and experience as well as on the pattern and rates of retirement, or exit otherwise, from work. The population flows in an economy encompass, in other words, demographic, educational and labour processes. For educational planning to be complete, information is therefore necessary on all these processes.

In Kerala data are available on the demographic processes from the decennial population Censuses and the Sample Registration Surveys. Data on educational processes are reported by the Director of Public Instruction, the Universities and the Directorates of Technical and Collegiate education. Information on the labour processes, namely the pattern of absorption of labour of varying kinds in different types of employment, the stock of labour in employment at different points in time, the rates of attrition of different categories of workers, etc., is not available however on a continuous basis or even for any given period of time, except the ones thrown up by the decennial Censuses, particularly after 1961. The stock of the unemployed, educated and uneducated, is not known from any source except the Censuses and the data available with the Employment Exchanges. The Census data on unemployment are gross underestimates; the Employment Exchange data are not at all adequate for detailed and meaningful planning purposes due to the high degrees of error likely to be present in them. The only type of data which Kerala has to some greater degree of accuracy and on a wider and time series basis is educational data, namely data regarding the human flows that take place from the rest of the economy into the educational sector, transition of persons from one point within the education sector to others and the out-flow of persons from the different stages and branches of the educational sector.

Before passing on to a detailed discussion of the educational data, we shall briefly touch upon the nature of the Census data which have a bearing on the educational status of the population.

(1) The Population Censuses

The decennial population Censuses throw some information on the educational status of the population such as rates of literacy and

stocks of manpower according to levels of education. They also furnish items of information like the distribution of population by age, sex, employment, occupation and industry.

The 1961 Census was the most well-conceived effort to-date so far as educational statistics are concerned. Census Tables B III A and B, B VI and C III furnished the main items of information on education. Table B III classified population into workers and non-workers by educational levels and industrial categories. This information is available separately for men and women and for rural and urban areas. The educational classification used for rural areas was into: (i) illiterate, (ii) literate without educational level, (iii) primary or junior basic, and (iv) matriculation and above. For urban population the classification was into these four categories but contained also a detailed subdivision of the numbers under category (iv).

Table B-IV Classified persons at work other than cultivation in the urban areas by sex, broad age-groups, occupation and educational level.

Table C-III presented population figures by sex, age (ten age-groups) and educational levels for rural and urban areas. The other important tables in which education forms a characteristic are Table B-VIII (A and B) which classified the unemployed persons aged 15 and above shown by sex, age and educational level for urban areas, and by sex and educational level for rural areas. Table D-IV classified migrants to cities and towns—by sex, age, educational level and occupation (in the case of workers).

Even though Table B-IX did not use education-wise classification, and classified persons not at work by sex, age-groups and type of activity (one of which was the full-time student), they are useful in estimating separately the number of full time students in urban and rural areas in each of the above categories. There were also special Tables for the Scheduled Castes and Tribes. The 1961 Census also gives information on the distribution of Scientific and Technical personnel collected by means of cards filled and returned to the Census officials by the persons concerned.

The educational data for the 1971 Census follows broadly the same pattern of classification except that the educational levels are further split up. For instance, Tables B-III and C-III for urban areas have 14 educational level classes and for rural areas 8 such classes. But the classification of the unemployed persons on the basis of age and educational levels had more items in the 1961 Census. For instance, it had information as to whether the person was unemployed for the first-time or had been already unemployed, but at the time of the Census out of work and seeking fresh employment. However, the special card system first introduced in the 1961 Census for collecting information on the Scientific and Technical personnel was made

more comprehensive in the 1971 Census by including all persons who had completed their graduation or possessed a degree or diploma in a technical field. A new addition to the 1971 census was the information regarding migrants to cities with population 100,000 and over classified by sex, age, educational level and occupation of the workers.

Certain limitations of the census data may be pointed out. Census being a hurried operation, one cannot ensure the correctness of the response except on a few items.¹ Further, estimates of educationally qualified personnel built on sample basis may not be reliable for smaller regions because of sampling error. Again, data on Scientific and Technical personnel, obtained from cards mailed back by respondents would suffer from an unknown degree of bias of non-response. Non-comparability of concepts used in the different Censuses poses an additional problem.

Educational data collected, compiled and published touch upon a variety of aspects such as enrolment, expenditure, teachers, and schemes of scholarships, stipends etc. We shall briefly mention below separately the data position with regard to school education and higher education.

(2) Ministry of Education Figures

The Ministry of Education, Government of India is the principal source of annual statistics on education in Kerala. The Department of Public Instruction is in charge of collecting the data on education for the Ministry. Of the various pro forma used, Form A is the most important. The pro formae were first introduced in 1949-50, and underwent changes periodically. The pro forma currently in use are the ones introduced in 1975. They include the following:

(I) *ES-I-Numerical Data*

This pro forma collects information on (a) the name of the institution, (b) nature of the areas (rural/urban), (c) type of institution (vocational/technical/special), (d) type of management and pupils served (boys/girls/mixed), (e) number of students (6th working day figures) sex-wise (separately for SC and ST), (f) name of the courses offered, and (g) number of teachers—Sex-wise, Section, Subject; full-time/part-time; and trained/untrained (separately for SC and ST). The information is collected as on 30th September of the year.

(II) *ES-II-Financial Data*

It gives data on income by sources (recurring and non-recurring) and expenditure by items (recurring and non-recurring) for the financial year ending on the 31st March.

(III) *ES-III-Examination Results*

Information is available on the annual and supplementary results in terms of the number appeared and number passed—course-wise and sex-wise.

(IV) *ES-IV* gives separate numerical data for Scheduled Castes and Scheduled Tribes.

Since the numerical data on enrolment in schools give no information on stagnation and drop-out, from 1981 onwards a register—Register of Statistical Data on Wastage in School Education—has been sent to every school with instructions to enter in it on a continuous basis such information. It contains the following items:—

- (a) Total enrolment (in a standard),
- (b) No. left on T. C. during the year,
- (c) Net enrolment (a-b),
- (d) Enrolment on last working day,
- (e) No. discontinued (c-d),
- (f) No. failed in the class, and
- (g) No. promoted to the next class.

In the section for the standard X, instead of items (f) and (g) above, the number of pupils presented for examination and the number passed are given. The register also has a separate section for repeaters in every class.

Process of Collection of Data

The educational data have to flow through a long channel from the institution to the DPI and thence to the Ministry of Education. The primary and middle schools send their returns to the Assistant Educational Officers from where they are forwarded to the District Educational Officers. The District Educational Officers are also responsible for collection of returns for high higher secondary schools, teacher training schools, vocational and technical schools and special education schools. Apart from receiving district returns, the DPI collects returns direct from colleges and departments of the State Government. The latest years for which the consolidated data have been sent to the Ministry are:

ES 1 and 4	..	1979-80
ES 2	..	1978-79
ES 3	..	1977-78
EE 5 (Quinquennial estimate)		1976-77.

Apart from the inordinate delay incurred in sending the consolidated figures (the State Governments are supposed to send them before 31st October of the year of collection—vide 35th proceedings of the CAIBE 1970), the over-all picture of the data collection is satisfactory when juxtaposed with the performance of several other States in the country. Notwithstanding, there are problems of comparability of data both at the national level because of the different patterns of education (not many have adopted the 10+2+3 system yet) prevailing in the different State as well as within the State because of frequent changes in the items in the proforma.

There are other limitations as well. Inaccuracies in enrolment figures particularly at the level of primary education are a case in point. Enrolment figures at this level are likely to be inflated for two reasons: first, since elementary education is free and the system of whole-pass prevails, there is no urge to strike off the names of habitually absent pupils from the register; and, second, since the security of employment of teachers at the school-level depends on the enrolment reaching a given number, to satisfy the fixed teacher-student ratio, there is likelihood of over reporting of enrolment for fear of retrenchment, transfers, or, getting included in the category of 'protected teachers' posted to schools far away from the homes of the teachers concerned. Further, at the college level, since some of the course start rather late (later than 30th September, the reference date for data collection), there is every likelihood of non-filling of the proforma or of duplication of figures for earlier years.

Data on Higher Education

At the University level, the statistical units are entrusted with the task of collecting and supplying the educational data according to the requirement of the Ministry of Education. The University collects data from individual colleges with the aid of these proforma which contain:

(I) Numerical Data

Apart from the preliminary information regarding the name, location, management, pupils served (men/women/mixed), the numerical data give information on the teaching staff (separately, in addition, for the SC and ST) and enrolment of students—course-wise, sex-wise and year-wise (separately, in addition, for the SC and ST). The item on enrolment also contains a sub-item on the course-wise sanctioned strength and the actual number of admissions of students.

(II) Examination Results

The information available on examination results is rather meagre as it gives only the sex-wise break-up of the number appeared and the number passed in the annual and supplementary examinations for various courses.

(III) Income and Expenditure of Affiliated Colleges

Information on income (recurring and non-recurring) expenditure (recurring and non-recurring) and also on Scholarships and Stipends received by students are made available by this proforma.

The Directorate of Collegiate Education also collects educational data independently from all the colleges in the State. The Department entered the field of data collection in a meaningful only in 1981. Apart from the conventional numerical data collected by the University,

information on the sanctioned staff strength, number of applications received and of students admitted is also collected on a district-wise basis. The type of information is highly useful in that it gives a rough idea about the private demand for education and also of the supply position. If this practice of collecting and classifying data at the district level continues, it might throw light on the regional distribution of educational development and thereby help to fill a major existing gap in the educational data of the State, a gap created particularly by the non-collection/supplying of data by the University of Calicut.

Data on technical education are collected by the Statistical Unit attached to the Directorate of Technical Education. Data on enrolment, staff pattern and examination results are collected from the Colleges in the same way as in the University. But expenditure figures are not collected. While figures for the directional expenditure are duplicated from the 'reconciled figures' in the State Budget, those of the non-recurring expenditures, say, on buildings, are included in the budget of the P. W. D. Consolidated data are available for the years 1975-76 to 1979-80; data for the years prior to 1975-76 are highly scanty and available only for selected years.

Available statistics on higher education also suffer from certain gaps and limitations which render any serious analysis of the data rather cumbersome from the point of view of educational planning. For instance, on information is available on the community-wise break-up of students which is necessary for assessing the progress achieved by the different communities; nor is any information available on the flow of students from one class to another within a stage, particularly in professional education and on the grades secured in the examination and the number of attempts made in the examinations etc. Such items of information are essential to calculate the effective student-years spent on the average by students and also on the wastage involved in higher education.

A serious shortcoming in the available educational data of the State is the near-total non-availability of statistics of the University of Calicut and of the Agricultural University. The situation is made worse by the non-availability of any reliable data on the size and composition of private registrants as well as on the various technical examinations conducted by the Pareeksha Bhavan (Examination Wing) of the Department of Public Instruction. In 1981 about 69000 students are reported to have been privately enrolled in the University of Kerala alone, which formed more than one third of the total enrolment in the University. In the year 1981-82, in the 35 examinations conducted by the Pareeksha Bhavan out of a total of 64, many of which requiring a minimum qualification of a pass in the S. S. L. C., about 65000 students appeared. No information regarding the other examinations for the same year nor of any such examinations for any of the previous years is

either published or available. In view of such gaps, most of the data-of higher education in particular—on enrolment, out turn and stock of the various categories of educated manpower, published by the Central Ministry of Education, State Directorate of Economics and Statistics, and the State Planning Board, which depend on the educational agencies for the supply of data, are likely to contain a high margin of error. The latter two agencies are often prone to duplication as well. That apart, there are certain methodological flaws in the estimation of the stock of technical and professional manpower categories made by the Directorate of Economics and Statistics. The methodology adopted is that followed by the Institute of Applied Manpower Research (IAMR), New Delhi—which holds good only in the case of a closed economy (i. e. where there are no external and internal migration or where these two opposite flows are equal) and therefore is defective for a State such as Kerala. The method followed by the Directorate of Economics and Statistics is not only the same as the one followed by the IAMR; it does not take into account the large scale migration of the educated people to the outside states, the incidence of which is too large to be ignored and the number of persons who branch out to other higher streams of education and employment and, therefore, cannot be included in that particular category of manpower. Consequently, such estimations of stock made by the State Directorate of Economics and Statistics turn out to be mere summations of the out turn figures of the previous years with some allowance given for attrition due to death and retirement.

The inadequacy of statistics does not seem however to have posed serious difficulties for the educational planners and the administrators in this State. Experience of recent years may suggest that decisions on opening new institutions or introduction of new courses of study were made more on the basis of extra-statistical knowledge, in tuition and extraneous forces than cold facts and figures. Such an unplanned policy approach has led to the persistence of educational imbalances among the various districts of the State as may be seen from the following Table.

TABLE
ENROLMENT OF STUDENTS IN ARTS
AND SCIENCE COLLEGES PER LAKH OF
POPULATION IN EACH DISTRICT
1976-77

District	Enrolment of students	Estimated mid-year population '000)	Enrolment per lakh of Population
Trivandrum	22605	2468	916
Quilon	22721	2710	838
Alleppey	19340	2388	810
Kottayam and Idukki	29197	2589	1128
Ernakulam	22688	2431	933
Sub Total	116551	12586	926

District	Enrolment of students	Estimated mid-year population (000)	Enrolment per lakh of Population
Trichur	20110	2391	841
Palghat	10222	1892	540
Malappuram	4779	2086	229
Kozhikode	12752	2365	539
Cannanore	11501	2656	433
Sub Total	59364	11390	522
State	175915	23976	734

Source: Higher Education and Educated Manpower in Kerala Manpower Studies, Vol. II, Bureau, 1979.

Evidently, the educational policy makers have not taken serious note of the regional disparities in educational facilities nor have they pursued policies of educational equalisation on the basis of factual data.

Gaps in the Educational Statistics

There exist several important items which are not covered in the regular data collection programme such as data on non-formal education, enrolment in unrecognised institutions, private expenditure on education, family background of students and teachers, degree of utilisation of staff, and the stock of physical capital in the educational sector and the annual additions to it.

Enrolment data on school education are published as on the 6th working day. Such figures do not help in understanding the volume of enrolment in the lower classes in which large numbers are admitted either after the Puja holidays in October or on the closing date after testing private candidates for admission directly to the various primary classes.

It is widely held that owing to the tendency for the annual enrolment in standard I to remain almost constant since 1972-73, there has been a feverish attempt on the part of the teachers, particularly of private schools, to inflate enrolment with a view to avoiding the hazards of

getting thrown out from employment. Such attempts are believed to have led to an unknown degree of inflation in the size of enrolment in the lower classes, particularly standard I. A scrutiny of the annual number of readmissions (and their subsequent removal from rolls) to the various classes might reveal if this impression is correct and if it is, the extent to which bogus readmission helps bloat the enrolment figures.

A serious limitation of the educational statistics is the absence of a co-ordinating agency to collect data from the different types and stages of education, the paucity of arrangements to publish the data and to avoid delays in publishing. Our enquiries have shown that at least in some educational sectors, the heads of departments have not realised the significance of collecting comprehensive educational data and publishing them intelligently and promptly. This task may not be difficult to undertake in Kerala since there already exist an extensive machinery for collection of data. The problem that remains is effective co-ordination, speedy tabulation and prompt publication. For this purpose, it may also be necessary to strengthen the existing statistical machinery both by increasing the staff and improving its competence.

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2. Table: Distribution of Employed Engineers.

Year of Passing	Location of Employment		
	Employed Within the state	Outside the states but within the country	Outside the Country
1971	002	45.1%	41.2% 13.7%
1972	82	41.5%	50.0% 8.5%
1973	84	32.2%	46.4% 21.4%

Source: Migration of Engineering Graduates. A case study: Manpower Studies, Vol. II. Bureau of Economics and Statistics, Government Press, Trivandrum, 1979.

6. EDUCATIONAL STATISTICS

Dr. Vasantha Ramkumar

The relationship between education and economic development when translated into operational terms from the standpoint of education would mean the building of a planning model for education so that it can "gear its production mechanism to operate with maximum internal and external efficiency in meeting the economic and social objectives of a nation through the development of its human resources" (Huq, 1975:85). Since external efficiency is determined by the extent to which the supply of educational output matches the demand and input-output ratios and quality of output are the determinants of internal efficiency, the need for adequate data to link the process of education with the economic development of a society is emphasised. The purpose of the present paper is to survey the available statistical data on education in Kerala, collected and published by different agencies and to assess the extent to which the data can provide a proper base for decision making in economic and social planning.

Any paper on educational statistics has to mention the fact that the objective processes and requirements of educational planning have not been well defined in India as well as in Kerala, and important decisions have been taken without proper data base. This condition while not necessarily a reflection on the quality of the available data, can result in data collected without converging focus. When this happens the mass of data results in taken relations which do not permit the teasing out of specific relationships. The paper attempts to investigate this possibility also.

Education has assumed the proportions of a large industry, involving a sizable proportion of persons and incurring an expenditure that cuts in to the revenue of the state. The economic evaluation of education is an important aspect of the total economy of the state. The paper included this evaluation in its purview.

An important exercise in economic planning is to derive the required educational output from a set of economic growth projections. This aspect is beyond the scope of this paper.

Educational development and economic growth—quantitative indicators

The process of linking educational development to economic growth involves estimating, mobilising and allocating the human resources required to perform the identified tasks needed for directing desirable social and economic changes. Several indicators have been used to establish the relationship. They can be broadly classified as:

1. measures of a state's stock of human capital at a particular point of time and the gross or net additions to this stock over a specified period.
2. Assessment of the "fitness" of the educational system by matching output with the demand for it.
3. Indices of economic evaluation of investment in education.
4. Correlation ratios of different aspects of education to economic growth indicators.
5. Specific role of education in achieving social objectives.

These broad areas have been investigated in detail through studies of:

1. Levels of educational attainment of total population including literacy figures.
2. The present educational status of labour force and assessment of the increase in the levels of education.
3. The type and relevance of the type of education to particular occupations of labour force, including formal education, on the job-training and self learning.
4. Measures of generation and utilization of high level manpower which further requires assessment of the appropriate shape of the educational pyramid, emphasis given to various levels of education, vocational and technical education, development and "seed corn resources" (teacher requirements).
5. Utilisation of redundant manpower through calculation of unemployment and under-employment ratios.
6. Manpower forecasting studies yielding differences between required and anticipated stock of personnel in each occupation.
7. Relationship between expenditure on education and income or physical capital formation.
8. The residual component in the relationship between measurable inputs of capital and labour and increase in GNP.
9. Types of education considered as investment in productive capital mainly different types of professional education.
10. Rate of return studies such as: Cost of education as adjusted gross national product and cost of education as investment in future earnings.

11. Cost studies such as cost of formal education including cost of special schools and ancillary services and unit and size cost studies on wastage.

12. Physical input in education including social and private costs of education.

13. Internal production relations of the educational systems.

14. Input-output ratios within educational systems.

15. Correlation of school enrolment ratios to GNP.

16. Descriptions of various aspects of education such as enrolment, ratios teaching pupil ratios, teacher qualifications as unit for classification of educational system on development continuum, compulsory education targets, stock and flow statistics studies of educational system.

17. Calculation of coefficients of quality for special groups.

Statistical data required

The minimum data required to study the relationship using the indicators already adopted include:

1. Size, structure and distribution of population.

2. Stock and flow position of qualified manpower at different levels.

3. Labour force statistics by sex, age occupation and education level.

4. Unemployment data by educational level.

5. Economic data such as GNP and Government revenue and expenditure.

6. Data on population literacy.

7. Current status of formal system of education with reference to enrolment, institutions, physical facilities, educational manpower, ancillary services, special groups.

8. Sources of finance for education, education budget, expenditure pattern, cost of education in terms of institutions and individual studies, recurring and capital expenditure, direct and indirect expenditure.

9. Characteristics of students: demographers, socio-economic and psychological details.

10. Administration and academic information on students such as new admissions, repeaters, average daily attendance, stock and flow of statistics, achievement indices.

11. Physical plant—space, type of construction, room facilities, laboratories, libraries.

12. Social justice programmes scholarships, lump sum grants, concessions.

13. Data on non formal education, facilities by type of organisation, characteristics of students.

14. Data on special groups such as scheduled castes, scheduled tribes, women and muslims.

15. Educational Manpower data such as characteristics, pay scales, qualifications attrition rate of teachers and non teaching staff.

Educational statistics available in Kerala

The information available to compile statistical data on the formal processing of education as well as on the different aspects of economy of Kerala have to be assessed in terms of the requirements spelt out in relation to the relationship indicators which can be adopted

Agencies of Collection

In Kerala information is collected by different institutions for mainly two types of agencies, Central and State. They include institutions directly involved in the formal process of education and others who collect the data for purposes of other planning sectors. The agencies include Ministry of education and social welfare, centre, the U.G.C., N.C.E.R.T. National Staff College for educational planners and administrators. The State Department of Education, Census Reports of the Registrar General's Office, The Director of Employment and Training, The Institute of Applied Manpower Research National Sample Survey, Ministry of Finance, Central Statistical Organisation, National Institute of Educational Planning and Administration, Directorate of Collegiate Education, Director of Technical Education, State Institute of Education, University of Kerala, State Department of Harijan Welfare, Development Department, Department of Planning, Education Division and non-official efforts by individual research workers and voluntary agencies.

Publications

The information compiled as tables are published as Annual Reports by the Central and State Departments, as Census Reports as abstracts and Monograph and research reports.

Purposes of Collection

The purposes of collection are varied:

1. Social and Economic Planning based on periodic data.

2. Educational Planning on annual basis.

3. Management of the Educational System on daily routine basis.

4. Educational Research depending on individual requirements.

5. Accounting responsibility of educational agencies as required.

Data available

The data available are not commensurate with the large number of agencies involved and the multiple purposes for which that are supposed to be utilised. The main reasons for this situation could be:

1. Overlapping in the type of data collected among the agencies resulting from lack of co-ordination.

2. State Departments mainly collecting data for Central institutions and very rarely for their own purposes.

3. The practice of taking decisions without calling for a data base.

4. Institutions which are the units of collection not being involved in the process of compilation or use of data finally.

Data

1. Educational institutions by number, by level, type of management, location.

2. Students by age and grade, enrolment by sex in institutions and in hostels, and in different types of educational institutions, programmes, wastage and stagnation figures, out turn.

3. Teacher by number, sex, age, experience, for schools classified by level and management.

4. Number and amount of scholarship, stipends given to students, in different types of institutions from different sources.

5. Finance: budget provisions, allocation of funds, heads of expenditure, direct and indirect, pay scales and emoluments of teachers.

6. Education in rural areas, number of institutions, enrolment, number of teachers.

8. Examination results, number of candidates appeared and passed.

9. Manpower: No. of job seekers by education and skill on the live register to employment exchanges, occupation of labour force by educational standards.

10. Data on special categories.

11. Special Information reports of commissions and surveys.

12. Educational Status of entire population every 10 years.

13. Occasional classification of population by levels of education, age, sex and distribution by area.

14. Distribution of scientific and technical personnel.

15. Distribution of students by courses at higher education level.

Assessment of available data

The data should enable study of status positions through cross sectional studies, growth and developmental assessment through longitudinal data and permit prediction studies through forecasting. These studies should yield.

(a) Quantitative indicators relating education to economy.

(b) Future projection figures for planning.

(c) Identification of imbalances for both economic and social planning priorities.

When viewed in this context the available data have shortcomings caused by—

1. The data being primarily meant as a comment on the operation of the formal process of education and

2. Lack of a structural framework prior to data collection.

3. State agencies mainly collecting information for central agency purposes.

4. Agencies mainly concerned with discharging accountability function by disseminating information that is positive oriented rather than critical.

These drawbacks can be revealed by a closer look at the available figures.

Gaps and Limitations

The evident disparities in data collected by different agencies for different purposes, the different periodicity in the data collected, and the time lag in publishing are to be assumed as a common basis for all the data further.

1. Lack of continuity in data provided with reference to stock and flow statistics.

The inputs in terms of enrolment and output in terms of pass percentage are available for each stage of education separately. In this "lock-step" system those who fall in between as well as those who fall by the wayside are combined and are left out of the ambit of education as such. Depending on the agency of students over fifteen get classified as stock among the non workers in census data those below 15 become flow for educationists. Similarly those who are out of the education process from stock

for the census and hence the students under 15 should also be classified here.

The ambiguity between stock and flow also pose other difficulties. Was age indices in education cannot be accurate. When inter-stages are cutting of incidents, proportions between stages are no longer accurate providing a wrong picture of input and output. Utilisation of physical facilities and expenditure by pupil by stage are actually lower than any indices calculated on this basis of enrolment figures. While the total expenditure on education in Kerala is always pointed out as being very high and forming a high proportion of total revenue the school enrolment figures for whom they are intended is actually lower than stated.

Projections of school enrolment

Premi has pointed four types of data required for projections of school enrolment.

1. Population of school age.
2. Pupil enrolment.
3. Various rates and ratios derived from these two figures.
4. Questions of administrative policy affecting education in general and school enrolment in particular.

While data on the first category are available through census data and population projections it is the second type of information that have glaring inaccuracies. And these are mainly caused by the fourth type of data that is administrative principles. Lack detention on the basis of performance in school is not permitted in the two lowest classes and the percentage permitted is very low in the next. Detention due to long absence is also not happening as the percentage of attendance required is only ten and any absence period can be condoned by the headmaster himself. Further teacher number is fixed on the basis of student enrolment at a data in the beginning of the year. Again primary education is completely free. All these factors combine to produce inflation in primary school enrolment as not attempt is made to strike off any names from the attendance register which continues as such upto standard IV. There are no drop outs or repeaters. In rural areas particularly and in remote area certainly the actual figures must be very much lower than the reported figures. This over reporting goes undetected mainly because supply and demand ratio between educated manpower and availability of positions have no meaning when the unemployment percentages are so high. Also cost benefit analyses are not done.

Expenditure figures and input estimates

Expenditure on education is from four sources:

1. Public expenditure in the form of Government expenditure.
2. Public expenditure in the form of community resources.
3. Private expenditure in the form of input by private managements.
4. Private costs of parents.

The figures collected and published while it covers direct, indirect, recurring and non recurring does not have reliable sources from private agencies. Further no attempt is made to include community participation through land grants and physical facilities paid for by Parent Teacher Associations. Private costs of parents can be assessed only in terms of fees paid. Sample studies on private costs of education have all the limitations of micro studies in such areas and cannot stand projections to the total. Hence all available figures on expenditure in education in published sources are lower than actuals. Input output ratios will naturally be affected by this limitation.

Attainment of students at all levels and Input Output ratios

Attainment indices are percentages of passes with the number appeared as base. A figure of 34% pass is not based on total enrolment at lower levels or even enrolment at the final stage of study. Further the practice of moderation at examinations prevents an actual index of attainment. As the data before moderation is usually kept confidential the actual attainment figures cannot be obtained to be related to input. When both input and output variables are inaccurate any attempt at assessment of the system of education is defeated before it is begun.

Different bases for data collection

The different bases adopted by different agencies for data collection create difficulties in the calculation of ratios. The coefficient of inequality for utilization studies by scheduled castes and tribes requires denomination of the proportion of the group to total population. When the figures on enrolment are available for 1980 the index has to use the census data of 1971 for the denominator making an error possible in the coefficient value.

Levels of aggregation

The levels of aggregation of published data is the district often while the unit for collection is the individual institution. Although raw data on published. When allocation of resources to individual institutions has to made it is not possible to differentiate between schools with and without facilities.

State and Centre emphasis on data collection

The need for the centre to bring in a level of conformity in the presentation of data and the wide heterogeneity actually present in the different states very often results in some states suffering. In Kerala assessment of special innovations like shift programme had to await the coming of an out side boy for evaluation.

Data on vital areas for planning and evaluation

Data is minimal or unavailable in certain areas. Adult education is one area where enrolment figures and facilities need to be known. To understand the total stock of human resources and to relate it to manpower requirement this information is crucial. In addition to regular adult education course, on the job training, skill acquired on own are all important. Socio economic condition of total pupil group and particularly sub groups. The assessment of attainment, the possibility of raising the ratios between input and output, the utilisation of service facilities as well as grant of scholarships, lump sum grants and concessions all require to be related to each other.

Future requirements

To overcome some of the limitations of the data the following suggestions are made:

1. Evaluation of present statistics including quality and process of collection, incorporating cross checking and reconciliation at every stage.

2. Orientation of personnel involved in collection of data to the discipline in which they are collected in addition to statistics and the purpose role and possibilities of the agency.

3. Either have a central monitoring unit for the state as a whole with its own process of collection and compilation with the active co-operation and co-ordination of all the agencies or each agency to collect complete information without depending on others.

4. The data collected to be presented institution wise as far as possible.

5. Census data to be made available in single age groups to permit assessment of wastage stagnation and permit projections.

6. The individual household to be made the unit for collection of educational statistics as well to provide information on socio economic conditions of pupils and their parents since individual base statistics is not feasible immediately.

7. Generation of new tables to be made possible on the request of different agencies.

8. Explanatory notes to be provided for all tables when necessary.

9. Raw data to be utilised even more than at present.

10. Mechanical repetition of collection units and tables to be avoided.

11. Private research in the area to be encouraged.

12. Changes in the budgetary format to be introduced to provide more details.

13. Unit and size cost studies to be done urgently.

14. Methodological studies in the area of statistical information to be done.

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7. INFORMATION BASE OF THE TRIBAL ECONOMY OF KERALA-- A REVIEW

M. Kunhaman

The problems of the Scheduled Tribes of Kerala, as elsewhere in India, began to attract sustained official attention only since Independence. Accordingly, numerous programmes of tribal welfare and development have been implemented for integration of the tribal society into the mainstream of national life. Nevertheless, by any meaningful socio-economic indicator, the tribals in Kerala still remain the marginalised section of the society. The failure of the programmes to fulfil their avowed goals must have been due either to their defective formulation or implementation or both; as is the case with all planning, non-availability or inadequacy of the information basis should be expected to have been at least partly responsible for such failure. There exist reasons to suspect that this really has been the case. For instance, there is as yet no unanimity among the reporting agencies even on the number of tribes or the size of the tribal population in the State. In the present paper, therefore, an attempt is made to assess the

various sources of data pertaining to the tribal economy of Kerala required for formulation of programmes of tribal welfare and development. More specifically, the attempt is (1) to understand the extent to which the existing statistical base justifies the various programmes of tribal welfare and development and (2) to identify the gaps, and inconsistencies in the available information.

The surveys so far conducted on the Scheduled Tribes of Kerala fall broadly into three categories:

- (1) repetitive and non-repetitive;
- (2) census and samples; and
- (3) exclusively on tribals and done as a part of longer surveys.

The various sources of information on the tribals of Kerala available at the moment are listed below:

PARTICULARS OF THE REPORTS RELATING TO THE SCHEDULED TRIBES OF KERALA

<i>Name of the Report</i>	<i>Agency that published</i>	<i>Year of Publication</i>	<i>Census or sample</i>	<i>Repeated/num repeated</i>
(1)	(2)	(3)	(4)	(5)
1. Decennial Census Reports	Registrar General of India		Census as well as sample	Repeated
2. Report of the Evaluation Committee on the Welfare of Scheduled Castes, Scheduled Tribes and other Backward Communities in Kerala with Orders of Government of its Recommendations		1962	Census	Non-repeated
3. Report on the Sample Survey on the Problem of Indebtedness among Scheduled Castes and Scheduled Tribes	Bureau of Economics and Statistics, Kerala	1965	Sample	Non-repeated
4. Socio Economic Survey on Castes/communities	"	1968	"	"
5. *Draft preliminary Report on Integrated Area Development Programmes and Sub-plan for Tribal Area Development			Census	"
6. *Integrated Tribal Development Project for Attapady	State Planning Board, Kerala	1976		"
7. *Report on the Survey of Bonded Labour in Wynad Area	Bureau of Economics & Statistics Kerala		1977	Census
8. *Report on the Evaluation of the Schemes Implemented in the Tribal Development Block, Attapady	"	1977	Sample	"
9. *Report on the Socio-Economic Survey of Tribals in Kerala	"	1979	Census	"
10. Agricultural Labour Enquiry Reports	Labour Bureau, Government of India	1950-51 and 1956-57	Sample	Repeated
11. Rural Labour Enquiry Reports	"	1963-65 and 1974-75	"	"
12. Reports of the Commissioner for Scheduled Castes and Scheduled Tribes	"	"	"	"

Note:-(1) *Exclusively on Scheduled Tribes

(2) The Report mentioned as serial number 8 above is not available in printed form. The writer happened to see only a typed copy of the Report with an Officer of the Bureau of Economics and Statistics.

Census Reports

The various decennial Census Reports constitute, the major source of information relating to the Scheduled Tribes of Kerala on a time-series basis. The Reports are particularly, important for the population figures relating to these people. However, these figures lack inter-temperal comparability due to wide inter-censal fluctuations attributable to (a) definitional inconsistencies, (b) inaccessibility of the tribal areas; and (c) the migrant nature of the hill-tribes prior to the 1951 census and the intermittent "tribing" and "detricing" of communities in the work of the revisions in the list of "Scheduled Tribes" since 1951.

Since the launching of planned economic development, the need for quantitative data has been increasingly felt and, accordingly, the village survey monograph (1961) and the Ethnographic Notes in the Scheduled Tribes (1971) were prepared providing valuable insights into the socio-economic conditions of the Tribals in the dynamic context of their progressive integration into the mainstream society.

The major gap in the Village Survey Monographs and the Ethnographic Notes is the absence of data on agricultural wage-rates in spite of the fact that the overwhelming majority of the tribal work-force consisted of agricultural wage-workers. Further, the two studies are not comparable, for, in the former the focus of the enquiry was the tribal area while in the latter, it was the tribe.

Report of the Sample Survey on the Problem of Indebtedness among Scheduled Castes and Scheduled Tribes—1965.

The object of the Survey was to assess the magnitude of indebtedness among Scheduled Castes and Scheduled Tribes as well as to study the Social and economic environment in which they live.

Sampling Plan:

The Survey was confined to a sample of 150 Census villages and 58 Municipal Wards. The 150 Census Villages were allotted to the different taluks in proportion to the population of Scheduled Castes and Scheduled Tribes in each taluk. The 58 Municipal Wards were equally distributed among the 29 Municipalities and Corporations. From each selected village 20 households of Scheduled Castes and Scheduled Tribes were chosen for the Survey by the systematic sampling method after preparing a list of Scheduled Castes and Scheduled Tribe households in the village. From each of the Municipalities and Corporations, two wards were selected with equal probability and from each selected wards, 20 households of Scheduled Castes and Scheduled Tribes were selected by the systematic sampling method. Instructions were issued to the field staff that if

in any selected village, ward the number of Scheduled Caste and Scheduled Tribe households was less than twenty, then all the households had to be enumerated. The findings of the survey cannot be taken to reflect the actual situation of indebtedness among the Scheduled Tribes because (1) among the 3800 households enumerated, the Scheduled Tribe households numbered only 326 (8%) and thus (2) the survey covered only less than one per cent of the total tribal households in the State.

Again, 76% of the loans among the Scheduled Tribes are said to have been obtained "through unspecified credit agencies". However, neither in the body of the Report nor in the Schedule appended are these "unspecified credit agencies" defined. Thus, since the source of the major proportions of the loan is not specified, the relevance of the data to any serious purpose is to that extent limited.

Draft preliminary Report on Integrated area Development Programme and Sub-Plan for Tribal Area Development, 1975.

The realisation that the due proportions from the general development sectors earmarked for tribal welfare were not forthcoming and that the welfare of the Scheduled Tribes depended exclusively upon the meagre provisions made in the Backward Classes Sector impelled the Planning Commission to adopt a new strategy of tribal development in the beginning of the Fifth Five Year Plan. It was the Integrated Area Development approach aiming at quickening the pace of development of the tribal areas with emphasis on the advancement of Scheduled Tribes by implementing a variety of beneficial schemes pooling the resources under various development sectors. The new strategy, this sought to lay stress on the necessity for utilising the funds under the general development sectors for tribal welfare—the funds in the backward classes sector being reserved for supplemental programmes. For the preparation of Integrated Area Development Projects, studies on the problems and resource-endowment positions of various areas of tribal concentration were to be conducted. Accordingly, the Government of Kerala appointed in 1973 a Special Officer whose draft preliminary report is under review here.

The report is prepared "on the basis of the random field studies conducted in important tribal areas and also by using data and other details collected from District Welfare Officers and Field Officers and borrowing certain useful information appearing in Shri C. Gopalan Nair's Report on Wynad, Dhebar Commission Report, the Report of the Study Team on Tribal Development Programmes constituted by the Planning Commission in 1966, Report of the Committee on Forest Economy in Tribal Areas, Report of the Task Force on Welfare of Backward Class in Kerala State, 1972."

A comprehensive development strategy as envisioned in the Fifth Plan should have been preceded by a detailed socio-economic survey of the Scheduled Tribes in the State. However, excessive reliance was placed on the secondary sources of information which are notoriously unreliable. Further, even the meagre primary data collected through "the random field studies" cannot be taken to give a representative picture since no scientific method was adopted in the selection of the sample area. Also, may be due to the same reasons, population figures relating to the non-tribals are not provided for all settlements many of which at least are known to have non-tribals. This fragile and distorted information base of a massive and comprehensive development strategy is undoubtedly responsible (at least partly) to the paradoxical situation today, viz., the tribal areas are developing while the tribals continue to remain undeveloped.

Integrated Tribal Development Project for Attapady—1976.

The strategy of tribal development followed since the Fifth Plan is a double-pronged one: (1) an integrated area development approach in the case of areas of tribal concentration with the accent on the development of the tribals; and (2) a family-based approach in the case of dispersed tribes. It has been visualised that once the area development programmes took off, attention could be bestowed on the family-based approach. Contiguous areas with a majority of tribal population are designated as tribal sub-plan areas and for each such area an Integrated Tribal Development Project is formulated and implemented.

In conformity with the new strategy, the State Planning Board was entrusted with the task of preparing an Integrated Tribal Development Project for Attapady which has one of the largest concentrations of tribal populations in the State.

The Officers of the Planning Board who prepared the Project "made field visits to Attapady and held discussions with Officers working in the area and representatives of the tribal communities." However, no specific survey (through canvassing questionnaires) was conducted for the purpose.

The Project furnishes broad information on the various problems of the tribals and the existing infrastructural facilities and other resources. However, it lacks clarity in the presentation of the various particulars. A Project of this sort should have been based on a detailed field survey so that it could have had a stronger base of quantitative data.

The Survey of Bonded Labour in Wynad Area, 1977.

The survey was an important investigation made for identifying the tribal bonded labourers in this region (Wynad) which is the largest area

of tribal concentration in Kerala. Wynad is the only tribal area in the State where the tribals were predominantly the agrestic slaves of the traditional (non-tribal) *Jenmis* and continued to exist as bonded labourers.

Design and Methodology.—The survey was intended to cover the tribal communities concentrated in the North and South Wynad taluks. All the tribal families in the hamlets or settlements in Wynad were to be studied and relevant data collected in the prescribed questionnaires.

A person was considered to be a bonded labourer if any one or more of the following situations confronted him:

1. Obligation to render labour or service to any person either without wages or at wages below the prescribed minimum rates for the area.

2. Lack of freedom to choose employer.

3. Lack of freedom to lease the house or village during any part of the year without the permission of some other person.

4. Compulsion to sell any produce at a pre-fixed price only to some particular person.

5. Indebtedness compelling the acceptance of employment under a particular person at a pre-determined wage-rate.

6. Is a member of the Scheduled Tribe "Adiya".

Out of the 12583 tribal households covered under the Survey, the bonded labour households constituted 451 (i. e. 3.6%).

The Survey, both in terms of coverage and content, appears to be commendable. However, it had certain short-comings which later reflected upon the implementation of the programmes aimed at the rehabilitation of the emancipated tribal bonded labourers in the region. The survey was preceded by the formal abolition through legislation of this feudal labour-relation. Hence, it was realised that "the system exists mainly in its disguised form and a real assessment of the number of bonded labourers may be difficult to make because of the social and moral implications and inhibitions." While the Government was wise enough to concede the implications of the changed situation in the post-abolition period, it, nevertheless, failed in taking note of the tribal situation of Wynad in a historical perspective. Historically, Paniyans and Adiyans, who constitute 27% of the total tribal population in the State, were agrestic slaves and had been subject to the highest degree of inhuman treatment in the hands of the traditional *jenmis*. According to the latest information available, 57% of the Paniya and 61% of the Adiya households are absolutely landless. Hence, the decision to cover all the Adiya households (which constitute 4.2% of the total tribal

households in the State) is perfectly justified, the refusal to do so in the case of the Paniya households (constituting 25.1% of the total tribal households in the State) is absolutely unpardonable. Besides, there was considerable omission in canvassing the schedule among all the Adiya households. The Bureau's estimate of tribal bonded labourers is undoubtedly on the low side and makes travesty of historical reality. This conclusion is corroborated further by the paradoxical co-existence of the tribal proletariat working for a pittance for the non-tribal farmers, on the one hand, and the acute labour shortage experienced at the Sugandagiri Project (an ambitious programme for the rehabilitation of the emancipated tribal bonded labourers) ever since its inception, on the other. It may also be mentioned that the tribal agricultural labourers of Wynad continued to get a lower wage-rate than that obtained by their non-tribal counterparts.

Socio-Economic Survey of Tribals in Kerala - 1976-78.

The most comprehensive survey of the Scheduled Tribes in Kerala was conducted by the State Bureau of Economics and Statistics during 1976-78. It was a socio-economic survey whose objectives were: (1) to study the educational and socio-economic conditions of all the tribals in the State; and (2) to study their agrarian problems.

Design and Methodology

As the objective of the Survey was a detailed study of the socio-economic conditions of all the tribals (excluding Pulayans) of Kerala, it was based on the census method using the household schedule prepared for the purpose. A supplementary schedule was also used to note certain details of bonded labourers from the concerned households. However, as a separate bonded labour survey was conducted in the Wynad area since the beginning of the Socio-Economic Survey and as the supplementary schedules canvassed along with the survey did not contain anything new, they were not considered for tabulation.

Though the survey had initially envisaged a hamlet-approach, "as the concept of hamlet is not applicable in the Southern districts of the State and as scattered tribal houses are found even in the northern taluks, it was decided to change the proposed hamlet-wise approach for a complete enumeration of all the tribal households in each concerned taluk, even if they are scattered." This change in approach has been realistic and has, undoubtedly, made the enquiry comprehensive. Nevertheless, had hamlet-level details also been collected (wherever possible), it would have facilitated the formulation of the strategy of tribal development at that level.

As far as the content of the survey is concerned, it may be observed that while information

is provided on the quantities of various products marketed, no information is available regarding the aggregate output produced; productivity of tribal agriculture etc.

Agricultural Labour Enquiries by the Labour Bureau of the Government of India

The four Agricultural/Rural Labour Enquiries so far conducted by the Labour Bureau of the Government of India (the first two Enquiries known as the Agricultural Labour Enquiries were conducted during 1950-51 and 1956-57 and were followed by the Rural Labour Enquiries of 1963-65 and 1974-75) included within their scope, the tribal agricultural/rural labour households of Kerala also. The objective of these Enquiries was to collect up-to-date and reliable data on the socio-economic characteristics of Agricultural/Rural Labourers in India.

The Reports facilitate: (1) the study of the socio-economic characteristics of the Kerala tribal agrarian/rural proletariat at the State level; (2) the comparison with other States; and (3) the comparison with the all India situation. However, it is disappointing to note that no information is available at the district, taluk, or village level.

Annual Reports of the Commissioner for Scheduled Castes/Scheduled Tribes.

The annual reports of the Commissioner for Scheduled Castes and Scheduled Tribes contain various kinds of information relating to the Scheduled Tribes of Kerala. The Reports are especially useful for obtaining time-series data on the expenditure incurred on tribal welfare and development. However, since the feeder agencies of the Commissioner are mostly official like the Harijan and Tribal Welfare Departments, the other details contained in these Reports should be taken with caution. (Of course, the Commissioner takes direct evidences from individuals and voluntary organisations, as well. However, since such individuals and organisations are few in number and are made to furnish evidence in the presence of State Government officials, whatever information so collected cannot be taken to reflect the actual situation relating to the tribals).

Conclusion

Owing to the several inconsistencies in the available data, inter-temporal and inter-local comparisons of the socio-economic aspects of the Scheduled Tribes of Kerala pose formidable problems. Further, most of the surveys conducted so far suffer from serious limitations with regard to their design and methodology and/or content and coverage.

Besides, in certain instances in which the government prepared reports on comprehensive development of the tribal economy, we find that they were prepared on the basis of scanty and

fimsy data (and sometimes even no data at all) called out from unreliable secondary sources. An obvious case in point is the Integrated Tribal Development Project for Attapady.

Similarly, no attempt is made so far to compile statistics on age-wise and class-wise distribution of tribal students. There is imperative need for such data in view of the overwhelming importance attached to education in the package of tribal welfare programmes, on the one hand, and the considerable waste observed (especially in the northern districts, on the other. The compilation of such data does not entail heavy costs since they are available with the Department of Education. No information whatsoever is available on the following important aspects:

- (a) nutrition and health standards;
- (b) characteristics of the tribal agrarian households such as land possessed and/or culti-

vated, wage-rates and earnings, number of days of forced idleness, literacy level, nature and degree of labour attachment etc. at the district, taluk, and village levels;

- (c) irrigation facilities in tribal areas in general and in the 'tribal-sector' in particular; and

- (d) labour-relations on the tribal farms.

Again, since according to the latest governmental strategy of tribal development (integrated area approach), the sub-plan area constitutes the unit of planning, detailed data on all the relevant variables of the socio-economic conditions of the tribals at the sub-plan area level have to be collected on the lines of the Socio-Economic Survey 1976-78. Such surveys must be periodically conducted, say quinquennial and should precede the preparation of the Tribal Area sub-plans under each Five Year Plan.

8. SOURCE MATERIALS FOR UNDERSTANDING SCHEDULED CASTE CONDITIONS IN KERALA.—A REVIEW

P. Sivanandan

Many of the literary and academic scholars have drawn attention to problems of social inequality and economic backwardness perpetuated in Kerala society over the years. Through the Sangam Literature to the present day street drama performance they try to depict realities of common life characterised by struggles for existence on the one side and affluence on the other. In fact, the traditional socio-economic hierarchies seem to persist in close correspondence among the various caste-class categories. Historical and current evidence on these aspects are not fully documented and properly analysed. However, much of the credibility of such efforts depends on the credentials of the source materials and also the scrupulousness of the users. Systematic collection and compilation of information on all aspects of societal importance have only recent recognition. The volume and gravity of collection have eventually increased and today almost every aspect of human life is recorded. Nevertheless, the coverage and presentation of these source materials are so designed that they do not always satisfy the users with information required for interpreting historical continuity or with detailed tabulation for doing micro-level planning exercise on priority sectors. In this context, an assessment of the available information about the scheduled castes in Kerala is particularly significant because they constitute an important segment of the traditional socio-economic hierarchy and also the target group for various developmental efforts.

The source materials on the scheduled castes in Kerala can be broadly classified into three categories.

- (a) Historical narration of individual scholars;
- (b) Statistics collected and compiled by centralised agencies;
- (c) surveys undertaken by individual agencies.

The literature available in the first category gives emphasis on the socio-economic and political inter-relation in its broad historical context and the explanation is mostly on the qualitative differences. The second category of source materials provides information on the quantitative aspects mainly in the national perspective. The third type of literature, however is a synthesis of the two sets of approaches on specific environmental setting. The relevance of all these categories of information in depicting the condition of the Scheduled Castes in Kerala calls for an assessment of the very objectives of the various agencies involved in the process of collection and interpretation of information.

For instance, in the case of historical writings using rare manuscript materials, memoirs and travelogues, the contents may provide only glimpses of social and economic realities at various point of time. The focus of attention

has been by and large directed towards narrating the pangs and pastimes of the affluent sections. A precise depiction of the life and condition of the common man in his particular socio-economic environment seldom appears as fascinating subject for most of the literary treatises. A fresh deal with the available historical information and also more 'digging' for new materials are, therefore, essential for a sequential reconstruction of the history of the deprived sections focussing mainly on their struggles for survival and the causes of historical set backs.

A large body of historical materials containing specific references to the socio-economic and anthropological aspects of the scheduled castes in Kerala are now available in published form. Authors like Duarte Barbosa, Ibn Batuta, Liewtenants Ward and Conner, William Logan, Thurston, L. K. A. Iyer, V. Nagam Iya, T. K. Velupillai, C. Achutha Menon, E. K. Pillai, Velayudhan Panikkasseri, P. K. Gopalakrishnan etc., are a few among them who have made significant contribution to historical understanding. Moreover, the rare manuscript materials preserved by individuals, temples, palaces and archives may also contain evidences for explaining the historical backwardness of the scheduled castes in Kerala.

In the case of the second category of information, namely, statistics collected and compiled by centralised agencies, systematic collection of basic data on the social and economic indicators seem to have begun with the introduction of the All India Census operations during the second half of the 19th century. They covered mostly demographic characteristics, literacy levels and occupational patterns at ten year intervals. In successive operations the volume of information and gravity of analysis on each of these indicators considerably increased and today it serves as the single largest source of data for research and administrative requirements.

Upto 1931 (and to some extent in 1941) the practice was to present the tabulation on each caste/religious groups separately. Though the concepts and coverage were not strictly uniform for all the reference years, the above presentation had the advantage of making inter and intra community comparison of the broad trends in demographic changes and occupational and educational mobility over a period of three to four decades. However in subsequent census operations, the above scheme of presentation got drastically changed limiting tabulation to the major religious and scheduled caste and tribe categories.

The most important economic variable in an agrarian society namely, the possession of land and other asset holding among the various social groups, has never been incorporated as a regular item of investigation in the census operations. What was basically attempted upto

the 1951 census was to provide the status of persons in terms of land possessed and other occupations followed. Though a precise understanding of the distribution of the agrarian population in terms of land holding was not possible from such information, one could get some clues to the broad trends in agrarian differentiation. By 1961 onwards the presentation of livelihood categories with access to land holdings was replaced by industrial distribution of workers based on status of work. In the absence of periodic information on the quantity and quality of land and other related assets enjoyed by the society, (along with other indicators in the census) the magnitude of differences among the various caste community group could seldom be understood. Some effort in this direction was made during the 1931, 1941 and 1961 census operations through sample survey methods. Though they are not strictly comparable overtime due to differences in concepts, coverage and presentation, the informations help the users in understanding broad changes in land holding among the various caste communities or caste groups. Continuation of this exercise in the subsequent census operations with detailed information would have immensely helped the users. The special tables for scheduled castes and scheduled tribes incorporated in the census tabulation from 1961 onwards, provide fairly elaborate information on the demographic, educational and industrial characteristics with break up for each caste/tribe category. The village monograph series and the Ethnographic Notes of the census programme are also useful source materials on the Scheduled Castes.

Another set of information centrally collected almost periodically is for the All India Rural Labour Enquiry Reports. The State level tabulation of this data contain detailed break up on wages, employment, land holding status, income levels, expenditure patterns and indebtedness. The separate tabulation for the Scheduled Caste and Scheduled Tribe households in these reports provide valuable insights into their characteristics viz-a-viz other rural households. However, presentation of this data at the aggregate State level limits the users from understanding changes within the State at the district or taluk levels which would have been important sources for micro level studies.

The National Sample Survey Organisation through its various rounds of investigation collect information on most of the economic variables like land holding, employment, income, consumption and indebtedness, and present them in detailed State-wise tables. The special tabulation for the weaker sections and for the rural agricultural labour population are of particular significance to the source materials on the Scheduled Castes, since they constitute a sizeable proportion of the above categories. Here again tabulation at the aggregate level discourages micro level analysis.

The annual reports prepared by the Commissioner of Scheduled Castes and Scheduled

Tribes contain both qualitative and quantitative information on their current status. Statewise reporting of their socio-economic condition with particular emphasis on problems of special importance makes the reports highly useful for the researchers and the policy makers.

Along with the regular national statistical investigations which contain direct or indirect reference to Scheduled Caste information, the reports of the various enquiry commission on problems of minorities and backward classes also enrich the source materials.

At the regional level information on the socio-economic performance of the Scheduled Caste is periodically reported in the administration reports of respective department under the State Government. Some of the earlier reports have presented statistics for each community with detailed information on education, employment etc. However, most of the present day reports provide information only at the aggregate level limiting the scope for comparison over time, cross tabulation for specific requirements etc.

Two important organisations in the State undertaking collection, compilation and interpretation of socio-economic information are the Bureau of Economic and Statistics and the State Planning Board. Various surveys and studies of these bodies contain essential source materials on the scheduled caste conditions. However, following the national pattern they also make such information available largely at the aggregate level leaving much of the details inaccessible for users. The possibility of tracing detailed tabulation on all variables in the survey or referring to the primary data source for cross tabulation are extremely difficult for one to make intensive analysis. To that extent the presentation of tailor made information for public use greatly undermines much of the potential use of the surveyed data.

The last category in the information base of the Scheduled Caste literature is the surveys undertaken by individual scholars. A large number of studies in this direction contain detailed analysis of micro level conditions. They bring out both the subtle differences and the unique co-existence of diverse socio-economic interests at the base level relations. The qualitative and quantitative dimensions of these studies definitely enrich the understanding on the scheduled caste problems. It would have been more useful if a systematic collection of these individual studies is undertaken in some order of priority by a centralised agency.

To sum up, the information base of the Scheduled Caste literature needs considerable modification in order to serve as adequate source material for research and planning exercise. Modification is required at all levels of collection, tabulation and presentation of information. While the modification at the national information sources is not easily done attempts can be sought to restructure the information supplied by the state level agencies.

SESSION V
HOUSING, LABOUR AND EMPLOYMENT

1. HOUSING IN KERALA—PROBLEMS AND PROGRAMMES

K. Thomas Poulose

The Housing Problem in Kerala

The first step to tackle a problem is to understand the problem in all its aspects; its nature, its magnitude, its location etc. The recent census (1981) has recorded that in Kerala there were 42.89 lakhs of households and 41.33 lakhs of occupied dwelling houses. The corresponding figures in 1971 were 35.45 lakhs of households and 34.18 lakhs of occupied dwelling houses. This shows that in the State, during 1971 and 1981, 7.15 lakhs of houses which include sub-standard kutcha huts also have been built against a total demand for (42.89 - 35.43) 7.46 lakhs householders. Even though this gives an encouraging picture, we have also to take into consideration, the large number of semi permanent thatched huts among the existing stock. This is estimated as 24% and works out to about 10 lakhs of semi permanent huts. Of the 10 lakhs, nearly 60% or 6 lakhs are considered to be substandard on the basis of space available and materials used. Any scheme to wipe off the backlog and to cope up with the increasing demand every year, should include programmes for conservation, by repairs and improvements, of the existing stock and for putting up new houses in place of those which are fit for demolition and replacement. Further, construction of new houses satisfying minimum standards of stability and convenience to meet the new demand is also necessary. A house saved is a house made. In fact no serious attempt has been made in this direction till now.

The housing demand in the State as on today can be estimated on the basis of certain reasonable assumptions following past trends, and the available census figures and survey data, as given below:—

- (i) Numerical shortage (1981 Census) -- 1.55 lakhs
- (ii) Number of sub-standard houses and dilapidated houses required to be replaced -- 6 lakhs estimated on the basis of a survey conducted in 1980)

Total shortage as on today = 1.55 + 6 say 7.5 lakhs.

To the existing demand of 7.5 lakhs, we have to add the arising demand for the period by which the total housing shortage is to be cleared. Assuming that we will be able to achieve the target in a period of 10 years from now, the number of houses required for the new families during this 10 year period will be in the order of 9 lakhs. In addition, we have to account for some more houses of the existing stock which, in spite of reasonable repairs and maintenance

might become uninhabitable during this 10 year period. Assuming this as 1.5 lakhs, it can be seen that we require as much as 18 lakhs of houses (7.5 + 9 + 1.5) within the next 10 year period. Out of this 18 lakhs nearly 25% (4.5 lakhs) will be required in the urban areas and the remaining 13.5 lakhs in rural areas. Assuming a minimum cost of Rs. 5000 per house in the rural and Rs. 10,000 per house in urban areas, the total amount required to be spent in 10 years would come to Rs. 1125 crores. To this, allowance has to be made for the inevitable inflation and escalation of prices. At present, in public sector, we are spending nearly Rs. 12 to 15 crores a year which is joint 10% of the yearly requirement for housing under both the public and the private sector. As per a study recently conducted, nearly 30,000 houses are being constructed in the State in an year with Government assistance and about 50,000 by the families themselves with or without external aid.

The above figures clearly indicate the magnitude of the problem and the importance of bringing down the cost per house, so that with the available resources, more number of families can be provided with houses. This also emphasises the need for adoption of new building materials and construction techniques which are capable of cost reduction. Further, it requires the acceptance to moderate space standards and specification for housing. This is all the more important in view of the fact that nearly 60% of the total households in the State come under the category of economically weaker sections, who cannot normally afford to make sufficient savings to meet the capital expenditure. In addition to the above, attention has to be given for improving the environmental conditions of the existing stock of houses especially those of the poor families. As per a survey conducted by the Bureau of Economics and Statistics in 1980, about 50% of the houses are found to lack basic facilities and environmental standards of health and sanitation. The above mentioned survey shows that about 75% of the houses of Kerala have to electricity. As far as other basic facilities are concerned the situation is still worse. For example 82% of the households do not have sanitary latrines and 40% of the households experience scarcity of drinking water. Making available shelter alone will not help to improve the quality of life of human settlements. Further, the problem has also to be viewed in the background of the existing poor living conditions of the people and the financial constraints of the Government.

Housing activities in Kerala--Existing and proposed

There are 16 agencies in the State, which are engaged in housing activities.

Among these, the Kerala State Housing Board is the major one. As already mentioned, about 30,000 houses are constructed in the State every year with Government assistance. The expenditure per year under Public Sector Housing comes to nearly Rs. 12 crores. The schemes being implemented by different agencies and their achievements are briefly stated below:—

A. Government Departments

I. Board of Revenue

One of the major schemes implemented by the Board of Revenue, exclusively designed to the Economically Weaker Sections (EWS) is the "provision of house sites to the landless rural workers". 50% of the beneficiaries will be from the Scheduled Caste/Scheduled Tribes. It has been estimated that at the beginning of the 6th Plan (1980-81) 2.12 lakhs households, with 2.10 lakhs falling in the rural areas were landless. During the 2 years of the 6th Plan (1980-81 and 1981-82) about 12,500 plots have been distributed with the available budget allocation (75 to 80 lakhs every year). It is further estimated that the number of landless households belonging to the Scheduled Castes/Scheduled Tribes is roughly 1 lakh. Under the scheme construction of houses to rural workers during 1980-81 assistance was given to 5125 families at the rate of Rs. 4000 (Rs. 3000 loan and Rs. 1000 grant).

The other important schemes being implemented by the Board of Revenue are the following:—

1. Low Income Group Housing Scheme.
2. Middle Income Group Housing Scheme.
3. Village Housing Projects Scheme.

Under these 3 schemes about 1500 households are given loan assistance every year to construct their own houses.

II. Public Works Department

As far as housing is concerned the Public Works Department is attending to Rental Housing and Police Housing only.

III. Finance Department

The Finance Department is implementing the scheme for providing "House Building Advance to Government Servants". Under this Scheme about 1000 houses are constructed every year.

IV. Director of Municipal Administration

The Slum Clearance/Improvement Scheme implemented by the various Municipalities and the three City Corporations are administered by this Department. According to a survey conducted by the Town Planning Department there are 80 slums consisting of 12215 households, located in the three city corporations and 22 Municipalities. As per the scheme prepared by the Town Planning Department it is estimated that Rs. 20 crores would be required to improve/clear these slums. Works in 15 slums are in progress. The provision for 1980-81, and 1981-82 were Rs. 65 lakhs each year. The current years outlay (1982-83) is also Rs. 65 lakhs.

V. Harijan Welfare Department

The Harijan Welfare Department is implementing two housing schemes. One of the schemes is an exclusively grant scheme under which scheduled caste families are given housing grant at the rate of Rs. 4,000 per house. During 1980-81 and 1981-82 the number of houses constructed was 266 and 103 respectively. The second scheme of the Department is for granting interest free loan for housing to scheduled caste families. Loan upto Rs. 10,000 based on the family income are granted.

VI. Tribal Welfare Department

The Department is administering the following schemes for the benefit of scheduled tribe families.

1. Housing Grant Scheme.
2. Colonisation Scheme.
3. Hamlet Development Scheme.
4. Tribal Area Sub Plan.

Under all these four schemes the housing grant admissible is Rs. 4000. But 20% enhancement is allowed for constructing houses in inaccessible areas.

B. Quasi-Government Agencies

I. Kerala State Housing Board

Separate Note attached.

II. Kerala State Co-operative Housing Federation

The Federation through its 200 primary societies including 7 construction societies provides housing loans ranging from Rs. 15,000 to Rs. 50,000 based on the family income. About 1500 families are benefited through this federation every year.

III. Kerala State Development Corporation for Scheduled Castes/Scheduled Tribes

The target of the Corporation is to construct Rs. 50,000 low cost subsidised houses for

Scheduled Caste/Scheduled Tribe families. This year programme is to construct 25,000 houses each costing Rs. 4,000 subsidy from Government.

IV to VI.

The Development authorities like Greater Cochin Development Authority, Trivandrum Authority, Calicut Development Authority also take up housing schemes as part of their development programme. Greater Cochin Development Authority is attending to house construction activities also while the other 2 authorities provides house sites only.

VII. Kerala Fishermen Welfare Corporation

The Corporation has already completed 10,000 houses. This years programme of the Kerala fishermen welfare corporation is to Complete 10,000 houses under their II phase housing scheme each costing Rs. 5000. The amount is given as follows:--

HUDCO Loan	Rs. 2000
Government Loan	Rs. 1000
Government subsidy	Rs. 2000

VIII. Development Corporation for Christian Converts from Scheduled Caste/Scheduled Tribe. The housing Scheme envisaged by the Corporation is yet to be started.

Continuing Scheme of the Kerala State Housing Board

1. Public Housing Scheme

Under this scheme lands are acquired under the land acquisition act and developed by providing necessary infrastructure facilities for constructing houses. The plots and/or houses are allotted to people belonging to different income groups viz., Economically Weaker Section, Low Income Group, Middle Income Group and Higher Group. The size of the plots may vary from 60 m² to 500m² according to the paying capacity of the individual. Building size varies between 25 m² to 140m². Flats have also been constructed especially in the central zone of cities and towns, in order to achieve higher densities. The finance required for the schemes are generally raised from financial institutions like the HUDCO, Nationalised Banks etc. HUDCO, main financing agency is sanctioning loans under the graded system against specific schemes prepared under their terms.

The plots and houses under the Public Housing Schemes are now allotted to the registrants under the Advance Registration Scheme. Under this Scheme (Advance Registration Scheme) 35 applicants have registered for plot/plot with sites/flats.

Rural Housing Scheme (Aided Self Help Co-operative Scheme)

The scheme is being implemented jointly by the Government, the Housing Board and the Co-operative Sector. The scheme provides for construction of one lakh houses for the rural poor. The cost of each house is Rs. 4000 (HUDCO loan Rs. 2000, Government Grant Rs. 500, Co-operative Bank loan Rs. 800 and beneficiary's share Rs. 700). The schemes for constructing 50,000 houses have so far been taken up. Out of this, 31020 houses have been completed and the others are under different stages of progress. An amount of Rs. 58 lakhs have been provided for the State Budget for 1982-83 for giving grant to 11,600 beneficiaries.

Housing Loan Scheme

Under loan schemes, the Board provides financial assistance to people belonging to various income groups who own land for the construction of their houses. The finances for loan scheme share raised from financial institutions like the HUDCO, Kerala Toddy Workers Welfare Fund Board etc. So far assistance has been given to 8887 persons under different loan schemes.

Kudikidappukar's Housing Scheme

Under the direction from Government the Board has taken up a scheme for assisting 40,000 kudikidappukars for constructing houses in the land, they became owners as a result of the Kerala Land Reforms Act. The cost of each house will be Rs. 5000. Of this, Rs. 4000 will be given as loan from HUDCO and Rs. 1000 as Government grant.

As a first phase of the programme scheme for 10,000 houses has been taken up as shown below:—

Trivandrum District	}	3000 houses
Quilon		
Alleppey		
Kottayam	}	3500 houses
Ernakulam		
Trichur		
Malappuram	}	3500 houses
Kozhikode		
Cannanore		
Total		10,000 houses

Advance Registration Scheme

The Board, on 2nd May 1980 launched a new scheme namely the Advance Registration Scheme under which registration in advance can be made

for allotment of plot|plot with houses|building| flats at 56 urban centres throughout the State. As on 31-3-1982, 9685 persons have registered with the Board under this scheme.

Requirement of land

Nearly 400 hectare of land will be required to satisfy the requirements of the 9685 registrants in the 68 centres of Kerala. About 140 hectare of loan have already been taken possession and

development works, construction of building etc., are in progress in the lands already acquired.

The Housing Board has so far provided about 70,000 shelters to the different categories out of which 64,000 units are for economically weaker sections.

The suggested housing programme for the future includes the conservation of existing stock, sites and services scheme in urban areas and aided schemes for weaker sections.

2. HOUSING STATISTICS IN KERALA

E. P. Raman Namboodiri

1. Introduction

1.1. Housing is not merely an amenity, but on essential necessity for the healthy life of the Community. The transformation of a tradition- Ridden, illiterate, conservative society into a modern, scientific one is not possible without providing for, among others, the favourable physical environments conducive to such a change. This underlines the imperative need for a comprehensive housing scheme in the overall programme of economic development. Eventhough planning and policy formulation are not possible without a stable statistical base, Housing in the early years of planned economy in the country depended entirely on the housing statistics collected as part of the decennial population census. Later on, the National Building Organisation of the Works and Housing Ministry, Government of India addressed itself to the task of collecting housing statistics at the State level through the State Directorates of Economics & Statistics, and a system was evolved for the collection of house building statistics from the Municipal Authorities and the Public Works Department on a regular basis.

1.2. In Kerala State Housing Statistics Unit was set up for the first time in 1967, at the instance of the National Building Organisation. The Unit consisted of only a nucleus staff at the Directorate, One Research Officer and one L. D. Compiler and it is still retaining its original size and shape. This unit is collecting information from the Public Works Department, the Directorate of Municipalities, and the offices of the City Corporations, and prepare the prescribed statements for transmission to the National Building Organisation. The Public Works Department furnishes returns on building constructions to this Directorate on half yearly basis whereas the Municipal Directorate and the City Corporations are sending quarterly returns on the subject.

1.3. As in the case of this Directorate, Housing Statistics cells have been set up in the Office of the Chief Engineer, Building & Roads and in the Directorate of Municipalities. The cell in the Chief Engineer's Office consists of one Research Officer and three L. D. Compilers whereas its counterpart in the Municipal Directorate has one Research Assistant and two L. D. Compilers. It is the function of these cells to make available to this Directorate periodical returns on building constructions on a regular basis.

2. Sources and Coverage

2.1. 1 Data on construction activities taking place in the public sector are fully covered by the half yearly returns due from the P. W. D.

for the half years ending March and September. These returns furnish information on the various types of construction, such as (a) residential, (b) Industrial, (c) Commercial, (d) Institutional, and (e) Others. The residential constructions have been further sub-divided into dwelling quarters and other residential places. In respect of each type, the items covered are (i) the number of constructions, (2) plinth area, and (3) floor area. The data in the above pattern are furnished separately for works commenced and works completed during the given period in respect of the public sector. Further, (1) new constructions and (2) alterations and additions to the existing structures are considered separately for both sectors and data are given for each group. But separate figures for works commenced and works completed are not available for the private sector. Eventhough separate figures are available for alteration and additions to existing structures for both the sectors, such constructions are relatively insignificant. Hence the discussion in the following sections is based on the trend in new constructions.

2.1.2. The appended tables 1 to 4 give year-wise particulars of constructions commenced and completed during the decade from 1970-71 to 1979-80 in the Public Sector. It is observed that the tempo of building construction activities was the highest in the early years of the decade in respect of both plinth area and number of units. The declining trend which followed then hit the bottom mark by the mid-decade followed by progressively upward swing in the later years. However, by the end of the decade, the tempo of activities is seen to have picked up as seen from the table below:

Year	Works commenced (Nos.)	Plinth Area (M ²)
1970-71	294	134186
1971-72	363	168578
1973-74	104	51644
1974-75	77	43959
1978-79	181	108104
1979-80	189	80897

2.1.3. The classification of constructions by type shows that institutional buildings form the largest single group and accounts for more than 50% of the total number of constructions in most years. Industrial constructions, on the other hand, are the smallest component of the total output. The position of the residential constructions is somewhere between the two and vary generally from 10 to 30 per cent. Details are furnished in tables 1 to 4.

2.2.1. The constructions in urban private sector are furnished to this Directorate by the Directorate of Municipalities for the Municipal Towns in the State and by the three city corporations for their respective areas. The classification by type of construction in the same as in the case of public sector discussed in 2.1.1 above. Plinth area and floor are the two items on which data are collected for the various types of constructions in addition to the number of constructions. The data on constructions in the corporation areas for the past decade are furnished in table 5. As regards Municipal Towns, a consolidated table (Table-6) for all the towns in the State has been appended since separate discussion of the trend of constructions in individual towns would make the paper very voluminous and unwieldy.

2.2.2 A study of table-5 shows that at Trivandrum the average intensity of construction activities as measured by the volume of output in the highest of all the three cities in the State. The next in the order of intensity comes Cochin City, and Calicut takes its position at the bottom. The annual total numbers of new constructions at Trivandrum increased from 1363 in 1971 to 2162 in 1980 where as in the case of Cochin the increase during the period was from 823 to 1044. Calicut with its low record of 579 units of constructions in 1971 began to show faster rate of growth from 1975 onwards and overtook Cochin by 1980. Similar trends in respect of plinth area and floor area are also observed in all the cases during the period. The decennial growth rates in the annual number of constructions for Trivandrum, Cochin and Calicut are 58.62 per cent, 26.85 per cent and 155.44 per cent for the decade ending 1980.

2.2.3. The particulars of house construction activities in the urban private sector excluding the three city corporation areas are furnished in table 6. This table has been prepared by aggregating the municipality-wise data furnished by the Directorate of Municipalities. The total annual number of new constructions in the urban private sector increased from 4539 in 1971 to 10809 in 1980. The plinth area and floor area involved in these constructions were 362.36 M2 ('000) and 306.93M2 ('000) during 1971 which increased to 2023.74 M2 ('000) and 839.72 M2 ('000 in 1980. The decennial growth rates in the annual number of constructions, plinth area and floor area for the decade are 138.14 per cent, 182.60 per cent and 174.18 per cent.

2.2.4. Residential houses constitute the major part of building constructions in the urban private sector.

Table-7 presents year wise particulars of residential and non-residential constructions in the municipal towns during the past decade. In most years the residential constructions exceed 80 per cent of the total. The variation has been within the range of 77.42 per cent and 89.54

per cent. Similar trends prevail in the type-wise distribution of constructions in the three cities of Trivandrum, Cochin and Calicut also. The position obtaining in the public sector is different from this. The detailed discussion of the type-wise classification of constructions in public sector as given in 2.1.3 shows that institutional buildings predominate in the public sector as against residential houses in the private sector.

2.3. In view of the fact that the prices of building materials form an integral part of housing statistics, the housing statistics unit is also implementing a scheme of price collection relating to building materials. The scheme covers all the districts of the State. The prices prevailing in each centre, namely the District Headquarters, are collected by the Investigators of the Department on a quarterly basis. The total number of commodities covered by the scheme in 1965. In order to illustrate the type and availability of the data, the prices of 15 selected items for 3 important centres in the state for the years 1971, 1975, and 1980 have been given in table-8. The prices of some of the items have doubled and even tripled during the past decade. The phenomenal increase in the prices of materials like river sand indicates that the major components of enhanced prices are costs transportation and labour.

2.4. The wages of building labour which are also collected along with the prices of building materials are presented in Table-9. The increase in wages exceed 100 per cent in all cases during the decade ending 1980. It is seen that Kozhikode is a high-wage area as compared to Ernakulam and Trivandrum. The wages of Mason, Carpenter and unskilled labour for the selected centres have been given for the years 1971, 1975 and 1980.

2.5.1. The Housing Statistics Unit in the Directorate is also computing building cost index numbers for Trivandrum centre. The index numbers are constructed, based on the data received from the Kerala State Housing Board in respect of M. I. G. Housing Schemes, implemented by it at Trivandrum. Separate indices are worked out for different groups, viz, Materials, Labour, Water Supply and Sanitary Fittings and Electrical Fittings. Weights are assigned to different items in proportion to the cost on such items. These costs have been estimated on the basis of the data relating to building constructions obtained from a sample survey conducted jointly by the Kerala State Housing Board and the Directorate of Economics and Statistics in 1971-72. The weighted arithmetic mean is taken as the index for a particular group and weighted average of the group indices is taken as the general cost index number.

2.5.2. The General Building Cost-Index Numbers for Trivandrum computed as detailed

in 2.5.1 above are presented below for the decade ending 1981.

Year	Indices	Year	Indices
1972	110	1977	169
1973	115	1978	180
1974	139	1979	239
1975	159	1980	277
1976	166	1981	313

The average annual increase in the general cost indices during the past decade is 20.3. It is observed that from 1979 onwards the index numbers have started moving up at a faster rate than before. This is due to the upward trend in the indices of different Grounds, viz. Materials, Labour, Water Supply and Sanitary Fittings, and Electrical Fittings. In other words, wages of building labour and prices of building materials began to rise from 1979 onwards in a larger measure than ever before.

3. Census Data

3.1. Along with the decennial population census, comprehensive data on housing are being collected. District-wise information on the total number of houses has been furnished in table --10. The number of houses in the state has increased from 34.18 lakhs in 1971 to 41.33 lakhs in 1981. The decennial growth rate in housing constructions during the decade is 21%. This refers to the total number of houses in the state. District-wise distribution of census households with rural-urban break-up, average number of persons per household, percentage distribution of different types of utilization of census households etc., are also available from census reports. The average number of persons per census household in the state for 1971 and 1981 has been furnished in table-11. In rural areas, naturally, the number of persons per census household is less than that in urban areas. This finding holds good in all the districts of the State. Taking this number as an indicator of the intensity of housing problem, it is observed that during 1971 Malappuram is the worst-hit District where as Palghat the least affected. But the situation is seen to have changed by 1981. The largest number of persons per census household as per 1981 census is in Cannanore District where as Idukki has the smallest number. A downward trend is noticeable over the past decade in the number of persons per census household. The number of persons per households for India as a whole is 5.45 in 1971 as against 6.22 for Kerala the corresponding figures for 1981 are not yet available. For this State as a whole the number has decreased from 6.22 in 1971 to 5.92 in 1981, the decennial decrease being 4.9%. This is an unmistakable evidence of improvement in the housing sector of the economy.

4. Uses.

4.1. Data relating to building constructions public sector throw light on the trend of building activity with reference to the various types of use of the buildings. It is possible for those who are interested to make a comparative study of the trend in public sector with that of the urban

private sector. The results of such studies will enable the planners of economic development to initiate corrective measures to rectify distortions observed in the trend of investment in the housing sector.

4.2. The information on building constructions in the urban private sector can be profitably made use of by the agencies engaged in the planning and implementation of Area Development schemes. The study of Municipality wise data on building constructions will indicate areas of high concentration of building activities and highlight the need for appropriate town planning measures to develop new areas and reduce congestion.

4.3. The Statistics of wages and prices in the construction sector will serve the purpose of comparison of cost elements. Data on centre-wise and year-wise variations in the movements of construction cost will be a useful information for the various agencies instructed with the task of building construction.

4.4. Building cost index numbers relating to M. I. G. houses for Trivandrum centre highlight the trend in cost escalation. Even though they are applicable only to Trivandrum centre, they can be taken as an indicator of more or less similar trends in other parts of the state as well.

4.5. The census data are, by their very nature, intended to give a comprehensive picture of construction activities over the decade. They provide the basis for the formulation of long-term policies in the housing sector. On the basis of the pace of construction activities taking place in the economy as a whole, as revealed by the census data, appropriate policy measures can be adopted to regulate the tempo for ensuring the adequacy of housing facilities.

5. Limitations and suggestions for improvement.

5.1. As regards public sector building constructions costing less than Rs. 20,000 have been excluded from the purview of the reporting system. Of late, this ceiling has been further enhanced to Rs. 50,000 by the National Building Organisation. Constructions involving outlay below the ceiling are therefore not covered by the available data.

5.2. The coverage of the private sector constructions leaves much to be desired. The building constructions by the private sector in urban areas alone are covered at present. Rural areas constituting the larger segment are outside the scope of the existing statistical system. The only way to complete the coverage is to bring into the picture the local panchayats. Through appropriate legislative measures the panchayats have to be empowered to enforce a system of licensing for building constructions as in the case of Municipals Council. This will enable the panchayats to collect data on house constructions. The data so collected should be transmitted by the Executive Officers of Panchayats to the respective District Panchayats Officers. A consolidated to the Directorate of Economics and Statistics. Such a system can function smoothly provided

the existing machinery for housing statistics in the state is suitably strengthened.

5.3. No provision has been made in the existing system for the collection of data on cost of construction. This is a serious gap. Cost Statistics are useful since they facilitate centre-wise, sector-wise and period-wise comparisons of construction cost. Cost of constructions should also be included in the prescribed returns from the P. W. D., Directorate of Municipalities etc.

5.4. The existing system is confined to the collection of information on number of works, plinth area and floor area. It is necessary to enlarge the coverage so as to include plot area also. On account of the increasing pressure on land and also due to the abnormal rise in land value people are forced to go in for smaller and smaller plots for house construction. There is at present no reliable information on the rate of fall in plot area over the years. The collection of information on plot area in respect of building constructions is therefore an imperative necessity.

5.5. At present the building cost index constructed for only one centre in the State, viz., Trivandrum. The N. B. O. has recognised the need for extending the system to all the districts in the state. The suggestion put forward by the N. B. O. is to select at least one centre in each district for the construction of the cost index. The workload involved in the proposed enlargement of the coverage has been assessed and the additional requirements have been indicated to the National Building Organisation by this Directorate. Further the index is computed at present with 1971 as the base year. Owing to possible changes in the preparation of the various cost components in the last 10 years it is necessary to compute the indices with a new base year. This requires a fresh survey on the new pattern of construction inputs and fixation of fresh weights on the basis of the survey results. Such a revision of weights is indispensable to make the indices realistic.

5.6. At present comprehensive housing statistics covering both rural and urban area are available from the decennial population census. But such data for shorter periods than decade are necessary and useful for purpose of planning. It is therefore desirable to conduct a quinquennial housing census on the same pattern of the quinquennial live stock census. In fact a suggestion to this effect has been mooted in the meeting of the representatives of northern states held recently at Simla under

the auspices of the National Building Organisation.

5.7. In the 28th round of the National Sample Survey, the National Sample Survey Organisation has collected information about pucca, semi-pucca, and Kutcha houses in respect of both urban and rural areas. Data relating to condition of housing have also been collected in this round. A suggestion has been made by the National Building Organisation to collect such data by the National Sample Survey Organisation once in five years on a regular basis. The implementation of this suggestion will considerably strengthen the data base of our economy with reference to the housing sector.

5.8. There are various agencies involved in the implementation of housing schemes in the state. At present there is no systematic arrangement for the collection, storage and retrieval of data generated by them. Land value, prices of building materials, wage-rates of building labour, cost components of building constructions for people belonging to various income groups and a host of other data are available on the records these agencies, particularly the Kerala State Housing Board. It is therefore imperative to set up a fully equipped statistical cell in the Board for the documentation and analysis of data generated and also for conducting studies and surveys.

6. Conclusion

6.1. The object of this paper has been to indicate the source-wise availability of housing data and to discuss their coverage and quality. The tables appended have been limited to the requirements of the discussion in the paper. Obviously they are not intended to be exhaustive. A brochure on housing statistics in corporating all the available data has been published by this Directorate in 1974 and a revised edition of it is now under print.

6.2. It is for the users of the data to comment on their adequacy. The agencies responsible for collection. Storage and retrieval have to be guided by the enlightened comments of the users. However, some of the most obvious gaps and suggestions for improvement have been mentioned in this paper.

6.3. The main function of the Housing Statistical unit of this Directorate has been the collection and processing of the data and to arrange their transmission to the National Building Organisation as required by them. The existing system has thus been built up on the basis of the guidelines issued by the National Building Organisation. The improvement of the system depends, among others, on the constructive criticism by the users and their whole hearted co-operation in the task.

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APPENDIX

LIST OF TABLES APPENDED

1. House Building Activities in the Public Sector—Number of works commenced	Table—1
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TABLE - 1
HOUSE BUILDING ACTIVITIES IN THE PUBLIC SECTOR

Sl. No.	Type of construction	Number of works commenced during the year									
		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Residential Buildings										
(a)	Dwelling quarters	20	29	51	22	10	10	23	19	17	9
(b)	Other residential places	14	9	9	7	3	4	5	1	5	4
2.	Industrial buildings	1	1	3	1	1	—	1	1	—	—
3.	Commercial buildings	18	29	16	17	18	20	32	32	37	98
4.	Institutional buildings	235	287	103	57	45	126	128	116	120	78
5.	Other buildings	6	8	—	—	—	1	1	—	2	—
	Total	294	363	182	104	77	161	190	172	181	189
	Index of Total Number of works (1970-71 = 100)	100	123	62	35	26	55	65	59	62	64

Source : Directorate of Economics and Statistics, Kerala.

TABLE - 2
HOUSE BUILDING ACTIVITIES IN THE PUBLIC SECTOR

Sl. No.	Type of construction	Number of works completed during the year									
		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Residential Buildings										
(a)	Dwellings quarters	43	51	34	49	50	75	18	30	10	22
(b)	Other residential places	27	38	16	14	23	17	5	8	3	9
2.	Industrial buildings	11	11	3	7	1	2	..	2	1	2
3.	Commercial buildings	48	57	14	11	46	60	11	43	21	37
4.	Institutional buildings	628	580	271	108	205	170	90	181	108	113
5.	Other buildings	9	7	2	1	4	4	..	1	..	3
	Total	769	744	340	190	329	328	124	265	143	186
	Index of Total number of works (1970-71 = 100)	100	97	42	25	43	43	16	34	19	24

Source : Directorate of Economics and Statistics, Kerala.

TABLE — 3
HOUSE BUILDING ACTIVITIES IN THE PUBLIC SECTOR IN KERALA

Plinth Area: M2('000)

Sl. No.	Type of construction	Works commenced during the year									
		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	Residential Buildings										
	(a) Dwelling quarters	21.8	16.4	30.2	14.0	7.8	9.9	18.0	16.3	7.4	8.4
	(b) Other residential places	7.3	4.0	5.4	6.8	1.9	2.3	9.4	3.1	5.0	8.0
2.	Industrial buildings	1.2	0.1	3.5	0.4	0.1	..	0.2	0.6	..	..
3.	Commercial buildings	5.3	32.8	5.0	11.3	13.5	29.4	19.4	19.1	20.7	19.0
4.	Institutional buildings	98.1	108.8	44.1	19.2	20.5	45.1	61.9	63.3	71.4	45.6
5.	Others	0.4	6.4	..	..	..	1.8	0.1	..	0.7	..
	Total	134.1	168.5	88.2	51.7	43.8	88.5	109.0	102.4	108.2	81.0

Source: Directorate of Economics and Statistics Kerala.

TABLE—4
BUILDING CONSTRUCTIONS IN PUBLIC SECTOR WORKS COMMENCED DURING
THE YEAR

Sl. No.	Year	Residential Constructions		Non Residential constructions				Total number of constructions
		Number	percentage to Total	Number	Institutional % of Total	Number	Others % to Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.	1970-71	34	11.56	235	79.93	25	8.51	294
2.	1971-72	38	10.47	287	79.06	38	10.47	363
3.	1972-73	60	32.97	103	56.59	19	10.44	182
4.	1973-74	29	27.88	57	54.81	18	17.31	104
5.	1974-75	13	16.88	45	58.44	19	24.68	77
6.	1975-76	14	8.70	126	78.26	21	13.04	161
7.	1976-77	28	14.74	128	67.34	34	17.92	190
8.	1977-78	23	13.37	116	67.44	33	19.19	172
9.	1978-79	22	12.15	120	66.30	39	21.55	181
10.	1979-80	13	6.86	78	41.27	98	51.86	189

Source: Directorate of Economics and Statistics Kerala.

TABLE—5

PRIVATE SECTOR BUILDING CONSTRUCTIONS IN CITY CORPORATION

N: Number of constructions
 P: Plinth Area—('000) m²
 F: Floor Area—('000) m²

Sl. No.	Year	Trivandrum city			Cochin city			Calicut city		
		N	P	F	N	P	F	N	P	F
1.	1971	1363	146.1	126.5	823	90.4	72.9	579	39.5	33.8
2.	1972	964	93.4	77.0	108	9.7	7.9	337	30.1	24.8
3.	1973	1916	256.8	206.9	38	2.7	2.2	301	35.4	30.2
4.	1974	1808	169.5	135.5	466	54.5	40.8	541	43.6	37.6
5.	1975	1586	150.9	118.7	831	72.5	57.5	745	53.4	39.1
6.	1976	1886	169.7	136.6	1598	133.4	110.5	1238	93.5	73.4
7.	1977	2030	189.9	153.0	2425	201.7	168.9	1229	98.6	80.1
8.	1978	1814	179.4	142.0	2389	188.8	147.3	1249	105.1	84.0
9.	1979	2140	224.8	171.5	2302	208.2	157.5	1433	129.1	98.4
10.	1980	2162	272.2	206.1	1044	130.0	98.2	1479	139.0	105.5

Source: Directorate of Economics and Statistics, Kerala

TABLE—6

PRIVATE SECTOR CONSTRUCTIONS IN MUNICIPAL TOWNS IN THE STATE

Sl. No.	Year	Number of plans sanctioned	Plinth Area M ² (8000)	Floor Area M ² (1000)
(1)	(2)	(3)	(4)	(5)
1.	1971	4539	362.36	306.93
2.	1972	4280	324.75	270.08
3.	1973	3745	301.47	244.20
4.	1974	4649	396.39	318.92
5.	1975	4761	407.86	326.45
6.	1976	5606	463.19	374.86
7.	1977	5658	506.70	412.21
8.	1978	7436	711.54	580.74
9.	1979	10681	934.78	762.18
10.	1980	10809	1023.74	839.72

Source: Directorate of Economics and Statistics, Kerala

TABLE—7

RESIDENTIAL AND NON RESIDENTIAL CONSTRUCTIONS BY PRIVATE SECTOR IN MUNICIPAL TOWNS
IN THE STATE

Sl. No.	Year	Construction				Index of Total No. of construction	
		Residential Number	% to Total	Non-residential Number	% to Total	Total (1971)	Total (100)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	1971	3514	77.42	1025	22.58	4539	100
2.	1972	3430	80.14	850	19.86	4280	94
3.	1973	3070	81.97	675	18.03	3745	83
4.	1974	3847	82.75	802	17.25	4659	102
5.	1975	3835	80.55	926	19.45	4761	105
6.	1976	4607	82.18	999	17.82	5606	124
7.	1977	4842	85.58	816	14.42	5658	125
8.	1978	6599	88.74	837	11.26	436	164
9.	1979	9564	89.54	1117	10.46	10681	235
10.	1980	9526	88.13	1283	11.87	10809	238

Source: Directorate of Economics and Statistics, Kerala.

TABLE—8

AVERAGE MARKET PRICES OF BUILDING MATERIALS IN THE STATE

Item	Variety	Unit	Trivandrum			Ernakulam			Kozhikode		
			1971	1975	1980	1971	1975	1980	1971	1975	1980
1	Bricks	1 Class 1000 nos.	70.00	137.50	200.00	80.00	121.67	181.75	300.00	518.00	827.50
									C.W.	C.W.	C.W.
2	River sand	Medium C.M.	8.00	20.00	26.45	10.35	13.10	31.00	11.50	19.06	50.00
3	Stone Ballast	20 m.m. C.M.	30.00	44.00	67.05	38.75	..	..	43.75	55.00	100.00
4	Limé	Slaked C.M.	60.00	113.00	143.00	58.25	101.75	105.00	62.50	92.06	176.50
5	Timber	Jack C.M.	664.00	1271.00	3017.30	..	910.00	3238.48	832.00	1025.00	3133.36
6	Cement	Sanker Brand M.T.	240.00	397.75	589.10	238.00	389.81	561.73	240.00	403.93	606.73
7	M.S. Round Bars	10 m.m. M.T.	1803.00	2105.00	4700.00	1733.00	2011.25	4500.00	1800.00	2113.50	4625.00
8	Binding wire	22 gauge M.T.	..	7517.50	11560.00	4500.00	6322.50	10000.00	..	7028.00	10000.00
9	Asbestos cement sheets	Corragated M.T.	1020.00	1859.65	3171.29	1005.00	1662.00	2000.00	..	1814.00	2951.28
									C.W.	C.W.	C.W.
10	Tiles	Mangalore 1000 nos.	260.00	488.19	891.45	..	425.00	100.00	384.00	575.00	1260.00
11	Special paint Forward	Special Litre	18.70	28.51	36.43	..	30.48	39.68	..	31.93	46.88
12	Varnish paint	Shalimar Litre	11.08	17.75	26.25	11.50	18.00	26.31	11.00	19.00	29.39
13	Sheet glass	2 m.m. M2	13.42	16.50	36.38	11.00	16.90	43.95	10.26	15.50	38.77
14	S.W. Pipes	10 m.m. One	2.73	5.76	7.50	2.72	5.10	7.50	3.30	6.06	8.19
15	A.C. Pipes	100 mm. One	21.67	35.63	55.78	21.63	32.21	49.55	..	34.99	56.07

Note: C.W. Common wealth variety.

Source: Director of Economics and Statistics, Kerala.

TABLE—9

WAGES FOR BUILDING LABOUR FOR SELECTED CENTRES IN THE STATE

Daily rate (Rs.)

Sl. No.	Type of Labour	Trivandrum			Ernakulam			Kozhikode		
		1971	1975	1980	1971	1975	1980	1971	1975	1980
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Skilled</i>										
1.	Mason I Class	9.00	15.00	18.75	10.00	15.00	22.50	9.00	15.00	24.25
2.	Mason II class	8.00	12.50	16.75	9.00	10.50	20.50	8.00	13.00	19.75
3.	Carpenter I class	9.00	15.00	18.50	10.00	14.00	22.50	10.00	15.00	24.25
4.	Carpenter II class	8.00	12.00	16.75	9.00	10.50	19.50	8.00	13.00	19.75
<i>Unskilled</i>										
5.	Male	5.50	8.00	12.75	6.00	9.25	13.00	6.50	10.00	17.25
6.	Female	4.50	6.00	10.75	5.00	6.25	11.50	5.00	8.00	11.50

Source: Directorate of Economics and Statistics, Kerala.

TABLE --10

DISTRICT-WISE NUMBER OF HOUSES IN 1971 AND 1981

Number of houses (Lakhs)

Sl. No.	District	Number of houses	
		1971	1981
(1)	(2)	(3)	(4)
1.	Trivandrum	3.61	4.51
2.	Quilon	4.02	5.27
3.	Alleppey	3.55	3.98
4.	Kottayam	3.37	2.88
5.	Idukki	..	1.84
6.	Ernakulam	3.72	3.92
7.	Trichur	3.36	4.11
8.	Palghat	2.88	3.66
9.	Malappuram	2.86	3.44
10.	Kozhikode	3.26	3.11
11.	Wyuad	..	0.94
12.	Cannanore	3.55	3.67
13.	Kerala	34.18	41.33

Source: 1971 and 1981 Census.

TABLE-11
AVERAGE NUMBER OF PERSONS PER CENSUS HOUSEHOLDS IN THE STATE

Sl. No.	District	1971			1981		
		Total	Rural	Urban	Total	Rural	Urban
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Trivandrum	6.05	5.98	6.28	5.29	5.22	5.42
2.	Quilon	6.01	5.96	6.61	5.20	5.11	5.86
3.	Alleppey	6.02	5.97	6.29	5.74	5.75	5.68
4.	Kottayam	6.19	6.16	6.48	5.74	5.72	5.82
5.	Idukki	..	..	..	5.18	5.17	5.47
6.	Ernakulam	6.32	6.24	6.54	6.21	6.48	5.83
7.	Trichur	6.43	6.41	6.64	5.84	5.81	5.97
8.	Palghat	5.76	5.74	5.88	5.37	5.35	5.53
9.	Malappuram	6.51	6.47	7.04	6.86	6.78	8.03
10.	Kozhikode	6.37	6.13	7.17	6.76	6.77	7.51
11.	Wynad	..	..	..	5.72	5.72	..
12.	Cannanore	6.58	6.52	6.95	7.08	7.19	6.72
	Kerala State	6.22	6.16	6.57	5.92	5.88	6.10

Source: 1971 and 1981 census

3. AN INSIGHT INTO SOME ASPECTS IN LABOUR STATISTICS IN KERALA

Lilykutty K. Varghese*

Introduction

Statistics play a vital role in the economic progress of a country. Since the dawn of independence India has accepted a programme of planned economic development as her national objective. With the advent of the planning Era in India, Collection of Statistics for planning for all sectors of the economy assumed its importance.

With the growth in the industrial units, the country has assumed new obligations to administer, controls and regulations, to increase the security and welfare amenities of the business community comprising both the employers and employees. In this context, the importance of the collection and maintenance of Labour Statistics needs hardly any emphasis. The most important landmark in the growth of Labour Statistics in India was the creation of Labour Bureau during the year 1946 (October 1st 1946).

As per 1971 census figures that industrial sector accommodates 15.7% of the workers in Kerala as against 9.4% for all India. The working population of India in 1971 was about 18.05 crores or 32.92% of the total population of the country of which only 10% was in the organised sector and the rest in the traditional sector. Kerala is one of the few states in India which maintains the lowest percentage of workers to the total population.

A number of Labour Legislations have been passed with a view to provide a healthier, safer and more pleasant environment for the workmen and to improve their conditions of services. The primary object of collecting the data under the various labour enactments and administrative measures is to find out the extent to which the different provisions contained in the enactments are implemented in the State and the number of persons benefited. The Labour legislations are furnished below.

1. The Workmen's Compensation Act, 1923.
2. The Indian Trade Union Act, 1926.
3. The payment of Wages Act, 1936.
4. The Industrial Employment (Standing Orders) Act, 1946.
5. The Industrial Dispute Act, 1947.
6. The Factories Act, 1948.
7. The Minimum Wages Act, 1948.
8. The Plantation Labour Act, 1951.
9. The Maternity Benefit Act, 1961.
10. The Legislation relating to Shops and Commercial Establishment Act.

11. The National and Festival Holidays Act.
12. The Payment of Bonus Act.
13. Motor Transport Workers Act.

Out of the above mentioned legislations, this paper deals with the analysis of the statutory returns received from the Directorate of Factories and Boilers registered under the payment of Wages Act, 1936. The Industrial Dispute Act, 1947, the Factories Act, 1948 and the Maternity Benefit Act, 1961 and also the non-statutory returns received from the Labour Department under monthly review on Industrial Disputes resulting in workstoppage monthly review on closures, lay-off, retrenchment and Gherao.

Government agencies responsible for the collection and maintenance of Labour Statistics are the following.

Central Government	..	Labour Bureau, Simla.
State Government	..	1. Labour department. 2. Directorate of Factories and Boilers. 3. Directorate of Economics and Statistics.

Statistics relating to the Payment of Wages Act, 1936.

The Annual Returns under the payment of Wages Act is prepared in two statements. The details of payment of gross wages are dealt with in statement I (Form A) Form B dealt with deductions and recoveries on account of fine, recoveries for loss and damage, compensation for breach of contract etc. The scope of payment of Wages Act has been extended to cover earning Rs. 200 or more but less than Rs. 400 per month. But since 1975 earnings of factory workers earning less than Rs. 1000 per month are collected.

Figures are separately collected for total earnings of employees covered by the Act, and the corresponding average daily number of employees. Figures are also collected for total number of days and mandays worked by all the units for submitted returns on average daily employment (Adults and Children separately). The basic return under this Act are received from the Directorate of Factories and Boilers.

The number of registered working factory establishments in Kerala covered by the payment of Wages Act increased from 3040 at the end of 1970 to 6036 at the end of 1974 and 9106 at the end of 1980 (vide Appendix-1).

Thus over a span of 10 years, the number of factories has increased by 199.5%. The average daily employment has decreased by 39721 during the year 1974 from 1970. But during the year 1980 the same has increased by 75050 from 1974. A fall in gross wages has been reflected in the year 1974, viz. 1449.8 lakhs of Rs. from 1894.6 lakhs for the year 1970. It has been increased to 6440.4 lakhs in the year 1980.

The percapita average daily earnings of factory workers under the payment of wages Act, 1936 for the important industries in Kerala are also calculated for each year. The details are furnished in Appendix-2.

Data on Industrial Dispute Act, 1947

The Statistics relating to Industrial Disputes resulting in work stoppages are collected to assess the magnitude of industrial unrest leading to loss in economic activity which includes wages and production. 'Work Stoppage': means stoppage of normal activity in a unit as a result of which the persons employed in the unit are forced to remain away from their usual duties.

From practical consideration only those work-stoppages which involve 10 or more workers, whether directly or indirectly are included in the statistics of industrial Disputes.

The State Labour Departments and Regional Labour Commissioners (Central) collect the basic information in respect of work stoppages in the State and Central spheres respectively. They collect the required information on uniform lines laid down for the purpose from the units concerned when such occurrence of a work stoppage becomes known directly or from the police records as per practice in vogue in different states. Amongst the various statistics collected, the two important ones are (1) the number of workers involved and (2) the number of mandays lost.

For each year percentage of disputes classified according to the method of termination, result etc. to the number of disputes are calculated. Appendix 3 reveals the disputes classified according to the method of termination, viz., conciliation, mutual or bilateral negotiation, others, number of token strikes, number of strikes continuing etc. over a period of 10 years from 1970 to 1980 in the State of Kerala. Appendix-4 presents the 'number of workers normally employed', 'number of workers normally affected' and 'Total mandays lost' in factories having disputes in Kerala. The year 1976 witnessed a substantial decrease in the number of mandays lost followed by the year 1975 due to industrial disputes in the State. The corresponding figures are 90824 and 538164 respectively. The figures in the statement exhibit that the total number of mandays lost is the maximum during the year 1974 followed by 1979 and the corresponding figures are 4794202 and 3552226 respectively.

The number of disputes classified by causes such as 'Wages and allowances, Bonus, personnel, Retrenchment, working conditions and others are also furnished in Appendix-5 from the year 1970 to 1980. The percentage of disputes by causes to total dispute for each year are given in this Statements.

Appendix 6 reveals the number of disputes and their corresponding percentages to total classified according to result from 1970 to 1980, viz., successful, unsuccessful, partially successful, indefinite and others including token strikes and strikes continuing. It is evident from the table that the number of disputes are lowest for the year 1976 followed by 1975, viz., 57 and 91 respectively. The data reveal that the number of disputes reported is the highest in the year 1972 followed by 1970, being 296 and 272 respectively. Emergency declared by the Government of India during the 2nd half of 1975 may be the reason for the decrease during the year 1976 and 1975.

Appendix-7 gives details of disputes, workers and mandays lost in India from 1951 to 1981. A total of 1071 industrial disputes resulting in work stoppages were reported during the year 1951. In these disputes 691321 workers were involved and 3818928 mandays were lost. During the year 1961, there were 1357 industrial disputes in which 511860 workers were involved and 4918755 mandays were lost. A total of 2752 industrial disputes were reported during the year 1971. In these disputes 1615140 workers were involved and 16545636 mandays were lost. The statistics shows that the maximum number of disputes resulting in work stoppages were occurred in India during the year 1973, viz. 3370. Workers involved in these disputes and mandays lost were 2545602 and 20626253 respectively. But during the year 1981 there were only 2151 industrial disputes in which 1216519 workers were involved and 25503654 mandays were lost.

Layoff, Retrenchment, Closures, etc.

In order to prevent avoidable hardships to the employees and to maintain higher tempo of production and productivity the Industrial disputes Act, 1947, has been amended to prevent layoff and retrenchments. Under the New Act, known as the Industrial Disputes (Amendment) Act, 1976, reasonable restrictions have been put on an employers right to layoff, retrenchment and closure. Now the employer has to seek prior approval of the appropriate government by giving at least a three months notice before the intended closure, stating clearly the reasons for laying off, retrenchment and closing of industrial establishment where 3000 or more workmen are employed.

Statistics on the Factories Act 1948

The Factories Act 1948 is admittedly a progressive piece of legislation on labour. The Act

contains provisions mainly to regulate labour in factories and also provides for many safety and welfare measures to workers. The State Director of Factories and Boilers is the authority for registration, renewal and cancellation of licensed factories at the State level. The main object of processing and analysis of returns is to assess and evaluate the progress of implementations of the various provisions of the Act and to ascertain the number of workers benefited by the Act. The factories registered under the above act can be classified into the following groups viz.

Section 2m and section 85

Section 2m consists of 2m (i) and 2m (ii), 2m (i) covers factories where in 10 or more workers are working, or were working on any day of the preceding 12 months, or any part of which a manufacturing process is being carried on with the aid of power, or ordinarily so carried on. 2m (ii) covers those factories wherein 20 or more workers are working or were working on any day of the preceding 12 months and in any part of which a manufacturing process is carried on without the aid of power.

Section 85 covers those factories to which all or any of the provisions of the factories Act are extended by notification in the official gazette by the State Governments notwithstanding that (1) the number of persons employed therein less than 10 if working with the aid of power—85p or less than 20 if working without the aid of power—85 NP (ii) the persons working therein are not employed by the owner there of but are working with the permission of or under agreement with such power.

The annual returns under Factories Act, 1948 consists of 14 statements. Out of this 7 statements are prepared in the Labour unit of Directorate of Economics and Statistics on the basis of particulars furnished in the returns received from the Directorate of Factories and Boilers and the remaining statements are received directly from the Directorate of Factories and Boilers. The Factories and Boilers in their turn depend on the industrial establishments in the State for statistical information prescribed under the different acts. They are scrutinised and reconciled in this division and forwarded to the Government of India (Labour Bureau), Simla. The various statements cover the important topics such as (i) number of factories and workers employed (ii) Factories carrying on dangerous occupations declared dangerous under section 87 and workers employed in such operations, (iii) Section-wise and sector-wise number of working factories and employment therein, (iv) Distribution of working factories submitting returns according to working strength, (v) Distribution of working factories according to number of days worked for submitting returns, (vi) Number of fatal and non-fatal accidents, (vii) Number of fatal and non-fatal accidents according to causes, (viii) Number of accident according to age and

sex, (ix) Number of cases of poisoning and deceased notified under section 89, (x) Number of factories submitting returns according to hours of work for men and women separately and average number of persons employed, (xi) Number of Inspections, (xii) Number of convictions, (xiii) Details of welfare measures such as number of canteens, creches, shelters, rest rooms etc., (xiv) Leave with wages and compensatory holidays. The half yearly returns comprises of only statements I and II.

Growth of Factories in Kerala during the period from 1970 to 1980.

The data relating to the Registration, cancellation, total registered factories at the end of the year and employment in the State during the period 1970 to 1980 is depicted in Appendix-8. It is evident from the table that fluctuation in registration has been noticed from 1970 to 1980. Very often registrations have out numbered cancellation but a reverse trend has been manifested in the years 1970 and 1971. From 1972 onwards an upward trend in registrations has been observed. The minimum registration is witnessed during the year 1970, viz., 102.

On the other hand, 1978 witnessed the maximum cancellations of 178 number of factories where as 1972 witnessed the minimum number of 67 cancellations between 1970 and 1980. During the year 1980 both registrations and cancellation of factories have been decreased when compared to the year 1979. At the end of the year 1980, the total number of registered factories have been reported as 9467 from the Directorate of Factories and Boilers. There has been an unprecedented growth in the number of factories raising the total number 3156 at the end of 1970 to 6488 by the end of 1975. The quinquennial increase has been more than 100% and the annual growth rate being more than 41%. The total increase over a span of 10 years (from 1970 to 1980) is about 200%. The number of working factories have increased from 3040 during the year 1970 to 9106 by the end of 1980 there by registering an increase of about 200%. The percentage of submitted returns to the number of working factories over a period of 11 years from 1970 to 1980 in Kerala are furnished in Appendix-9—67.6% have submitted returns during the year 1970. But there were setbacks in the years 1974, 1975 and 1980. An unprecedented decline in the submission of returns was seen during the years 1974, the percentage being 29.39 only. During the year 1980, the percentage was only 46.52.

Industrial injuries and accidents

One of the main problems in Industry is the industrial injuries and accidents. Any injury is defined as one which prevented the affected workers from attending to work for a period of 48 hours or more immediately following the injury. In the western countries, the mandays lost due to industrial injuries is 4 to

5 times of the loss of mandays due to industrial disputes. But in India, loss due to disputes is taken as 5 to 6 times more than by industrial injuries. The number of accidents per 1,000 workers employed increased from 13 in 1929 to 41.50 in 1958, an increase of more than 300%. The number of accidents per 1,000 workers employed increased further to 77 in 1971.

The succeeding table gives a comparative picture of the industrial injuries in Kerala and the Indian union in 1961, 1971, 1976 and 1979.

Year	INDIA			KERALA		
	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total
1961	474	159222	159696	5	3604	3609
1971	634	321595	322229	5	2432	2437
1976	831	299488	300319	11	5376	5387
1979	691	292653	293344	12	8881	8893

Source: Pocket Book of Labour Statistics.

It is seen that the fatal and non-fatal injuries in Kerala was much less than many other States of the Indian Union in 1961 and 1971. Out of the 474 fatal accidents in the whole of India in 1961 only 5 fatal accidents are in Kerala which is only 1.05% of the total. Total accidents in Kerala accounts for 3609 (2.26%) as against 259696 in the Indian Union for the year 1961. During the year 1971, fatal accidents are reported to be only 5, as against 634 for the whole of India. Similarly for 1979, only 12 fatal accidents and 8881 non-fatal accidents are reported for Kerala against 691 and 292653 for all India. The corresponding percentages are 1.74 and 3.03 respectively. Appendix 10 gives the number of industrial fatal injuries in factories for the whole of India from 1951 to 1977 and also their incidence rate number of fatal and non-fatal accidents in Kerala during the years 1971 to 1980 is also furnished in Appendix 11. Originally accident prevention movement was started by social workers with the idea that human suffering should be mitigated and the management of factories also showed interest as philanthropists. Later statutory enactments have forced to maintain safe conditions for work. But in many industrially advanced countries, the main driving force behind the safety movement today is nothing but cost aspects, viz., accidents are expensive and cause high direct as well as indirect expenditure through medical aid and compensations to the injured person, damage to tools and equipments etc.

To pinpoint, the reasons for the efforts for prevention of accidents are:--

(i) Needless destruction of life and health is a moral evil.

(ii) Failure to make necessary precaution against predictable accidents involves moral responsibility for these accidents.

(iii) Accidents produce social harm also.

(iv) Accidents limit efficiency and productivity.

The organisation of the chief Advisor of factories, Government of India disseminate information on safety measures and prevention of accidents in factories.

The recommendations of the National commission on Labour on safety are divided into three groups:

(i) Measures for safety.

(ii) Training in safety.

(iii) Accidents prevention.

We need control over the benefit and welfare of man. If proper arrangements are made to look after the health of the workers, the production in the factories will be much better than what is today. The axiom that 'health is wealth' is no where more true than in an industrial society and unit. If the worker is healthy, enthusiastic and vigorous the production will increase, work stoppage will decrease and the wealth of the industrial units will also improve.

Women Employment in Factories in Kerala

Till the present century, women usually attended to household duties only. Increase in population, literacy and the urge for a better standard of living brought about many changes in the rate and character of women's participation in all walks of life. Recently, the participation rate of women in almost all activities has increased manyfold. Female labour has dominated agricultural sector in Kerala. In the manufacturing sector also about 30% of the total workers are females. When compared to the employment position in the other states of the Indian union, Kerala possesses a better place in the case of women employment. The succeeding table shows that 38% of the factory employees in Kerala are women as against only 9% in the country as a whole (1971 census).

Sl. No.	State	Percentage of women employment in the factory sector
1	Andhra	30.3
2	Assam	8.4
3	Bihar	3.2
4	Gujarat	9.3
5	Haryana	3.5
6	Himachal Pradesh	3.0
7	Jammu & Kashmir	7.3
8	Karnataka	12.8
9	Kerala	38.0
10	Madhya Pradesh	5.1
11	Maharashtra	7.4
12	Manipur	6.5
13	Orissa	6.3
14	Punjab	2.8
15	Rajasthan	4.8
16	Tamil Nadu	15.4
17	Tripura	4.8
18	Uttar Pradesh	1.0
19	West Bengal	3.1
India		8.6
		(Including Union Territories)

A study on the employment pattern in the registered factory sector witnesses the fact that around 40% of the factory units are employing women workers. It is evident from the following table that about 50% of the employees are females. This observation is based on the data processed out of the statutory returns furnished by the registered factories in Kerala.

Year	Total No. of registered factories	No. of factories submitted Returns	Total Employment in the factories which submitted returns	Women employment out of (4)	Percentage women Employment (5)% (4)
(1)	(2)	(3)	(4)	(5)	(6)
1971	3024	1815	111269	44040	38.5
1975	6317	2678	177172	95324	53.8
1976	6921	3821	226357	132217	58.9
1977	7625	3925	195765	107301	54.8
1978	7781	2926	176673	89442	50.6
1979	8491	4589	195098	99178	50.8
1980	9467	4336	180590	85058	47.7

In this connection it may not be out of place to point out that women employment is not uniformly distributed in all over the factories in the factory sector. The overwhelming engagement of women in some selected industries like cashew, coffee, matches, coir, fish canning, plywood and veneer, cotton textiles etc., contributed to this unique feature of over representation to female labour in the factory sector. Cashew plays a dominant role in this case. In addition to the above, there are also other industries such as oil, tea, glass ware, welding, agricultural implements etc., where women workers are also associated.

Hours of work

Working conditions in Factories are regulated by the Factories Act, 1948 which prescribes a 48 hour week for adult workers and forbids the employment of children under 11 in any factory. Information in respect of (A) 'Number of Factories' and (B) 'Average daily number of workers employed' can be obtained separately for adult men and women under each classification for normal weekly hours. The data highlights the fact that about 92% of the male workers and 97% of the female workers have worked for more than 45 hours in a week during the year in 1971. But during the year 1972, 98.5% of the male workers and 99.5% of the female workers have worked for more than 45 hours in a week. In brief, about 75% of the male workers and 93% of the female workers have worked for more than 45 hours in a week during the last decade.

Inspections and Convictions

Number of inspections and convictions conducted during the year 1971 to 1980 in Kerala in the factory establishments can be had from the following table.

Year	Inspections	Convictions
1971	3144	117
1972	3620	161
1973	5201	99
1974	6186	131
1975	6468	117
1976	7125	164
1977	7879	97
1978	8114	75
1979	8837	118
1980	9477	103

It is evident from above that the number of inspections have increased year by year during the decade, where as the number of convictions have fluctuated. Minimum number of convictions viz., 75 have conducted during the year 1978. At the same time maximum number of convictions have occurred in 1976, viz., 164.

Statistics of Maternity Benefit Act in respect of Factories Covered by the Maternity Benefit Act 1961

Statistics relating to the number of women employees in factories, plantations and mines claiming maternity benefits and the amount of benefit paid are collected under this Act. The enforcement of the Act in plantations coming under plantations Labour Act is exercised by the plantations inspectorate. In the case of registered factories coming under the purview of the Act, the State Director of Factories and Boilers is the competent authority. The Act applies to areas where the Employees State Insurance has not been extended.

There are 3 Inspectoresses of factories for women welfare with Headquarters at Quilon, Alwaye and Kozhikode for administering the provisions of the Maternity Benefit Act 1961. Most of the factories are covered by the E. S. I. Act (Employees State Insurance). Maternity Benefit due to the workers in such factories are being paid by the E. S. I. corporation directly. Statistics of Maternity Benefit in respect of factories covered by the Maternity Benefits during the decade 1970-1980 is depicted in appendix-12.

Eventhough the number of factories covered by the Maternity Benefit Act has been increased from 887 in the year 1971 to 1976 for the year 1980, the number of women who claimed maternity benefit shows a downward trend, viz.,

1445 and 452 during the years 1971 and 1980 respectively. Similarly number of claims accepted and paid either fully or partially has been decreased by 1004 i.e., from 1439 in the year 1971 to 435 in the year 1980.

Statistics of Maternity Benefit in respect of plantations are also dealt with. The Act is administered in plantations by the plantations Inspectorate consisting of the Chief Inspector of plantations and ten inspectors of plantations who have been notified as Inspectors under the Maternity Benefit Act for the whole State. The table highlights the fact that the number of plantations covered by this Act has been the maximum during the year 1977 followed by 1974 (From 1973 to 1980). The corresponding figures are 609 and 491 respectively. But the year 1979 witnessed the minimum number, viz., 332.

Number of women who claimed maternity benefit has declined from 9283 during 1973 to 6059 in the year 1980. The maximum number of women who claimed maternity benefit was in the year 1978 (15821) followed by 1973. The lowest number of women who claimed maternity benefit was during the year 1980. The number of claims accepted and paid either partially or fully during the year 1973 and 1980 are 9174 and 5862.

Conclusion

Labour Statistics have to be collected with utmost care and promptness to keep them free from deficiencies. But the experience of the agencies charged with the responsibility for collecting and maintaining these statistics suffered from a number of short comings mainly the following.

- (a) Poor response in the submission of returns.
- (b) Delay in getting the returns from the primary reporting units.
- (c) Defects in the returns.
- (d) Incomplete returns.

Owing to poor response the utility of the data becomes much less and it may not be representative in character. Timely submission

of data is very important. Delay in getting the returns within the dates prescribed for the same makes it difficult to process the data and consolidate the same according to the time schedule. Defective and incomplete data necessitate thorough scrutiny of the schedules. To get the defects rectified, a large volume of correspondence becomes necessary resulting in undue delay in finalising the statements required by the Government.

On account of the above mentioned difficulties, a committee on 'Improvement of Labour Statistics' was appointed in 1958 by the Government of India to suggest ways and means of improving labour statistics. Hence attempts were made to organise training classes at the centres and also at the state level. The main aim of the training programme on improvement of Labour Statistics is to impart adequate training to the personnel of the state level connected with the administration of the various labour laws, collection and processing of the data under the different labour enactments and also to the staff of the primary units.

Initially attempts were made to conduct training classes as a joint venture of the concerned 3 departments viz., Labour Department, Factories and Boilers, and Directorate of Economics and Statistics. Some difficulty was experienced in securing proper co-ordination of the three departments to chalk out joint training programme. Hence during later years training classes had been organised by the Director of Factories and Boilers and Labour Commissioner in collaboration with the Directorate of Economics and Statistics. An effective link between the concerned departments and the primary units could go a long way in analysis and interpretation of useful and related data on labour.

Training Classes should be conducted frequently and intensively. But inadequacy of funds has been a handicap in organising training classes frequently. Hence appropriate funds should be diverted for this purpose.

In addition to these, statistical personnel should be posted in the Directorate of Factories and Boilers and also in the sub offices of the Labour Department to facilitate prompt collection of data and also more personnel should be posted in the Directorate of Economics and statistics to minimise delay in the processing of returns.

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APPENDIX—1

PERCAPITA AVERAGE DAILY EARNINGS OF FACTORY WORKERS UNDER THE PAYMENT OF WAGES ACT 1936—KERALA (Rs. 400/1000 PER MONTH)

(1)	(2)	1970 (3)	1975 (4)	1978 (5)	1979 (6)	1980 (7)
1	Rice Mill	5.05	6.97	8.04	8.92	12.76
2	Sugar	9.05	13.34	25.16	19.59	19.31
3	Edible Oil	4.90	10.35	10.12	11.50	14.41
4	Tea Factories	4.12	8.10	12.03	11.43	14.61
5	Cashew factories	3.35	6.67	9.35	8.56	9.88
6	Cotton textile	7.12	8.79	7.93	19.25	21.35
7	Coir	7.55	10.93	13.89	15.35	16.78
8	Umbrellas	6.20	10.11	13.45	12.60	11.95
9	Saw Mills	5.78	10.20	11.12	11.93	13.23
10	Plywood	7.27	..	18.08	8.79	9.25
11	Splints and Veneers	2.86	8.62	9.71	..	..
12	Furniture and Fixture	9.36	12.45	15.69	15.56	18.90
13	Printing and Publishing	10.24	10.70	12.94	18.64	18.92
14	Tyres and Tubes	18.22	8.62	21.92	19.18	19.67
15	Rubbers	6.97	10.40	10.89	18.48	18.68
16	Artificial measures	4.99	10.04	28.11	20.68	37.00
17	Pharmaceutical	6.56	10.41	23.29	21.45	23.72
18	Matches	2.10	3.05	4.12	5.73	8.03
19	Soaps	10.25	11.83	17.00	29.38	26.94
20	Bricks and Tiles	5.12	11.11	11.95	14.95	16.19
21	Pottery China and Earthenware	7.08	11.93	16.39	14.10	17.45
22	Metal products	7.44	9.18	23.37	18.40	20.32
23	General Machinery	7.21	9.23	13.56	14.79	18.44
24	Electrical Machinery	9.87	10.08	18.01	23.27	25.94
25	Repair and Motor Vehicle	10.06	10.23	18.32	25.23	31.32
26	Sanitary Services	10.29	..	..	..	..

Source: Directorate of Economics and Statistics.

APPENDIX No. 2

STATEMENT ON THE WORKING OF PAYMENT OF WAGES ACT IN RESPECT OF PERSONS EARNING LESS THAN Rs. 4000 1,000 UP TO 1975, PERSONS EARNING LESS THAN Rs. 400

Sl. No.	Year	Total number of Factory Establishment		Total No. of days worked by all the units	Total No. of Mandays worked by all the units	Average daily employment (total)	Gross wages including deductions (in lakhs)
		Covered by the payment of wages Act	Submitted Returns				
1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	1970	3040	1646	451128	30912523	132039	1894.6
2	1974	6036	1343	344232	19815095	92318	1449.8
3	1976	6921	3567	918893	40643873	213764	5448.9
4	1980	9106	4123	994113	32634711	167368	6440.4

Source: Directorate of Economics and Statistics, Trivandrum.

APPENDIX 3

DISPUTES CLASSIFIED ACCORDING TO THE METHOD OF TERMINATION (KERALA)

<i>Method of Termination</i>	<i>Conciliation</i>		<i>Mutual bilateral negotiation</i>		<i>Others</i>		<i>Number of token strike</i>		<i>Number of strike continuing</i>		<i>Total</i>	
	<i>No. of dispute</i>	<i>Percentage of the total</i>	<i>No. of disputes</i>	<i>Percentage of the total</i>	<i>No. of disputes</i>	<i>Percentage of the total</i>	<i>No. of disputes</i>	<i>Percentage of the total</i>	<i>No. of disputes</i>	<i>Percentage of the total</i>	<i>No. of disputes</i>	<i>Percentage of the total</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
70	69	25.37	22	8.09	117	43.01	21	7.72	43	15.81	272	100.00
71	95	35.19	80	29.63	36	13.33	52	19.26	7	2.59	270	100.00
72	87	29.39	90	30.41	22	7.43	79	26.69	18	6.08	296	100.00
73	142	55.04	56	21.70	8	3.10	39	15.12	13	5.04	258	100.00
74	118	52.44	66	29.33	2	0.89	35	15.56	4	1.78	225	100.00
75	37	40.66	39	42.86	1	1.10	6	6.59	8	8.79	91	100.00
76	12	21.05	26	45.61	3	5.26	10	17.55	6	10.53	57	100.00
77	92	51.11	20	11.11	33	18.33	23	12.78	12	6.67	180	100.00
78	83	63.36	10	7.63	16	12.22	12	9.16	10	7.63	131	100.00
79	59	49.17	21	17.50	12	10.00	18	15.00	10	8.33	120	100.00
80	36	34.95	53	51.46	3	2.91	4	3.88	7	6.80	103	100.00

APPENDIX 4

NUMBER OF WORKERS NORMALLY EMPLOYED, NUMBER OF WORKERS NORMALLY AFFECTED AND TOTAL MANDAYS LOST IN FACTORIES HAVING DISPUTE

<i>Method of termination</i>	<i>No. of workers normally employed</i>	<i>No. of workers normally affected</i>	<i>Total No. of mandays lost</i>
(1)	(2)	(3)	(4)
70	87331	73304	610177
71	214299	201706	3130326
72	253097	228264	3210905
73	153895	135087	2291915
74	291564	285876	4794202
75	25670	23249	538264
76	5946	3857	90824
77	160488	154154	2781135
78	71721	65476	2108499
79	165830	153550	3552226
80	73955	73769	1430829

APPENDIX—5

DISPUTES CLASSIFIED BY CAUSES FROM 1970 to 1980

Causes	wages and allowance		Bonus		Personal		Retrenchment		working conditions		Others		Total	
	No. of dispute	% of Total	No. of dispute	% of Total	No. of dispute	% of Total	No. of dispute	% of Total	No. of Dispute	% of Total	No. of Dispute	% of Total	No. of Dispute	% of Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
70	115	42.28	15	5.51	40	14.71	..	..	8	2.94	94	34.56	272	100.00
71	139	51.48	24	8.89	..	..	4	1.48	3	1.11	100	37.04	270	100.00
72	97	32.77	20	6.76	..	..	10	3.37	1	0.34	168	56.76	296	100.00
73	103	39.92	41	15.89	..	..	1	0.39	..	..	113	43.80	258	100.00
74	104	46.22	27	12.09	..	..	8	3.55	24	10.67	62	27.56	255	100.00
75	37	40.66	4	4.40	14	15.38	4	4.40	..	..	32	35.16	91	100.00
76	10	17.54	23	49.55	4	7.02	..	..	1	1.75	19	33.34	57	100.00
77	73	40.56	49	27.22	17	9.44	..	..	..	..	41	22.78	180	100.00
78	49	37.40	26	19.85	4	3.05	3	2.29	2	1.53	47	35.88	131	100.00
79	34	28.33	25	20.83	14	11.67	5	4.17	2	1.67	40	33.33	120	100.00
80	48	46.60	8	7.77	28	27.18	4	3.88	2	1.95	13	12.62	103	100.00

APPENDIX—6

DISPUTES CLASSIFIED ACCORDING TO RESULT FROM 1970 to 1980

(KERALA)

Disputes resulted	Successful		Un successful		Partially		Indefinite		Others		Total	
	No. of Dispute	% of Total	No. of Dispute	% of Total	No. of Dispute	% of Total	No. of Dispute	% of Total	No. of Dispute	% of Total	No. of Dispute	% of Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
70	146	53.68	..	..	40	14.71	7	2.57	79	29.04	272	100
71	116	42.96	..	0.37	77	28.52	17	6.30	59	21.85	270	100
72	139	46.96	6	2.03	36	12.16	2	0.67	113	38.18	296	100
73	127	49.22	4	1.55	70	27.13	5	1.94	52	20.16	258	100
74	110	48.89	2	0.89	71	31.56	3	1.33	39	17.33	225	100
75	23	25.28	1	1.10	52	57.14	1	1.10	14	15.38	91	100
76	13	22.81	..	..	27	47.37	1	1.75	16	28.07	57	100
77	97	53.89	2	1.11	24	13.33	10	5.56	47	26.11	180	100
78	95	72.52	2	1.53	2	1.53	7	5.34	25	19.08	131	100
79	59	49.17	7	5.83	21	17.50	2	1.67	31	25.83	120	100
80	59	57.28	1	0.97	32	31.07	6	5.83	5	4.85	103	100

APPENDIX 7

STATEMENT SHOWING, No. OF DISPUTES,
WORKERS AND MANDAYS LOST IN INDIA

Year	Number of disputes	Number of workers	Number of mandays lost
(1)	(2)	(3)	(4)
*1951	1071	691321	3818928
1956	1203	715150	6992940
1961	1357	511860	4918755
1966	2556	1410056	13846329
1970	2889	1827752	20563381
1971	2752	1615140	16545636
1972	3243	1736737	20543916
1973	3370	2545602	20626253
1974	2938	2854623	40262417
1975	1943	1143426	21900931
1976	1459	736974	12745735
1977	3117	2193215	25320072
1978(P)	3187	1915533	28340193
1979	..	..	..
@1980	2856	1900333	21925026
1981	2151	1216519	25503654

Source: *Statistical Abstract—India (1979)
@Indian Labour Journal.

APPENDIX 9

NUMBER OF WORKING FACTORIES AND PER-
CENTAGE OF SUBMITTED RETURNS TO THE
NUMBER OF WORKING FACTORIES IN
KERALA

Sl. No.	Year	Number of working factories	Submitted returns	Percentage of submitted returns to total working factories
(1)	(2)	(3)	(4)	(5)
1.	1970	3040	2056	67.63
2.	1971	3024	1815	60.02
3.	1972	3499	1962	56.07
4.	1973	5046	2131	42.23
5.	1974	6036	1774	29.39
6.	1975	6317	2678	42.39
7.	1976	6921	3816	55.14
8.	1977	7625	3925	51.48
9.	1978	7784	3926	50.44
10.	1979	8491	4589	54.05
11.	1980	9106	4236	46.52

Source: Directorate of Economics & Statistics.

APPENDIX 8

REGISTRATION AND CANCELLATION OF
FACTORIES AND AVERAGE NUMBER OF
WORKERS EMPLOYED DAILY IN ALL
THE FACTORIES IN KERALA

Sl. No.	Year	At the beginning of the year	Number Newly registered during the year	Factories cancelled during the year	At the end of the year	Average Number of workers employed daily in all the factories
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	1970	3161	102	107	3156	205174
2.	1971	3156	150	162	3144	206839
3.	1972	3144	543	67	3620	226163
4.	1973	3620	1681	109	5192	244329
5.	1974	5192	1117	132	6177	258960
6.	1975	6177	543	252	6468	264194
7.	1976	6468	857	198	7125	281201
8.	1977	7010*	1133	274	7869	285586
9.	1978	7869	713	478	8104	272397
10.	1979	8104	1109	386	8827	295502
11.	1980	8827	823	183	9467	300515

APPENDIX 10

INDUSTRIAL INJURIES IN FACTORIES

Year	Fatal	Incidence rate	Fatal	Incidence rate	Total	Incidence rat.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1951	234	0.09	75713	29.84	75347	29.93
1956	278	0.09	1128177	44.47	128450	44.56
1961	474	0.14	159222	45.53	159696	45.67
1966	591	0.15	208253	51.18	208844	51.33
1971	635	0.15	324545	75.52	325180	75.67
1973	666	0.15	285344	62.43	286010	62.58
1974	650	0.14	248460	53.63	249110	53.77
1975	660(P)	0.14	241663	50.72	242323	50.86
1976	831(P)	0.16	299488	59.99	300319	60.15
1977	686(P)	0.13	31552	263.83	316238	63.96

Source: Statistical Abstract

APPENDIX 11

KERALA

Year	Fatal accident	Non-fatal accident	Total
(1)	(2)	(3)	(4)
1971	5	2384	2389
1972	8	4674	4682
1973	17	4577	4594
1974	10	3961	3971
1975	9	3993	4002
1976	10	5309	5319
1977	16	5946	5962
1978	4	7947	7951
1979	12	7537	7549
1980	12	7888	7900

APPENDIX 12

NUMBER OF ESTABLISHMENTS COVERED AND CLAIMS FOR MATERNITY BENEFIT UNDER THE MATERNITY BENEFIT ACT

Year	Number of plantations and Factories covered by the Maternity Benefit Act	Which Submitted Annual Returns	Average daily number of women employed in Factories in Submitted returns	Number of women who claimed maternity benefits	Number of Claims accepted and paid either fully or partially	
(1)	(2)	(3)	(4)	(5)	(6)	
1971	Factories	887	622	24924	1445	1439
	Plantations	459	269	44127	9615	9591
	Total	1346	891	69051	11060	11030
1972	Factories	642	271	12634	649	647
	Plantations	498	264	68489	8819	8496
	Total	1140	535	81123	9468	9143

	(1)	(2)	(3)	(4)	(5)	(6)
1973	Factories	644	161	21391	2038	2033
	Plantations	484	264	49414	9283	9174
	Total	1128	425	70805	11321	11207
1974	Factories	648	450	47295	1277	1277
	Plantations	491	255	46429	7491	7224
	Total	1139	705	93724	8768	8501
1975	Factories	709	538	59294	2702	2702
	Plantations	490	276	43034	8419	8053
	Total	1198	814	102328	11121	10757
1976	Factories	1118	694	73455	775	775
	Plantations	484	288	44232	8371	7865
	Total	1602	982	117687	9146	8640
1977	Factories	570	546	76290	1934	1934
	Plantations	609	322	59052	7848	7787
	Total	1179	868	129342	9782	9721
1978	Factories	781	541	39361	950	940
	Plantations	473	361	42583	15821	15821
	Total	1254	902	81944	16771	16761
1979	Factories	1013	317	9292	364	355
	Plantations	332	298	40532	6537	6537
	Total	1345	615	49824	6901	6892
1980	Factories	1176	817	88906	452	435
	Plantations	475	344	52648	6059	5862
	Total	1651	1161	141554	6511	6297

Source: Directorate of Economics & Statistics

4. LABOUR SECTOR—DATA REQUIREMENTS

C. T. Sukumaran

The importance of labour as a factor of production cannot be over emphasized. With the industrialisation of the economy the labourer has come to occupy the centre of the State. The main activity of the Labour Department is therefore concerned with the various aspects of the many problems arising from this factor of production.

Data Source

The origin of data relating to many spheres of labour is the Assistant Labour Officer in many instances. The reports of the Assistant Labour Officers are forwarded to the District Labour Officers who consolidate these reports for transmission to the Labour Commissioner's Office. It would be very beneficial if at this level there is more co-ordination between the Assistant Labour Officer and District Statistical Officer of Directorate of Economics and Statistics. Many technical aspects can be handled by the District Statistical Officer with the help of the Assistant Labour Officer.

For data relating to Plantation Industry it is the Inspector of Plantations who is primarily responsible. Based on the reports of the Inspectors of Plantations, the Chief Inspector of Plantations communicates a consolidated report to the Labour Commissioner's Office.

Trade Union statistics is solely obtained from the annual returns furnished by trade unions. The most comprehensive report on this transmitted to the Labour Bureau Simla, is the Annual Return under the Trade Union Act.

There are various areas relating to labour in which data is being collected, compiled and analysed. As all the myriad items cannot be discussed, attention is mainly directed to some important returns prepared by the statistical wing, some welfare schemes administered by the department and the trade union statistics. Brief references are also made to the Industrial Relations Committees functioning in the State the subsidised housing schemes for plantation workers, the minimum wages in various industries etc.

To study the gap in the availability of data in labour statistics we must primarily assess what are the data now being collected. In the Department the Statistical section deals with collection of data on various aspects of industrial relations, number of workers in different industries, wages, etc., for preparing statutory and non-statutory returns. A very detailed report is the monthly report on the industry-wise

particulars of the industrial disputes arose, settled etc. Here we have the number of disputes which arose during the month, pending previously, the disputes settled by voluntary negotiation, conciliation, withdrawn by the parties, referred for adjudication, arbitration, etc. We also collect data here of the number of disputes that led to strikes, lockouts, and the number of workers involved in both cases. Another very important data computed from the returns sent by the District Labour Officers is the number of mandays lost due to strikes, lockouts, layoffs, closures etc. In this context it would be very useful if atleast an approximate figure of number of mandays of work available, is collected. From this we would be able to find out the percentage number of mandays lost in one category of industry or in one establishment itself for a particular year. This data is on an industry-wise basis for each month. A cause-wise picture of the disputes is also computed. A final statement of this report also presents details about the number of trade unions the cancellations effected, unions registered etc. during the month.

Now the monthly return could be made more informative by including data on many more aspects for eg: along with the percentage causewise distribution of disputes, the percentage distribution of disputes by results such as successful, partially successful etc. is included. Again the percentage distribution, of disputes by duration as one day or less, more than 1 day upto 5 days etc., to more than a month could also be useful for further analysis. These two aspects are brought out in the annual pocket book of labour statistics published by the Government of India.

An attempt has been made recently to keep the labour statistics continuously up dated. This is done by maintaining a calendar of long term settlements and keeping a watch of the dates of their expiry. Conciliation is initiated sufficiently early such that the time gap between the expiry of a long term settlement and the next long term settlement is reduced to the minimum.

Collection and compilation of data relating to industrial disputes are being done keeping in view the requirements of the Labour Minister for answering questions raised by legislators in the floor of the Assembly. For this purpose the nature of questions which have been raised in the past is taken into consideration and details are collected and compiled. Also in the event of unusual types of questions the subordinate offices are immediately alerted and answers are

collected within the time available for answering the interpellations.

Statement I gives the number of strikes, lockouts, etc. which arose during the last 3 years along with the number of mandays lost in each case. These annual statistics are computed from the monthly reports on industry-wise particulars. Statement II shows the number of mandays lost industry-wise for the month of September which is the latest. From this data it remains to be seen whether sickness in any industry can be analysed and the causes studied.

Another monthly report is the report on violence, gheraos etc., in industries. Along with this report the details on industrial accidents, number of workers affected by these accidents could also be added for collection of data.

1. Annual return on the Trade Union Act.
2. Quarterly Report on the Minimum Wages Act.
3. Annual report on the Minimum Wages Act.
4. Annual report on the Motor Transport Workers Act.
5. Annual report on the Shops and Commercial Establishment Act.
6. Annual report on the Industrial Establishments (Standing Orders) Act.
7. Annual report on the Workmen's Compensation Act.
8. Half yearly report on the Beedi and Cigar Workers Act.
9. Annual report on the Plantation Labour Act.

Unfortunately no changes can be made in the pro forma of the above acts as they are prescribed by the Labour Bureau Simla. The above acts form only a part of the many acts administered by the Department. The other Acts administered by the Department are:

1. Payment of Wages Act, 1936
2. Employment of Childrens Act, 1938
3. Industrial Disputes Act, 1947.
4. Working Journalists (Conditions of Service and Miscellaneous Provisions) Act, 1955.
5. Working Journalists (Fixation of Wages) Act, 1958.
6. The Maternity Benefit Act, 1961.
7. The Payment of Bonus Act, 1965.
8. The Contract Labour (Regulation and Abolition) Act, 1970.
9. The Payment of Gratuity Act, 1972.
10. The Equal Remuneration Act, 1976.
11. The Sales Promotion Employees (Conditions of Employment) Act, 1976.
12. The Kerala Industrial Establishment (National and Festival Holidays) Act, 1958.

13. The Kerala Industrial Employment Payment of Gratuity Act, 1970.
14. The Motor Transport Workers (Payment of Fair Wages) Act.
15. The Kerala Payment of Subsistence Allowance Act, 1972.
16. The Kerala Agricultural Workers Act, 1974.

With the appropriate data the proper administration of these Acts can be assessed. Data relating to the number of inspections conducted, petitions filed, fines administered etc. would be of great relevance here. Statement IV shows some of the details under these Acts collected on a monthly basis by the Department.

Trade Union Statistics

The Labour Commissioner being the Registrar of Trade Unions, one important item of data is trade union statistics. The Trade Union movement started in India during the early decades of the 20th Century. It has since made significant progress in securing to the workers political and economic rights as well as a dignified status in society. It has grown in size and strength, more so in power and influence. But its coverage is limited. Statement III shows the growth of Trade Unions over a decade in Kerala. Only around 1979-80 an effort was made for cancellation of Trade Unions for want of submission of annual returns. There are still a large number of workers in the unorganised sector who are not yet unionised. The general standard of life of the workers is still low. The movement is at present characterised by multiplicity of unions and union organisations and the industrial relations situation in this country is marked by acute inter-union rivalry. The movement has therefore a long way yet to go to achieve its objectives. There are also many hurdles in its way.

Today with the growth of the country's industrialisation, the trade union movement has grown in strength and stature. Through a period of struggle the working class has won respectability and recognition in the life of the nation.

It is of great importance to create workers education Centres/Associations so that the worker should be made to understand that a climate of industrial peace can be generated by cordial relationship between the employer and the employees and that both should work in the interest of the community. There are not enough workers' education centres in Kerala. There are two at Kalamassery and Kozhikode

One important aspect on which data is being collected is workers' participation in industry. More informative data on this subject has to be collected. Data relating to the number of different joint actions councils formed could be of great relevance to this Department.

Welfare Schemes

An important function of the Labour Department is to look after the Welfare of the workers by the administration of Welfare Schemes through plan schemes.

Some of the Welfare Schemes administered by the Department are:

1. Subsidised Housing Scheme for Plantation Labour, Kerala.
2. The Kerala Coconut, Palmyra and Arecanut Tree Climbers Welfare Scheme, 1980.
3. The Kerala Cashew Workers Welfare Scheme, 1981.
4. The Kerala Coir Workers Welfare Scheme, 1981.
5. The Kerala Construction Workers and Quarry Workers Welfare Scheme, 1981.
6. The Kerala Handloom Workers Welfare Scheme, 1981.

1. Subsidised Housing Scheme for Plantation Labour, Kerala

This is a centrally Sponsored Scheme. The Scheme envisages the grant of 50% loan and 37½% subsidy and 12½% to be met by the concerned plantation employers for the construction of houses for the plantation workers. The ceiling cost of construction is fixed at Rs. 5,000 per house.

Mode of disbursement of loan and subsidy is given below:

Loan

1. 25% on execution of agreement for financial assistance.
2. 25% when construction reaches plinth level.
3. 25% when construction reaches roof level.
4. 25% on satisfactory completion of construction of houses.

Subsidy

1. 60% when the construction of houses reaches roof level.
2. 40% when the Government receives and accepts as correct, the complete and detailed accounts of the expenditure by the beneficiaries duly audited and certified by a Chartered Accountant relating to the cost of completion of the houses. The power to sanction loan and subsidy under the scheme and the powers to reject application for Financial Assistant rests with the Labour Commissioner.

Statement II shows the details for the year.

During the year 1982-83 no allotment has been received. Government have been addressed to allot a sum of Rs. 12 lakhs (Rs. 7 lakhs towards subsidy and Rs. 5 lakhs loan) for the implementation of the Scheme.

2. The Kerala Coconut Palmyra and Arecanut Tree Climbers Welfare Scheme

The scheme envisages payment of exgratia Financial Assistance to those employed in climbing coconut palmyra and arecanut trees except for tapping purposes. In the event of permanent or total disablement of the employees or his dependents, in the case of fatal accident while employed will be paid a financial assistance of Rs. 5,000.

During the year 1982-83 an amount of 2 lakhs has been provided in the Budget Estimate for this purpose.

The Kerala Cashew Workers Welfare Scheme 1981 and the Kerala Coir Workers Welfare Scheme 1981

The above two schemes were introduced with effect from 2-10-1981. But the same have not been implemented so far. It is provided under clause 3 of the Schemes that there should be formed a fund to be called the Cashew Workers Welfare Fund, Coir Workers Welfare Fund. The Schemes could be made operative only on the establishment of the fund. Government have been addressed in the matter.

These schemes envisage financial assistance to the employees or dependents of such employees who had been workers in the Cashew/Coir Industry for a period of 5 years preceding the date of application for Financial Assistance and having an annual income of less than Rs. 3,600.

During the year 1982-83 a sum of Rs. One lakh each has been provided in the Budget Estimate.

The Kerala Construction Workers and Quarry Workers Welfare Scheme

The Scheme was introduced as per G. O. (P) 7981/LBR dated 1-10-1981. It came into force with retrospective effect from 1-4-1981. The Scheme envisages payment of Rs. 5,000 as exgratia Financial Assistance to an employee in the event of his becoming permanently and totally disabled as a result of an accident arising out of and in the course of his employment or to the dependents of employers in the case of fatal accident. During the year 1982-83 an amount of Rs. 50,000 has been provided in the Budget Estimate.

The Kerala Handloom Workers Welfare Scheme

The Kerala Handloom Workers Welfare Scheme was introduced as per G. O. (P) 8081/LBR dated 1-10-1981. It has not been implemented so far. As in the Cashew and Coir Workers Welfare Schemes, it is provided in this scheme also that there shall be formed a fund to be called the Handloom Workers Welfare Fund. Government have been addressed on the matter.

During the year an amount of Rs. 50,000 has been provided in the Budget Estimate for this purpose.

It is understood that qualitative benefits accruing to the workers cannot be statistically assessed. Still a yawning data gap exists in this area. No basic statistics relating to the number of persons benefitting from such of these schemes is available. A monthly report on the progress of each scheme incorporating details such as how much money was disbursed, how it was utilised etc. under each scheme would come in very useful for a further analysis of the welfare measures administered.

Kerala Agricultural Workers Pension Scheme

The introduction of the Agricultural Workers Pension Scheme has widened the data base of Labour Statistics.

Very useful and up-to-date data regarding number of applications received by Village Officers, number of applications sanctioned etc. is being collected by the Department

This scheme brought into force with effect from 1-4-1980, provides for payment of a monthly pension of Rs. 45 to Agricultural Workers who have completed 60 years of age and whose Annual income does not exceed Rs. 1,500 (in calculating such income the income of the applicant including husband/wife unmarried adult sons and daughter if any shall also be taken into account). An Agricultural Worker other than a worker covered by the Plantation Labour Act depending principally on wages for his livelihood and residing in the State for a continuous period of at least 10 years preceding the date of application for pension is eligible for pension. Agricultural Workers who owing to old age or physical infirmity are not employed as Agricultural Workers will also be eligible for pension if they are otherwise eligible under the scheme.

Under the old scheme issued in G. O. (P) No. 31/80/LBR dated 26-4-1980 the executive authorities of local bodies sanction pension to the Agricultural Workers and the District Labour Officers made payment through money order. The scheme was revised as per G. O. (P) No. 112/80/LBR dated 28-10-1980. As per the revised scheme a selection committee consisting of representatives of local bodies and Trade Unions of Agricultural Workers sanctioned the pension and the District Labour Officers had to arrange disbursement of pension through the Primary Co-operative Societies.

Since there were widespread complaints that a large number of ineligible persons were sanctioned pension, Government ordered that a detailed verification of the pension cases already sanctioned, may be conducted by the officers of the Department. Accordingly verification of all sanctioned applications received in the office of the District Labour Officers upto 30-9-1981

has been completed and payment authorised for the eligible persons upto 30-9-1981.

142543 applications were found eligible for verification from those applications received upto 31-3-1981 in the District Labour Officers' office. So also 29833 applications received for the period from 1-4-1981 to 30-9-1981 were found eligible for payment of pension. Hence during 1981-82 (upto 30-9-1981) pension has been authorised to 172376 persons.

As per G. O. (P) 23/81/LBR dated 13-7-1982 a revised scheme has been brought into force with effect from 1-6-1982.

As per the revised scheme the application for pension shall be submitted to the Village Officers in whose jurisdiction the applicant is a resident. The Village Officers after making necessary enquiries and recording his certificate in the application shall forward the same to the Deputy Labour Officer attached to the office of the District Labour Officer. The Deputy Labour Officer will sanction the pension and the same will be sent to the pensioner by money order.

For the years 1980-81 and 1981-82 an amount of Rs. 10,92,27,925 and Rs. 7,44,20,135 respectively have been expended towards pension.

During the year 1982-83 a sum of Rs. 9,50,000 towards pension and Rs. 50 lakhs towards other charges have been provided for in the State Budget. Out of this an amount of Rs. 1,11,42,000 towards pension and Rs. 3,40,450 towards other charges have been distributed to the District Labour Officers for payment of pension to the Agricultural Workers for two months i.e. June and July 1982.

Proposals for an amount of Rs. 10.8 crores towards pension and Rs. 50 lakhs towards other charges have been included in the Budget Proposals for 1983-84. Statement VI gives the agricultural pension details as on 5-1-1983.

The grievances of the workers in certain industries like coir, cashew, plantation etc., are sought to be rectified by the Industrial Relations Committee functioning. The many Industrial Relations Committees are:—

1. The Industrial Relations Committee for Cashew Industry.
2. The Industrial Relations Committee for Coir.
3. The Industrial Relations Committee for Textile Industry.
4. The Industrial Relations Committee for Kuttanad Agricultural area.
5. The Industrial Relations Committee for Palghat Agricultural area.
6. The Industrial Relations Committee for Toddy Tapping Industry.

7. The Industrial Relations Committee for Working Journalists.
8. The Industrial Relations Committee for non-Journalists.
9. The Industrial Relations Committee for Plantation Labour Committee.
10. The Industrial Relations Committee for Motor Transport Industry.
11. The Industrial Relations Committee for Tile Industry.
12. The Industrial Relations Committee for Alleppey Port.
13. The Industrial Relations Committee for Beedi Industry.
14. The Industrial Relations Committee for Tripartite Committee for Cardamom Plantation.
15. The Industrial Relations Committee for Equal Remuneration Advisory Committee.

An analysis on what are the main industrial problems dealt with by the Industrial Relations Committee can be made if data relating to existing wages, the Minimum Wage for any one industry and the wage revised by the Industrial Relations Committee are collected together and studied.

Regarding Minimum Wages there are Government notification fixing/revising them. As we know this topic is being dealt elaborately by Mr. Varma in this Seminar. So nothing more need be said here.

Another item of data collection is the bonus paid during the festival seasons. This data is very useful for making policy decisions by Government. Again data relating to independent and stray items such as the Number of Cinema theatres, number of Quarry Workers in the State etc., are collected as and when the need for such data arises, for preparing for instances, answers to the L. A. Sessions.

For practical purposes relating to labour policy formulation and economic inferences,

the availability of comparative statistical figures, for Kerala, Andhra, Karnataka and Tamil Nadu in such areas as number of workers, wages, cost of production, cost of living etc. would become necessary. An informative statement showing this comparative pattern has to be maintained. This has to be updated periodically. In the instance of wages, the minimum wages as per Government notification in such traditional industries as cashew, beedi, coir, handloom etc., in Kerala, Andhra, Karnataka and Tamil Nadu are now being collected and a register maintained.

Innovative data or worked out figures published by the Labour Bureau in the Indian Labour Journal are the indices of wages. Simulating this, for Kerala the index of prevailing wages in various categories of industries can easily be calculated selecting one typical year as base year.

For statistical data to be accurate it is very important that persons with the appropriate orientation be sent to collect the data. In this regard, the co-ordination between the sub offices of the Labour Department and the District Offices of the Directorate should be strengthened. Periodic training classes should be given by the senior and more experienced officers of the Directorate to the Assistant Labour Officers. The specified performae for data collection can then be explained and discussed in detail. A more ideal method would be to have at least one person with the proper background for data collection in each of the offices of the Regional Labour Inspectors.

In short it may be pointed out that data collection in fresh aspects/items of labour economics is a progressive process and that data gaps would continue to exist at any point of time. It is only when the need for a never item of data arises (for further study or answering an interpellation etc.) that we are aware of this item and collect the required data. A closer liaison and coordination between the related activities of the Labour Department and the Directorate of Economics and Statistics will help the easy realisation of the above objectives.

5. DATA BASE FOR ESTIMATES OF EMPLOYMENT UNEMPLOYMENT IN KERALA

Mridul Eapen
Chandra Mohan

The basis of estimating employment and unemployment for all-India, as also particular states such as Kerala, has been subject to strong criticism. These have been discussed quite extensively in the Report of the Committee of Experts on Unemployment Estimates (1970) set up by the Planning Commission. Subsequently, in the light of its recommendations, some efforts were made to improve upon the methodology. However since many of the limitations are inherent in the socio-economic conditions of our economy, they cannot be wholly overcome by conceptual improvements or improvements in the techniques of estimation.

In the case of Kerala, certain characteristic features of its economy, which have led to a unique co-existence of high rates of unemployment and relatively high wage rates in some sectors, introduce further dimensions to the problem. Some of these features are: historically high levels of literacy and education, political consciousness of its workforce, high rates of population growth and density, very low land man ratio, higher proportion of non-agricultural occupations and a slow rate of growth of modern industry. These further complicate our understanding of its employment and unemployment situation. The recent Census survey on Housing and Employment in Kerala (1980) undertaken by the Directorate of Economics and Statistics, which differs in its concepts and definition from the existing estimates, is yet another attempt at grappling with the real situation as it exists in Kerala today. In this note we shall only briefly touch upon the various existing sources of data which as mentioned earlier have been exhaustively dealt with in the Expert Committee Report; however we shall discuss in somewhat greater detail the limitations of the 1980 Census Survey of Kerala since it differs from the earlier sources.

Major Sources of Data and Their Limitations

As far as employment and its pattern is concerned, the most detailed and comprehensive source is the decennial population census. Its economic tables are very useful and in particular the Census of Establishments which was started in a limited way in 1961 covering the manufacturing and processing establishments and subsequently widened to cover the entire non-agricultural sector in the 1971 Census. These relate to All-India and the different states. The level of detail provided in these Census of Establishments reports permit a fairly accurate

classification of non-agricultural workers into organised and unorganised sectors respectively. The major limitations with the Census data, as is well known, lies in changes made in the concept and definition of a worker in each Census which makes inter-censal comparisons difficult. In addition, the census does not attempt a rigorous estimate of unemployed persons and associated characteristics.

The National Sample Survey Organisation (NSS) surveys on Employment and Unemployment, is the second major source of data in this area. These surveys give equal importance to estimating employment and unemployment and pattern thereof, in terms of rural-urban, male-female, age, level of education, etc. Since the concepts and methodology used has remained more or less constant since the 14th Round (1958-59) except for certain improvements in the recent rounds, these surveys provide us with data over a fairly long period of time. They have been widely used for studying trends in unemployment in particular both rural and urban. For Kerala, tabulations are available in respect of 1958-59 (14th Round) 1960-61 (16th Round), 1965 survey conducted by the Bureau based on NSS concepts, 1972-73 (27th Round) and 1977-78 (32nd Round).

However, the NSS methodology in estimating unemployment has been strongly criticized. In brief, the major criticism has been that a one-dimensional measure of unemployment is not meaningful in a country where unemployment has a heterogeneous character. The concept of labour force underlying these estimates borrowed from the developed western countries, is designed essentially for full employment economic in which unemployment tended to be partly frictional and partly a result of periodical fluctuations in effective demand.* The labour force was therefore measured with a short reference period of a week or more. Although some modifications were introduced in its adoption for our surveys in view of (a) widespread seasonality in agricultural employment and (b) large numbers in both rural and urban areas, not actively seeking work but being available for work, however even with these modifications the basic difficulties were not solved. In an economy like ours where there are still large numbers self-employed or in household enterprises this concept of labour force is very unsatisfactory. In other words open unemployment is very little but there is considerable seasonal unemployment or underemployment, and the length of the reference period would strongly affect our estimates. This was brought

* Though this may not be the case now since the crisis in the western economies, beginning in the early seventies.

out in the 27th Round which in the light of the above criticism, gave three measures of unemployment—person day, person week and person year rates, depending on whether the reference period was a day, week or year. [The person week rate corresponds to the estimate in the earlier rounds.] The 27th Round and subsequently the 32nd Round, did make a conceptual break through however even with all the improvements, the data still do not enhance our understanding of the phenomenon of unemployment and employment.

Besides these two major sources of data encompassing the total economy, some other sources give information on particular regions or sectors of the economy. (1) Employment Exchanges Statistics are often used to measure urban unemployment but are subject to the following well-known limitations (a) some of those registered live in rural areas; (b) some are in fact employed or students; (c) not all those unemployed register with the Employment exchange; and (d) some register at perhaps more than one exchange. (2) Rural Labour Enquiry Reports give estimates of the rural work force. Three enquiries have been conducted relating to the years 1956-57, 1963-65 and 1974-75. They do give quite extensive information on rural labour households. (3) The Employment Market Information (EMI) scheme of the Ministry of Labour gives estimates of employment in the organised sector, the industry-wise details being available also at the state level. It covers the entire public sector and non-agricultural establishments in the private sector employing 10 or more persons. Although these data are reasonably sound (except for the numbers employed in small private units and undertakings of the State Government) their usefulness could be enhanced if they gave also a break up by (a) rural/urban areas; (b) educational level, as also (c) by skill.

Mention must also be made of some micro surveys on particular aspects of unemployment in Kerala—such as educated unemployment and emigration. The Centre for Development Studies (CDS) did a survey of the educated unemployed (matriculates and above) in two districts Trivandrum and Calicut during April 1973 as part of its published study, Poverty, Unemployment and Development Policy, United Nations 1975. In recent years, with an increase in emigration from Kerala, a few surveys were conducted to understand its magnitude and pattern. These are (a) Raju Kurien, Pattern and Effects of Emigration from Kerala—A study of two villages (M. Phil. dissertation, CDS, 1978) (b) Radhakrishnan and P. Ibrahim, Emigration, Inward Remittances and Economic Department—a study of the Kadakkavur village (Department of Economics, University of Kerala) (c)

B. A. Prakash, Impact of Foreign Remittances—a case study of Chavakkad Village, Economic and Political Weekly, 8 July 1978 and (d) E. T. Mathew and P. R. Gopinathan Nair, Socio-economic Characteristics of Emigrant households—a Case Study of Two Villages in Kerala, Economic and Political Weekly, 15 July, 1978.

We finally discuss the latest available information on employment and unemployment compiled in the 1980 Census on Housing and Employment. A striking feature of the Report is the level of disaggregation at which the data are given. Unlike the earlier sample surveys which gave information at the state level, except for the 1965 Bureau survey which published some data at the district level, this survey has given estimates at the block and town level also. This is helpful at the policy making level as also for bringing out interesting inter-regional differences.

As in the NSS surveys the total population is first divided into Labour force and the rest. However, the criterion used for classifying the population is not clear—whether its labour time disposition as in NSS or some other. But the chapter on Employment Seekers (p. 35) seems to suggest that the basis is age—all those between 15-60 years of age are in the labour force. If age is the criterion, how does one ensure the non-inclusion of persons who may still be students and women who may be only housewives.

The labour force is further sub-divided into permanently employed, not permanently employed, employment seekers and employed migrants. We thus have:

- (i) Labour Force
- (ii) Permanently employed of which
 - (a) hired labour
 - (b) self employed
- (iii) Not permanently employed of which
 - (a) employed for 200 days or more
 - (b) employed for 120 to less than 200
 - (c) employed for 60 to less than 120
 - (d) employed for less than 60 days
- (iv) Employment seekers
- (v) Migration for employment.

A novelty in concepts is the categorisation of employed into permanently and not permanently employed. Though this was also done in the NSS methodology by giving the extent of underemployment of the employed persons in terms of hours of work, the Census approach appears to be a simpler and neater method of doing so. However, it would have been useful if for the self employed category more probing questions on the intensity of work

had been asked (as is done in the case of hired labour). This would have to some extent explained anomalies such as the highest proportion employed (as also permanently employed) being in Idukki district and Attapadi block.

A very useful aspect of the present survey is the light it throws on emigration on which not much information was available except from the few micro studies mentioned earlier. On a

census basis we now have information on the volume of manpower employed outside Kerala, place of origin and destination, educational status of the emigrants and the minimum level of annual remittance. However, an area on which some light could still be thrown is a detailed understanding of the type of enterprises in particular services which have mushroomed in the wake of the gulf boom, the number of persons employed therein and the nature of their employment.

6. DATA ON EMPLOYMENT AND MANPOWER

P. C. Jain

1. Introduction

A comprehensive and up-to-date data on important manpower aspects is essential for an efficient system of manpower planning. Informations on stock of manpower at suitable intervals under different categories, their distribution by significant characteristics are needed to correlate these with other relevant economic and social variables. Unemployment, especially educated unemployment is the major menace of Kerala. It is difficult to build up accurate statistics on this phenomenon for unemployment in a subsistence economy like ours does not lend itself to exact quantification. But several estimates of employment and unemployment and analysis of manpower problems of the State have been done by different agencies. The Manpower Division attached to the Directorate of Economics and Statistics, started functioning in 1974, with a view to co-ordinate manpower planning exercises in the State.

Manpower Planning.—For a general Manpower Planning demographic characteristics of population such as distributions of population by age and sex, educational skills, migration, labour force, working force, occupational pattern, dependency ratio etc., are needed.

For technical manpower planning at any level or of any category, information regarding the stock of manpower, intake and out-turn of educational institutions and training facilities and the demand for different categories of manpower is needed. In this regard information on the investment co-efficients and employment co-efficients are essential.

The first step in the Manpower Planning exercise is the assessment of stock of the concerned manpower group. The stock indicates the manpower resources position at a given point of time.

Proper manpower planning demands a balanced supply and demand. The decennial population census is the most important source of information on population, labour force and their educational levels. Census presents data in terms of workers and non-workers including unemployed. Workers are tabulated according to occupation. Workers in various occupations are further classified according to educational levels. This tabulation of occupational data in terms of education and training levels would have given us the approximate figures of the stocks of individual, education and training categories. These would have served as base figures of the stocks on various categories. Using

these stocks figures as base year stock figures, stock estimates of various categories could have been updated with the help of annual out-turn data.

Manpower data sources.—The manpower information system covers a wide field ranging from the decennial census to other statistics compiled through ad hoc surveys from time to time. There are a number of agencies through which the information is collected and compiled and published. Some of the main sources are: the census organisation, National Sample Survey Organisation, Directorate of Employment and Training and the Department of Education (both School and College Education). Other agencies which provide manpower information are the Universities, State Government Departments of Agriculture, Animal Husbandry, Public Works, Health Services, Technical Education, Industries and Commerce etc.

II. Data on Employment and Unemployment

Manpower studies, both quantitative and qualitative, are based mainly on statistics obtained from the census, National Sample Survey, Employment Market Information and Employment Exchange Registers and Ad hoc Surveys and Studies conducted from time to time. Available data on employment and unemployment in the State can be grouped as follows:—

- (1) Data on working force-size, participation rates by sex, age and residential status.
- (2) Industrial, occupational and status distribution of working force.
- (3) Data on employment by sex, age, qualification and sector.
- (4) Data on unemployment by sex, age, education, waiting period, and residential status.
- (5) Estimates of under employment.
- (6) Estimates of Migration. and
- (7) Studies on manpower problem.

Census has been the main source of information on 'economically active' population in the State. Censuses upto the 1951 census, provided data only on the total number of workers according to sex and residential status and did not provide data on age-sex specific work participation rates. But in the year 1960-61 the 16th Round of N.S.S. estimated

age-sex specific work participation rates of the population. In the 1961 census population was classified as 'Workers' and 'Non-workers' by sex and broad age groups and this age grouping was too broad to indicate work participation rates. So the 1971 census classified workers according to quinquennial age group and estimated work participation rates. The National Sample Survey data on working force collected through 16th to 21st rounds (1960-61 to 1966-67) have followed quinquennial age groups and hence comparison of N.S.S. and census age distribution of this period can be attempted. But work participation rates of the two are non-comparable due to differences in concepts and quality of enumeration. The 1971 census underestimated the working force as it emphasised on 'mainworkers' and ignored the contribution of marginal workers. The 1981 census avoided the possibility of under estimation by classifying the population according to work participation as 'mainworkers', 'marginal workers' and 'Non-workers'.

Industrial Occupation and Status Distribution

Data on working force by economic activity classification was compiled from 1911 to 1951 censuses. But the industrial occupational and status classifications in these censuses have been non-comparable due to non-uniformity in concepts and procedures in data collection. The 1961 census recognised the need for presenting the data on workers by their occupational and industrial compositions. The 1971 census made available a grouping of workers according to National Industrial classification. The N.S.S. too in its various rounds, beginning from the 9th round, have made industrial and occupational distribution of working force according to sex and residential status. The N.S.S. presents information on the activity status of workers, classified as 'Employer', 'Employee', 'own account worker' and 'unpaid family worker'.

Employment

Census data on sectoral employment is comprehensive. But differences in concepts and classification of employment in different censuses makes comparison of data difficult. In 1872 and 1881 censuses data relating to "occupation" only was collected. In 1891 information on "occupation and means of subsistence" also was collected. In 1901 census data on "Occupation or means of subsistence of actual workers" and thus information on principal occupation, subsidiary occupation and means of subsistence of dependent etc., was collected. The 1921 census divided population as workers and dependants and in 1931 on 'earner', 'working dependants' and non-working dependants was collected. In 1941 census the concept of 'means of livelihood' was introduced and data on "Independent workers", "wholly dependants" and "partly dependants" was obtained. In 1951 census persons were categorised, according to economic

status as "self supporting persons", "earning dependent" and "Non-earning dependents". On the basis of means of livelihood persons were classified in this census as, cultivators, cultivating labourers, non-cultivating owners, those engaged in production other than cultivation, commerce, transport and other services and miscellaneous occupations. In 1961 census a person was considered as worker based on his participation in any economically productive work. Population was broadly classified as "workers" and "non-workers" and workers were classified according to different occupational groups. In 1971 a worker was defined as a person whose main activity was participation in any economically productive work. The 1981 census classified population as "main workers", "marginal workers" and non-workers". Districtwise and talukwise details of cultivators, Agricultural labourers, household Industry workers and other workers according to sex, age and residential status is given in the 1981 census.

The National Sample Survey is one of the major sources of statistical information on employment and unemployment. They have been carrying out quinquennial survey on employment and unemployment since its 27th round in 1972-73. The second survey was completed through 32nd round of N. S. S. (1977-78) and planning for the third Survey is in progress. The N. S. S. followed a two stage stratified sample design which the villages for the rural areas and blocks for the urban areas constituted the first stage sample units. Households constituted the second stage sample units. The main attempt in the 27th round of N. S. S. was to highlight in multi-dimensional pattern of the activity situation through the different indications of employment and unemployment viz., 'employed', 'unemployed' and 'not in labour force'. The 'usual status', 'current weekly status' and 'current day status' approaches were used in this round to estimate employment. The measure gives an idea of persons with 'regular work' and the number of 'chronically unemployed' persons. The personweek estimates of unemployed with reference period of one week indicate the 'idleness' of chronically unemployed and of the 'intermittantly unemployed'. The 27th round of N. S. S. made the following employment estimates.--

- (1) Employment in own-family farm as workers, helpers and exchange labour;
- (2) Employment in non-farm household enterprises as workers and helpers;
- (3) Employment in Agriculture as regular salary/wage earners and casual labourers;
- (4) Employment in non-farm enterprises in the public sector as regular employees and casual workers; and
- (5) Employment as service workers.

Some conceptual changes were introduced in the 32nd round with a view to obtain more meaningful data amenable for comparison with the census results. The criterion for 'usual status' classification was changed. Instead of an open reference period as adopted in the 27th round, a definite reference period of 365 days preceding the date of survey was used in the 32nd round. "The major time spent criterion" was introduced to determine the employment status. The description of the detailed activity categories adopted in the 27th round survey were modified to identify the industrial location of the activity of a person and its pattern. The 32nd round N. S. S. employment estimates include the following:—

- (1) Employment as bonded labour attached to landowner, money lender, landowner cum money lender and others.
- (2) Self employment in household enterprises;
- (3) Employment in household enterprises as paid workers and helpers;
- (4) Regular salary wage employment.
- (5) Employment in public works; and
- (6) Other types of employment.

The 33rd round of N. S. S. Survey on 'Directory and Non-directory Manufacturing Establishment in Kerala' collected employment aspects of unorganised non-agricultural enterprises in the State. The Survey reports give district-wise estimates of part-time and full-time employment in household and non-household manufacturing establishments recording to 20 groups of manufacturing activity.

The E. M. I. programme attached to the National Employment Service of Kerala State is another source of employment data. Under the 'Compulsory Notification of Vacancies' Act, 1959, every establishments in the Public Sector and non-agricultural establishments in the private sector with an employment of 25 or more provide employment returns at quarterly intervals in a year. Information on the level of employment classified by sex at the end of the quarter, number of vacancies that have occurred notified and filled during the quarter, and the vacancies remaining unfilled etc., are collected by E. M. I. This data is obtained in a voluntary basis from smaller establishments in the private sector engaging 10 to 25 workers. Data on occupational composition of employment in establishments in the public and private sectors is collected in alternate years. Data on educational qualifications of workers in these establishments is not properly obtained as it is voluntary. Data for public sector employment are further classified by Central Government, State Government, Quasi-Government and local bodies. Moreover the D.G.E.T. has been undertaking an annual census of Central Government

Employees and Employment according to characteristics like basic pay ranges, sex, gazetted, non-gazetted status, permanent and temporary status etc., are collected.

The 'Annual Survey of Industries' conducted by N. S. S. makes estimates of factory employment in Kerala. Employment in Sectors like, Agriculture, Animal Husbandry, Fishery, Construction, Manufactory, Khadi and Village Industry, and services etc., are estimated annually by the planning and monitoring cells in the respective departments. Employment details of gazetted officers in State Government Departments according to sex, age and qualification are available in the 'Civil List' maintained by the 'Services Department'. Every year a department-wise statement of employment position in State Government departments according to scale of pay and category of post is given as Appendix I of 'Detailed Budget Estimates' for the year. Apart from all these the Manpower Division of Directorate of Economics and Statistics has conducted a 'Census of State Government Employees-1980' and collected very vital employment informations of State Government employees. The data is in the tabulation stage. Similarly census of employees in K.S.E.B. and K.S.R.T.C. is in progress. The division collects annually employment position in public undertakings and companies in the State.

The Directorate of Economics and Statistics conducted ad hoc Surveys in 65 and 78 to estimate the extent of employment and unemployment in the State. 'The Survey on Housing and employment 1980' is the latest in this category. Through this survey information on a census basis has become available on employment and unemployment which are hitherto collected on a sample basis. State level as well as disaggregate data at the levels of districts, taluks blocks/towns are presented in this report. The available magnitudes of employment fall into the following category, viz:—

1. Labour Force.
2. Permanently employed which is sub-grouped into:—
 - (a) Labour (Salary Wage earners) and
 - (b) Self Employed.
3. Not permanently employed, which is sub-grouped into:—
 - (a) Employed for 200 days or more in a year.
 - (b) Employed for 120 to below 200 days in a year.
 - (c) Employed for 60 to below 120 days in a year.
 - (d) Employed for below 60 days in a year.

4. Employment seekers.
and
5. Migration of employment.

These details are furnished according to districts, taluks and blocks in the survey report.

Unemployment:

The 1961 census estimated unemployment based on the sub-classification of non-workers. Persons who has not been employed before but is seeking employment for the first time and persons employed before but now out of employment and seeking employment, together constituted the unemployed. The unemployed enumerated were tabulated for each district by sex, broad age groups, residential status and educational attainments. The 1961 census made an under estimation of unemployment since the reference period adopted for classifying persons engaged in seasonal work was too liberal to include 'marginal workers' as unemployed. The 1971 census too made an estimate of unemployed, again, based on the sub-classification of 'non-workers'. Non workers were grouped into seven categories and the last category viz. 'other non-workers' was taken as unemployed. This data also was presented by sex, age group, rural urban and educational status.

The N. S. S. has been collecting data on unemployment through labour force enquiries. Unemployment estimates have been influenced by concepts definitions and procedures adopted in different rounds. While the 9th and 10th rounds of N. S. S. adopted 'usual status' approach the 10th rounds onwards 'Current Status' or 'Labour force status' approach have been followed. The N. S. S. presented unemployment estimates by sex, age, education, marital status, reporting registration with Employment Exchanges, residential status, seeking work for the first time, not seeking work for the first time, not seeking but available for work and duration of unemployment etc.

In spite of various limitations, live register data collected through employment exchanges in the State, on a quarterly basis, has been a major source indicating the pressure of job seekers in the labour market. Data on educated job seekers (matriculates and above) registered with the Employment Exchanges and their placement classified by levels of education and sex are collected half yearly. Statistics in respect of various special categories of job seekers, such as Scheduled Castes/Scheduled Tribes, ex-servicemen, physically handicapped, persons trained in ITIs etc. are also collected.

Data on 'educated unemployment' have been collected in different censuses through individual slips and special cards canvassed along with 'Degree holders and Technical Personnel'. The N. S. S. has been collecting data on educated unemployment since its 9th

round. Data were tabulated for broad educational categories viz. (1) Secondary (2) Other than graduates having technical qualification and (3) Graduates and above. However in 27th round the data on educated unemployed are tabulated by 24 educational categories and presented in percentages. In the 32nd round estimates of educated unemployed has been given in 13 educational groups. The 35th round (July 1980-June 1981) of N. S. S. did a survey on educated persons with the objective of collecting details about the higher technical and general education attained by any educated person and also the particulars about the course level etc. of the study if the person is a student. Data, again, according to 13 educator groups is expected from this round results.

The Housing & Employment Survey 1980 conducted by the Directorate of Economics & Statistics, also collected data on the magnitudes relating to employment seekers in Kerala. In this survey employment seekers are defined as those persons between the age group of 15 to 60 who were not able to secure job even for a day during the previous year and are actively searching for a job.

The survey report gives the following:

- (1) District wise distribution of labour force and employment seekers.
- (2) District wise frequency distribution of blocks, Town according to proportion of employment seekers in Labour Force.
- (3) Highest Ten and Lowest Ten Blocks on the basis of extent of employment seekers.
- (4) Distribution of blocks/Towns according to size of employment seekers and labour force.
- (5) Proportion of Employment seekers and literacy level of the Districts of Kerala.
- (6) District wise distribution of labour force and employment seekers in the rural urban composition.

Underemployment

Under employment refer to under utilisation of labour force. Successive rounds of N. S. S. have estimated the extent of underemployment in the State through the question on 'hours of work' in the reference period by persons classified as workers. The classification of workers according to days of work done in the Housing and Employment Survey 1980 is also an indicator of under employment in Kerala.

Migration:—Migratory movements affect size composition and distribution of population as well as constituent labour force. Migration is a less predictable component of labour force change.

Migration is customarily divided into internal migration and international migration. Statistics on

internal migration are retrospective in character and less authentic. Kerala suffers from 'brain drain' and skill drain to outside countries. Data on international migration too is comparatively insufficient.

Population registers, census data, and survey data record actual movements of individual migrants as regards internal migration. The vital statistics collected in the State involves an estimate of net migration in any geographical area. 'Sample Registration Data' also can be used to estimate the extent of internal migration. The 1961 census reports contain the following aspect of internal migration.

- (1) Non-Indian nationals
- (2) Cross classification of data by place of enumeration and place of birth along with Rural-Urban classification of places.
- (3) Number of persons by duration of residence at the place of enumeration.
- (4) Migrants to cities classified by sex, broad age groups, education and occupation.
- (5) Population in cities classified by place of birth.
- (6) Distribution by Industrial Categories of workers and Non-workers among migrants by place of birth.

In addition to these, a few special tables were prepared for cities with population of one million and over. In these tables migrants were cross-classified by various demographic and Socio-Economic characteristics such as age, sex, marital status, religion, education occupation, industry etc. The 1971 census records contain the following details on migration.

- (1) District wise total out migrants (persons) born in a district but enumerated in other district of the State.
- (2) Sex-wise cross-classification of migrants by place of last residence and duration of residence at the place of enumeration.
- (3) Migrants to cities cross-classified by place of last residence and sex, age group, education, occupation etc.
- (4) Sex-wise classification of migrants by place of last residence and main activity.
- (5) Cross-classification of migrants by broad—age group, marital status, duration of residence and place of last residence.

The 1981 census results would go a long way in covering the gaps in internal migration data. Data shedding light on the reasons of migration and thus to identify forces responsible for change in migration pattern is collected in this census. 1981 census covered the birth place migration as well as migration from the place of last residence. The 1981 migration data would include the following:—

- (1) Migrants by sex, place of last residence, duration of residence and reason for migration.
- (2) Main workers, marginal workers, non-workers, those seeking, available for work and literacy among migrants reporting "employment" as reason for migration by age, sex and duration of residence.
- (3) Migrants from rural areas and urban areas (separate) with the State reporting "employment" as reason for migration, by sex, age etc.
- (4) Migrants from rural and urban areas (Separate) outside the State reporting employment as reason for employment by sex, age, etc.
- (5) Migration reporting 'Education' as reason for migration, new seeking available for work by age, sex educational level etc.
and
- (6) Persons born in other district of the State and enumerated in this district.

The source of data on international migration comprises of emigration data and Immigration data, collected at the national level. In Kerala 'the Overseas Development and Employment Promotion Corporation' keeps record of international migration from Kerala for employment. But data in respect of employees sent through this agency only can be obtained from this service.

The 'Housing and Employment Survey 1980' made an attempt to collect some basic information regarding migratory movements from the State and the report contain the following data:—

- (1) Percentage distribution of outmigrants for employment according to Educational status and distribution (State).
- (2) Percentage distribution of out migrant for employment according to educational status (Districtwise).

- (3) Districtwise estimate of skilled and unskilled persons migrated for employment.
- (4) Out migrants for employment according to destination and educational levels, (Talukwise, Block/Townwise).
- (5) Percentage distribution of outmigrants for employment to Gulf Countries according to educational status (Taluk/District).
- (6) Percentage distribution of out migrants for employment to non-gulf countries according to educational status.
- (7) Percentage distribution of outmigrants for employment to other States in India according to Educational Status (Taluk/Districts).
- (11) Intake and out-turn of Agricultural Post Graduates in Kerala for 1961 onwards (Annual).
- (12) Intake and out-turn of Phd. (Ag.) 1965 onwards (Annual).
- (13) Intake and out-turn of B. Sc. and M. Sc. (Hort.) and Phd 1972 onwards (Annual).
- (14) Wastage rate estimated for B. Sc. (Agl.), and M. Sc. (Agl.).
- (15) Stock position of Agri. Tech. personnel in Kerala at the beginning of V Plan and on subsequent years.
- (16) Stock of Agricultural Graduates and Post Graduates 1974-75 to 1983-84.

III. Other Manpower data

The following data relevant for manpower planning in the State are also collected, compiled and maintained up-to-date by the Manpower division.

- (1) Out-turn of Engineering Graduates upto the year 1980-81 collected from all Engineering Colleges in the State.
- (2) Out-turn of diploma holders upto 1980-81 collected from Polytechnics in the State.
- (3) Out turn of J. T. S. L. C. holders upto 1980-81 collected from J. T. Schools in the State.
- (4) Stock of Technical and Professional Manpower in the Department of Technical Education (Collected annually).
- (5) Data on intermediate technical manpower in the Technical Education Department.
- (6) Intake of students in various technical institutes in Kerala, both in degree and diploma levels (Collected annually).
- (7) Stock Position of Engineering personnel in P. W. D. (collected annually).
- (8) Stock position of Engineering personnel in other sister departments, corporations and boards etc., (collected annually).
- (9) Details of Post Graduates, Graduates, Diploma holders and certificate holders in each of Engineering branches like Civil, Mechanical, etc.
- (10) Intake and out-turn of Agricultural Graduates in Kerala from 1955 onwards (Collected Annually).
- (17) Stock of intermediate manpower in Agricultural Department (Annual).
- (18) Intake and out-turn of fisheries technical schools in Kerala (Annual).
- (19) Stock position of Technical personnel in the Fisheries Department (Annual).
- (20) Employment in Small Scale Industries in the State (Collected through the D. I. Cs.).
- (21) Stock position of Technical personnel in the Department of Industries and Commerce (Annual).
- (22) Stock position of Intermediate Technical category in the Department of Industries and Commerce.
- (23) Employment in the Public undertakings in Kerala (Annual).

'Manpower Studies' on various topics in respect of different disciplines have been conducted and published in three volumes. The fourth volume is in the press and the fifth volume is getting ready for publication. A detailed statement of the studies in these volumes is given in Appendix—overleaf.

IV. Data Gaps

Employment and Unemployment data collected through decennial census, National Sample Surveys and Employment Exchanges are non-comparable. Data on educated manpower given in the general census provides only the total number of persons into various educational categories irrespective of their activity status and age. The educational break-up of rural and urban areas is not uniform. Information are available only at decennial intervals. Incomplete enumeration of the survey is the major limitations of the 'Special census of Degree holders and Technical personnel' done along with 1971 census. No rural urban break-up of degree holders and technical personnel is done. The data collected

through the census are not analysed within the reasonable time. The details of 1971 census have come into the light very recently. If the data is compiled and analysed immediately after the census, the results can be used by the planners until the next census.

Data on population and labour force estimated by N. S. S. studies are published in percentage only. Separate distribution of general education and technical education of the persons is not provided. Information is available only at five year intervals.

Employment statistics collected through the E. M. I. programme covers only the organised sector. Information of workers is incomplete as workers in small establishments in the private sector employing 12-19 workers, self employed, and family workers have been excluded from the E. M. I. data. Moreover E. M. I. do not collect data on agricultural operations in the Private Sector. The response of the establishments from those information is collected on voluntary basis is very poor. It provides educational break-up of selected categories of workers only. The unemployment Statistics from Employment Exchanges suffer from certain limitations such as incompleteness of registration due to voluntary registration, double multiple registration, inclusion of students and employed persons for better employment and exclusion of rural unemployed persons.

As regards migration, data on internal migration provided by the census, vital statistics, sample Registration etc. are not suitable for stock estimation as these details are not provided by levels of education of the migrants. Migratory movements are undercounted due to the decennial character of the census. The

formation of new district also influence migration which is left unaccounted. Data on international migration also is not conclusive.

Stock estimation and updating of different categories of manpower in the State are not done in time. Available data on stock relates to technical and professional manpower only and that too in respect of certain departments under the State Government sector. The private sector employment participation is not enumerated properly and hence remains as big gap of manpower planning in the State. Employment generation and potential under plan and non-plan schemes implemented by different government and semi-government agencies are not collected and maintained up-to-date at present as the concerned organisations turn a deaf ear to requests for the above data. Manpower demand estimation for different categories of skilled and unskilled manpower becomes very difficult as proper demand estimations are not done at the project level. In short manpower data available in the State at present is incomplete and quite insufficient for an efficient system of manpower planning.

V. Suggestions for Improvement of Data

Uniformity in concepts, and classifications of employment and unemployment by different agencies of estimation can ensure comparability of data. Ad hoc surveys can be done to fill the data gaps in relevant areas of manpower involvement. The private sector component of employment participation should be periodically estimated through sample surveys. Setting up of manpower cells in all Government and Semi Government Organisations may be helpful in estimating the manpower content of plans and projects implemented by them.

LIST OF APPENDIX

1. Appendix I Districtwise distribution of workers (main workers and marginal workers) in Kerala 1981 census provisional figures.
2. Appendix II Districtwise distribution of Main workers in Kerala, 1981 census (Provisional)
3. Appendix III Distribution of work seekers in Kerala by educational levels for the period 1970-80.
4. Appendix IV Distribution of professional and Technical work seekers in Kerala for the period 1970-81.
5. Appendix V Districtwise distribution of Labour force and employment seekers in Kerala, 1980.
6. Appendix VI Rural Urban Spread of labour force and employment in the Districts of Kerala, 1980.
7. Appendix VII Growth of employment in state government department in Kerala during 1960-61 to 1982-83.
8. Appendix VIII Employment categories as percentage to labour force in Kerala (District wise) 1980.
9. Appendix IX Employment as percentage total employed in Kerala (District-wise) 1980.
10. Appendix X List of Manpower Studies.
11. Appendix XI List of reference materials available on employment and manpower in Kerala.

DISTRICT-WISE DISTRIBUTION OF WORKERS (MAIN
KERALA

District	MAIN WORKERS						MARGINAL		
	Rural		Urban		Total		Rural		Urban
	No.	%	No.	%	No.	%	No	%	No.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Trivandrum	524681	27.11	171231	26.13	695912	26.86	75296	3.89	11832
Quilon	600203	24.63	84656	22.87	684859	24.40	140824	5.78	16654
Alleppey	520510	26.43	86873	23.26	607383	25.92	117678	5.98	16583
Kottayam	417454	27.43	42070	26.45	459524	27.33	41731	2.74	4050
Idukki	322644	34.82	12906	28.92	335550	34.55	32721	3.53	555
Ernakulam	446370	29.17	260819	26.01	707189	27.92	62602	4.09	28074
Trichur	509612	26.51	135722	26.36	645334	26.48	71885	3.74	10262
Palghat	605504	32.99	58814	28.46	664318	32.53	50942	2.78	3370
Malappuram	484879	21.81	36614	20.60	521493	21.72	82281	3.70	5188
Kozhikode	354552	21.71	137414	22.52	491966	21.93	57098	3.50	14750
Wynad	185894	33.59	..	..	185894	33.59	26292	4.75	..
Cannanore	587569	27.41	155976	23.78	743545	26.55	219434	10.23	15982
Kerala	5559872	26.95	1183095	24.80	6742976	26.54	978784	4.74	127300

Percentage is to total population (1981 census provisional)

I
WORKERS & MARGINAL WORKERS IN
1981 CENSUS

District	WORKERS					TOTAL WORKERS				
	Urban		Total			Rural		Urban		Total
	%	No.	%	No.	%	No.	%	No.	%	
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
Trivandrum	1.81	87128	3.36	599977	31.00	183063	27.93	783040	30.22	
Quilon	4.50	157478	5.61	741027	30.41	101310	27.37	842337	30.01	
Alleppey	4.44	134261	5.73	638188	32.41	103456	27.70	741644	31.66	
Kottayam	2.55	45781	2.73	459185	30.17	46120	28.99	505305	30.06	
Idukki	1.24	33276	3.43	355365	38.35	355365	30.16	368826	37.98	
Ernakulam	2.80	90676	3.58	508972	33.26	288893	28.81	797865	31.50	
Trichur	1.99	82147	3.37	581497	30.25	145984	28.36	727481	29.85	
Palghat	1.63	54312	2.66	656446	35.77	62184	30.09	718630	35.19	
Malappuram	2.92	87469	3.64	567160	25.51	41802	23.52	608962	25.36	
Kozhikode	2.42	71848	3.20	411650	25.21	152164	24.94	563814	25.13	
Wynad	..	26292	4.75	212186	38.34	..	..	212186	38.34
Cannanore	2.43	235416	8.41	807003	37.64	171058	26.21	978961	34.96	
Kerala	2.67	1106084	4.36	6530656	31.69	1310395	27.47	7849051	30.90	

APPENDIX II
DISTRICT-WISE DISTRIBUTION OF MAIN WORKERS—1981. IN KERALA

	Population			Main Workers			% of workers to total population			% of main workers to total Population		
	M	F	T	M	F	T	M	F	T	M	F	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Trivandrum	1274948	1316109	2591057	541591	154321	695912	45.51	11.77	28.58	42.48	11.73	26.86
Quilon	1382708	1424515	2807223	547219	137640	684859	44.37	12.87	28.61	39.61	9.66	24.40
Alleppey	1139376	1203476	2342852	437839	169544	607383	43.13	13.59	28.15	38.43	14.09	25.92
Kottayam	840811	840293	1681104	373817	85707	459524	45.50	8.99	27.33	44.46	10.20	27.33
Idukki	494610	476583	971193	239738	95812	335550	50.28	17.92	34.62	48.47	20.10	34.55
Ernakulam	1266409	1266856	2533265	543640	163549	707189	44.67	12.55	28.71	42.93	12.91	27.92
Trichur	1159548	1277427	2436975	447139	198195	645334	41.81	15.91	28.35	38.56	15.52	26.48
Palghat	991854	1050058	2041912	439687	224631	664318	49.06	23.42	35.89	44.33	21.39	32.53
Malappuram	1169541	1231688	2401229	423950	97543	521493	44.68	10.16	27.08	36.25	7.92	21.72
Kozhikode	1109383	1133621	2243004	408254	83721	491966	42.79	7.88	25.30	36.80	7.39	21.93
Wynad	238579	269769	553348	133878	52016	185894	52.74	19.60	36.84	47.21	19.28	33.59
Camnanore	1375194	1424861	2800055	554685	188860	743545	45.57	14.54	29.88	40.34	13.25	26.55
Kerala	12487961	12915256	25403217	5091428	1651539	6742967	45.00	13.49	29.12	40.77	12.79	26.54

Provisional — 1981 census.

APPENDIX — III
DISTRIBUTION OF WORK SEEKERS IN KERALA BY EDUCATIONAL LEVELS FOR THE PERIOD 1970-'81.

Period ending	Total work seekers	Below S.S.L.C.	Percentage to total work seekers	S.S.L.C.	Pre-degree	Graduate	Post-graduate	S.S.L.C. and above	Percentage to total work seekers
31-12-1970	293754	115504	39.25	151279	7469	17703	1994	178450	60.75
31-12-1971	367381	166305	45.27	167814	10168	20841	2223	201076	54.73
31-12-1972	453914	194848	42.93	218880	16457	20396	3333	259066	57.07
31-12-1973	523882	239921	45.80	226783	18965	34327	4156	283961	54.20
31-12-1974	587935	274620	46.80	252423	20075	36947	3870	313315	53.20
31-12-1975	691242	331628	47.98	281989	28329	44456	4840	359614	52.02
31 12-1976	753579	344461	45.71	315552	38176	49749	5611	409118	54.29
31 12 1977	849378	391954	46.13	351211	46830	53037	6346	457424	53.85
31 12 1978	1052652	494935	47.02	434192	56641	57816	9068	557717	52.98
31 12 1979	1249372	582088	46.59	524631	69721	64365	8567	667284	53.41
31-12-1980	1843290	1045874	56.74	643758	78432	67006	8220	797416	43.26
31-12-1981	1903719	980692	51.50	748898	90254	76832	7043	923027	48.50

APPENDIX—IV

DISTRIBUTION OF PROFESSIONAL AND TECHNICAL WORK SEEKERS IN KERALA FOR THE PERIOD 1970-81.

<i>Period ending</i>	<i>Medical Graduates</i>	<i>Engineering graduates</i>	<i>Diploma holders in Engineering</i>	<i>I. T.I. Certificate holders</i>	<i>Agricultural graduates</i>	<i>Veterinary graduates</i>
31-12-1970	281	1852	3547	8380	133	70
31-12-1971	405	2068	3450	9894	128	116
31-12-1972	654	2014	4163	11540	101	52
31-12-1973	902	2135	3836	10003	80	40
31-12-1974	726	1450	3611	16888	Nil	Nil
31-12-1975	809	1850	3990	20163	32	117
31-12-1976	696	1752	4009	20747	29	75
31-12-1977	490	1784	3585	21376	78	32
31-12-1978	668	1755	4305	23821	58	55
31-12-1979	691	1395	5507	26345	62	56
31-12-1980	871	1508	6606	29693	97	30
31-12-1981	651	1217	7866	37039	103	14

Source: Directorate of Employment and training, Kerala.

APPENDIX V

DISTRICTWISE DISTRIBUTION OF LABOUR FORCE AND EMPLOYMENT SEEKERS IN KERALA, 1980

<i>District</i>	<i>Labour Force</i>	<i>Employment Seekers</i>		
		<i>in Lakhs</i>	<i>Percentage</i>	<i>Employment seekers as percentage of Labour Force</i>
Trivandrum	8.59	2.05	14.62	23.9
Quilon	9.11	2.40	14.55	26.2
Alleppey	7.87	1.49	10.62	18.9
Kottayam	4.74	1.02	7.27	21.5
Idukki	3.64	0.36	2.57	9.9
Ernakulam	7.72	1.65	11.76	21.4
Trichur	7.11	1.14	8.13	16.1
Palghat	7.56	0.99	7.06	13.1
Malappuram	5.72	0.63	4.49	11.0
Calicut	7.16	1.29	9.20	18.0
Cannanore	8.70	1.00	7.13	11.5
Kerala	77.91	14.02	100.00	18.00

Source: Survey on Housing and Employment—1980.

APPENDIX VI

RURAL- URBAN SPREAD OF LABOUR FORCE AND EMPLOYMENT IN THE DISTRICTS OF KERALA—1980

District	Urban			Rural		
	Labour force	Employment seekers	Percentage	Labour Force	Employment Seekers	Percentage
Trivandrum	227445	57634	25.34	631100	147443	23.35
Quilou	47390	14383	30.35	867643	225746	25.72
Alleppey	107928	32424	30.04	679616	116818	17.19
Kottayam	40222	8585	20.60	433687	93057	21.46
Idukki	10917	1082	9.91	353503	34833	9.85
Ernakulam	184399	39902	21.64	587593	125481	21.36
Trichur	59189	10073	17.02	651117	103613	15.91
Palghat	50353	8773	17.63	705750	89764	12.72
Malappuram	37718	5778	15.32	533558	56802	10.65
Kozhikode	183460	30517	16.63	529088	98258	18.57
Canmanore	42325	4917	11.62	827833	95691	11.56
Kerala	991346	214071	21.59	6800388	1187406	17.46

Source: Survey on Housing and Employment 1980.

APPENDIX VII

GROWTH OF EMPLOYEES IN STATE GOVERNMENT DEPARTMENTS IN KERALA DURING THE PERIOD 1960-61 TO 1982-83

Category	1960-61		1970-71		1974-75		1977-78		1979-80		1980-81		1981-82		1982-83	
	No.	Index	No.	Index	No.	Index	No.	Index	No.	Index	No.	Index	No.	Index	No.	Index
Class I	404	100	785	194	1071	265	1343	332	2442	604	3757	930	3630	895	3565	882
Class II	7484	100	10473	140	13415	179	15324	205	26696	357	33394	446	35411	473	34387	459
Class III	97714	100	159970	164	183211	188	191128	196	200869	206	204081	209	208486	213	200827	206
Class IV	16984	100	24998	148	30847	182	33059	195	29542	174	28569	168	30424	179	29720	175
Others	6439	100	10146	158	12282	191	8675	135	1936	31	1464	23	1259	20	1334	21
State	129025	100	206372	160	240826	187	249529	193	261485	203	271265	210	279210	216	269833	209

Source: Appendix I of Kerala Budget Estimates.

APPENDIX VIII

EMPLOYMENT CATEGORIES AS PERCENTAGE TO LABOUR FORCE—KERALA 1980 (DISTRICT-WISE)

District	Labour force	Total employed	Total Permanently employed	Salary wage earners	Self employed	Total not Permanently employed	200 days and above	120 to below 200 days	60 to below 120 days	Below 60 days
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Tri vandrum	100	76.12	38.63	22.96	15.67	37.48	11.63	13.26	8.35	4.84
Quilon	100	73.76	41.66	20.27	21.39	32.10	6.29	9.62	8.27	8.56
Alleppey	100	81.05	38.43	17.24	21.19	42.62	8.85	12.39	11.74	9.64
Kottayam	100	78.55	43.28	22.45	20.83	35.27	8.85	12.57	8.34	5.51
Idukki	100	90.14	61.61	34.44	27.17	28.54	8.70	10.53	6.51	2.80
Emmakulam	100	78.58	44.67	26.51	18.16	33.91	10.41	11.85	7.05	4.60
Trichur	100	83.99	45.95	24.68	21.27	38.04	13.00	13.03	7.47	4.54
Palghat	100	86.97	45.70	23.02	22.68	41.26	11.22	15.82	9.83	4.38
Malappuram	100	89.05	43.82	22.31	21.51	45.23	16.30	16.15	8.39	4.39
Kozhikode	100	81.93	42.76	20.23	22.53	39.18	13.84	13.10	7.70	4.53
Canranore	100	88.44	48.19	26.94	21.25	40.24	15.13	14.49	7.22	3.41
State	100	82.09	44.10	23.23	20.87	37.91	11.25	12.93	8.35	5.33

APPENDIX IX

EMPLOYMENT CATEGORIES AS PERCENTAGE TO TOTAL EMPLOYED—KERALA 1980 (DISTRICT-WISE)

District	Total employed	Total permanently employed	Salary wage earners	Self employed	Total not permanently employed	200 days and above	120 to below 200 days	60 to below 120 days	Below 60 days
Trivandrum	100	50.76	30.17	20.59	49.24	14.49	17.42	10.97	6.36
Quilon	100	56.77	27.62	29.15	43.23	8.27	12.08	11.27	11.61
Alleppey	100	47.41	21.27	26.14	52.59	10.92	15.29	14.48	11.90
Kottayam	100	55.09	28.57	26.52	44.90	11.27	16.00	10.62	7.01
Idukki	100	68.34	38.20	30.14	31.66	9.65	11.63	7.22	3.11
Emmakulam	100	56.84	33.73	23.11	43.15	13.24	15.08	8.98	5.85
Trichur	100	54.71	29.39	23.32	45.29	15.47	15.52	8.89	5.46
Palghat	100	52.53	26.47	26.08	47.44	12.91	18.20	11.31	5.03
Malappuram	100	49.20	25.05	24.15	50.80	18.31	16.14	9.42	4.92
Kozhikode	100	52.39	24.69	27.50	47.82	16.89	15.99	9.40	5.53
Canranore	100	54.49	30.46	24.03	45.51	17.11	16.50	8.17	3.85
State	100	53.80	28.34	25.46	46.20	13.69	15.75	10.19	6.57

APPENDIX X

LIST OF MANPOWER STUDIES

Volume I

1. Technical Manpower for agriculture in Kerala.
2. Attrition rate of Agricultural personnel in Kerala.
3. Utilization of Veterinary Personnel in Kerala.
4. Employment potential of Fisheries Development Programme in Kerala.
5. Manpower involvement in the School Education of Kerala.
6. Unemployment among B. Ed. Degree holders in Kerala.
7. Employment Trends among Engineering Graduates on the Live Register of the Employment Exchanges—1974.
8. Employment of Engineering personnel in Kerala.
9. Medical Manpower (Allopathic) in Kerala.
10. Unemployment among Allopathic Doctors in Kerala.
11. Nursing Profession in Kerala.
12. Directory of Technical and Professional Institutions in Kerala—1974.

Volume II

1. Higher Education (General) and Educational Manpower in Kerala.
2. A study on the statutory apprenticeship training programme in Kerala.
3. Fisherman Population and Fishing implements in Kerala.
4. Technical Manpower in Fisheries Sector in Kerala.
5. A Report on the Manpower utilised by P.W.D. in Kerala by its activities during 1976-77.
6. Migration of Engineering Graduates—A case study.

Volume III

1. Availability of specialists in Modern Medicine in Kerala.
2. A report on the study on Capacity Utilization and Manpower Involvement in the Manufacturing Industries of Cartons, Paper Bags, and envelopes in Kerala.
3. Employment in Fish Processing Industries in Kerala.
4. A report on the study on the Employment of Craftsmen in different trades in Kerala.
5. A study on the Characteristics of unemployed post graduates in Kerala.

Volume IV

1. A study on the employment potential in Khadi and Village Industries in Kerala.
2. Involvement of Manpower in Mini Industrial Estates in Kerala.
3. Manpower Involvement in Private Medical Care in Kerala—Some high lights.
4. Inservice training of medical and para medical personnel in Health Services.
5. Manpower Involvement in the Co-operative Sector of Fishing Industry.
6. Employment in Fish marketing in Kerala.
7. A report on the Supply and Demand of Engineering personnel in Kerala during the period 1978-83.

Volume V

1. Utilisation of Agricultural Post graduates in Kerala.
2. Employment prospects for non-technical less qualified manpower in Kerala.
3. Study on the utilisation pattern of apprentices in Kerala.
4. Study on the preparation of middle level manpower for Industries in Kerala.
5. A report on growth of Employment in the State Government Sector.
6. Hand Book of Technical Institutions—1981.
7. Statistical Review on admission of candidates for B. Sc. Engineering courses — 1980-81.

APPENDIX XI

LIST OF REFERENCE MATERIALS
AVAILABLE ON MANPOWER
AND EMPLOYMENT

1. 1981 Census data on workers and Non-workers in Kerala (Provisional).
2. Fact Book on Manpower, 1965.
3. Statistics for Planning. Sections 2, Manpower, 1972.
4. Fact Book on Manpower, 1976.
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7. EMPLOYMENT AND MANPOWER STATISTICS

N. Gopalakrishnan Nair

Taking cue from the experience of the developed countries and influenced by the developments in manpower planning methodology in such countries, the preoccupation of Indian manpower planners in the earlier years of planning was to ensure that programmes of development did not suffer due to shortage of trained personnel. This was all right so long as the problem was one of shortage of manpower. But, during the past fifteen years a shift in emphasis has taken place. Today, there is a mounting surplus of manpower of practically all categories, although shortages are experienced here and there.

2. The task of manpower planning is to ensure a reasonable degree of balance between the supply and demand for manpower. Training technical and professional manpower is essentially a long term process. Studies in perspective on the demand and supply of such manpower are, thus, essential to avoid shortage of critical categories of manpower and to regulate its supply, to the extent possible, under the prevailing socio-political climate. In a situation of surplus, the gap between supply and demand can also be reduced by operating from the demand side by attempting to maximise the employment content of the plans, in a selective manner, through the adoption of an appropriate mix of technology. These are the primary tasks the manpower planner should address himself to.

A. Supply of Manpower

3. The data requirements for the above purpose are as follows:

1. Labour force classified according to age, sex and educational qualifications.
2. Industrial and occupational profile of the employed.
3. Demographic and educational profile of the unemployed—current levels and projections. This would involve the estimation of the out-turn of different categories of manpower for future years, attrition rate in each category, etc.

4. The main sources of the above data are the Decennial Censuses, the National Sample Survey, the Directorate of Employment and Training and ad hoc surveys conducted by the Department of Economics and Statistics. The main data required from the census relate to the age-sex distribution of the population, the industrial—occupational classification and the age-specific labour force participation rates. These data are essential for making projections

of population and labour force. But the relevant census figures are usually made available with considerable time lags, even though the tabulation is computerised and only a sample of census slips is being tabulated.

5. The employment enquiries of the N. S. S form another important source of data. These data also have many limitations. In the light of the recommendations of the Dantwala Committee, there have been some improvements in the conceptual aspects of the data. At present the N.S.S. makes available estimates of the person years employed and unemployed during a year. Persons year unemployed will, thus, include also underemployment qualified in terms of person years. It is doubtful whether these figures can be used for estimating the age specified participation rates. Even if the definitional problems are ignored, N.S.S. data on unemployment are available only with considerable time lags. As an instance in point, it may be mentioned that data of the 32nd round of N.S.S. relating to the year 1977-78 are not yet ready. One further weakness of the N.S.S. data is the small size of the sample. While the sample size may be adequate at the National level, it may not be so at the State level, particularly when estimates are made for detailed breakdowns. It was with the intention of augmenting the sample size, that the State began participating in the N.S.S. since the tenth round. But the Central and State sample data are seldom pooled and the possible advantages of participation in N. S. S. has not been realised in practice.

6. The Directorate of Employment and Training regularly publishes data on unemployment in terms of the number of persons registered with the employment exchanges. But the live-registers of the exchanges contain also employed persons who have registered for better jobs. There is also the possibility that all the unemployed do not register with the employment exchanges. The live-register figures can, therefore, be used only with a correction for the registration of the employed and a correction for the fact that all the unemployed are not covered by these estimates. Since the recent trends indicate a very rapid increase in the live-register, it is necessary that annual surveys and studies are conducted to evolve correction factors for the live-register data in order to make them useful for estimation of unemployment. Such correction factors have to be built up for the different education-wise categories.

7. Supply of educated and trained manpower for future years may be made by using the intake and outturn figures for the different categories. The relevant basic data have to be

obtained from Government Departments and private institutions. The manpower planning unit of the Department of Economic and Statistics periodically publishes such data relating to a few categories of personnel. But more categories like typists, stenographers etc., have to be included and annual revision of the data should be effected in order to make it more comprehensive and useful.

8. Emigration of trained manpower from Kerala to other parts of India and also to foreign countries is taking place on a significant scale. Periodical estimates of category-wise emigration rates will be an extremely useful information. There are serious methodological problems involved in undertaking such studies. But it is worth examining whether it is possible to obtain estimates regarding the annual rate of migration of atleast the important categories of personnel, by including a few questions on the subject in the socio-economic surveys conducted by the Statistics Department.

9. Similarly, information on attrition rates, category-wise is also absolutely essential. Attrition rates are not likely to change in the short-run. Attempts should, therefore, be made to work out attrition rates for the different categories of manpower atleast once in a decade. A few categories can be covered every year.

B. Demand for Man Power

10. Estimation of demand for manpower for the future years poses more difficult problems. First of all the likely sectorwise investment in the state for future years must be known. This should be provided by the Planning Agency in the state. The planning agency may have to undertake studies and surveys on savings and capital formation, sector-wise capital output ratios, etc., in order that it may work out the future sectoral allocations.

11. Investments taking place in the state may be classified into State sector, Central sector and private sector investments. Central sector and private sector investments in each sector are not known to the State Departments accurately in time. But the State sector investments are known. It would be useful to analyse the employment content of the State plan outlays. As a beginning it would be worthwhile examining whether the Manpower Officers in the major departments could attempt an exercise of this type with the assistance of the implementing officers. At present, the plan documents of the state contain a statement on employment content of the plans, prepared by adopting rough and

ready norms relating employment and investment. In fact it should be our endeavour during the coming two or three years to build up sector-wise capital-employment ratios covering investment from all sources together.

12. One other method of estimating the future work force is by using the industry-occupation matrix which is a two way classification showing the proportion of working force by industry and occupation. Matrices so obtained from consecutive censuses should be studied for the trends in the co-efficients. On the basis of these trends, the matrix may be projected for future years. This is also rendered difficult now in view of the fact that the extent of detailed breakdowns, necessary for this exercise, are not available in the published census data.

Employment and Unemployment

13. Twenty-five years back, the annual conference of Central and State Statisticians recommended that methodological studies may be undertaken to evolve a national economic indicator based on employment, just as National Income and Consumption. In fact, the whole design of the N.S.S. employment enquiries and the concept and definitions employed have been formulated keeping in view the need for assessing changes in employment and unemployment resulting from the implementation of plans. Dr. Ashoke Rudra, while discussing the statistics needed for planning has suggested a detailed procedure for estimating the average number of working hours in each of a large number of sectors and occupations into which the working force is classified. Laborious and difficult, though such studies are they do help in understanding the nature and structure of under employment in specific industry-occupation combinations. This alone can lead to corrective policy measures. Attempts may, therefore, be made to undertake such studies, at relatively, longer intervals such as once in ten years.

Conclusion

14. The above discussion brings out that the nation is incurring considerable expenditure in the collection of a variety of data on employment, unemployment and manpower. But nobody seems to bother about the fate of the data collected. It is, therefore, necessary to constitute a committee consisting of the Director, Department of Economics and Statistics and representatives of user departments and institutions to assign priorities for the surveys to be undertaken and the tabulations to be made. This Committee may recommend the yearly programme of Statistics collection and processing.

SESSION VI
STATE INCOME, PRICES AND WAGES

1. GROWTH AND STRUCTURAL CHANGES OF STATE INCOME OF KERALA

N. George John

I. State income or the net State domestic Product of a particular State within the nation is the total of net value of goods and services produced by the State, from its economic activities during a specified period. Its measurement is made by adopting either of the two concepts viz.

- (i) Income originating
and
- (ii) Income accruing

The total income originating is worked out as the total of income originated within the geographical boundaries of the State. The income accruing is measured as the income accruing to the normal residents of the State. Estimates of State Income based on the above two concepts differ in the factor income flows across the boundary of the State. Since the economy of a State within the nation is more open than that of the country, it is rather difficult to measure the flow of factor income across the boundary of the State. Estimates of the net state domestic product are therefore generally framed by the income originating concept.

The net domestic product which relates to the aggregates of net value of goods and services at factor cost produced within the state from its economic activities, becomes available for consumption or for the addition to wealth. So the figures relating to State Income has assumed much importance in recent years as a measure of the growth of State's economy. It is also essential to formulate future policy programmes with regard to investment at the regional level, so as to arrive at a balanced regional development programme.

Estimates of income are worked out by any one of the three methods viz.

- (i) Product or inventory method
- (ii) Income method and
- (iii) Expenditure method.

The total income worked out by any one of the above methods would give identical results with the other two. But lack of reliable data does not permit to estimate the total income by any single line of approach.

For estimating the State domestic product, the entire economy is divided into thirteen industrial divisions in which, the product method is used in the commodity producing industries: (1) Agriculture including live stock (2) Forestry (3) Fishing (4) Mining and quarrying and (5) manufacturing (registered) and income method in the remaining sectors viz. (6) construction (7)

Electricity, gas and water supply (8) transport, storage and communication (9) Trade, hotels and restaurants (10) Banking and insurance (11) real estate and ownership of dwellings (12) Public administration and (13) Other services. The estimates of State Income are being framed on the basis of the guidelines issued by the Central Statistical Organisation, New Delhi. In the case of Supra regional sectors like communication, railways, air transport, banking and insurance and Central Government Administration, information on the net State domestic product is made available, at the State level by the Central Statistical Organisation, by allocating national totals on the basis of suitable indicators.

The Directorate of Economics and Statistics, Kerala has been preparing estimates of State Income for the years from 1955-56 onwards. These estimates are compared and reconciled with the comparable state estimates on State Domestic Product worked out by the C. S. O. and the reconciled estimates are used for making policy decisions at the regional level. The revised estimates of State Domestic Product for the period from 1970-71 to 1980-81 worked out by this Directorate is used in this discussion.

II *Primary Sector: (Agriculture and allied activities)*

Among the different industries of economic classification, agriculture, forestry and logging, fishing and mining and quarrying constitute the primary sector. These industries altogether contribute about 44.2 percent towards the net State domestic product. The overall growth of the primary sector during the past one decade (at current prices) was more than two and one third times, when compared to that of 1970-71. The increase in the income from this sector was mainly due to the progressive increase in the prices of the products, as can be seen from the fact that at 1970-71 prices, the net increase in income from these industries was only nominal. (0.53 per cent)

From mining and quarrying, an overall real increase of about forty per cent is seen recorded. But the progress of agriculture proper was only nominal. A reverse trend is seen in the case of forestry and logging as well as in fisheries from 1978-79 onwards. Details of growth in the income from the primary industries is shown below in table 2.

Eventhough some changes are seen recorded in the basic structure in the income generated by the components of the primary sector, at the prevailing prices, basically there was no substantial change in its composition. Agricul-

ture (proper) still contributes about 95 per cent of the primary sector and the remaining 5 per cent goes to the other industries.

TABLE 1
STRUCTURE AND CHANGE IN COMPOSITION OF NET STATE DOMESTIC PRODUCT IN THE
PRIMARY SECTOR OF KERALA FROM 1970-71 TO 1980-81

Sectors	1970-71		1980-81		1970-71	
	Rupees	Percentages	At current Prices		At Prices	
			Rs. Crores	% to total	Rs. Crores	% to total
Agriculture including Animal husbandry	582	93.93	1311	89.47	590	94.60
Forestry & Logging	11	1.78	70	4.80	10	1.65
Fishing	26	4.14	79	5.40	22	3.53
Mining and Quarrying	1	0.15	5	0.33	1	0.22
Primary Sector Total	620	100.00	1465	100.00	624	100.00

TABLE 2
GROWTH IN NET STATE DOMESTIC PRODUCT FROM THE PRIMARY SECTOR KERALA
1970-71-1980-81

Year	Base 1980-71=100.									
	Agriculture and Animal Husbandry		Forestry and Logging		Fishing		Mining & Quarrying		Total Primary Sector	
	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Base Rs. crores	582	582	11	11	26	26	1	1	620	620
1970-71	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1971-72	93.49	104.20	98.37	90.46	110.04	109.15	131.29	109.38	94.28	104.28
1972-73	109.38	103.70	129.67	94.83	128.42	117.94	123.96	100.00	110.55	104.13
1973-74	147.06	102.01	194.19	110.98	175.63	109.65	165.63	103.13	149.11	102.49
1974-75	160.34	103.76	184.21	96.91	218.72	116.62	195.83	82.71	163.23	104.16
1975-76	157.07	107.90	287.21	118.15	251.49	113.62	207.29	79.17	163.61	108.27
1976-77	171.17	103.66	237.21	106.62	211.41	74.85	380.21	159.38	174.33	102.61
1977-78	168.89	101.86	356.81	102.72	250.64	89.61	370.83	154.17	175.93	101.45
1978-79	181.76	102.43	467.06	90.29	298.60	98.33	433.33	127.08	194.88	102.09
1979-80(P)	209.37	102.87	526.68	83.94	252.98	83.92	622.92	144.79	217.45	101.82
1980-81(P)	225.04	101.25	638.29	93.28	308.56	85.79	494.79	139.58	236.26	100.53
Actual for 1980-81 (Rs. Crores)	1311	589	70	10	79	22	5	1	1465	624

(P)—Provisional.

At constant prices: 1970-71 prices.

I. Secondary sector:

Manufacturing (registered and unregistered), construction, electricity, gas and water supply constitute this sector. The overall growth in the income (at current prices) from the constituent industries in the sector was more than three and a half times that of 1970-71. But in real terms, the increase in the income was only above one and half times that of the base year. While the growth of income from the component industries in the secondary sector was following the general pattern, there was substantial increase in the generation and transmission of electricity during the period. The income from electricity rose by

about four and two thirds at current prices during 1980-81, and at 1970-71 prices by about one and two thirds. Income from manufacturing industries recorded more than a three fold increase at current prices and 1.41 time at 1970-71 prices. Organised industries recorded a real increase by 62 per cent, while unorganised industries recorded an increase in output of 24 per cent only. The major upward shift in the structural composition of the secondary sector is seen only in the case of electricity with corresponding decline in construction. Details of growth of the industries in the secondary sector and their structural changes are given in Tables 3 and 4.

TABLE 3

STRUCTURE AND CHANGE IN COMPOSITION OF NET STATE DOMESTIC OF THE SECONDARY SECTOR- KERALA FROM 1970-71 TO 1980-81

Sector	1970-71		1980-81			
	Rs. Crores	% to total	At current prices		At 1970-71 Prices	
			Rs. Crores	% to total	Rs. crores	% to total
Manufacturing	156	76.32	557	75.85	220	71.95
Manufacturing Registered	70	34.33	288	39.20	113	37.11
Manufacturing Unregistered	86	41.99	269	36.65	107	34.84
Construction	37	17.91	111	15.12	55	17.90
Electricity, Gas & Water Supply	12	5.77	66	9.03	31	10.15
Secondary Sector:						
Total	205	100.00	734	100.00	306	100.00

TABLE 4

GROWTH IN NET DOMESTIC PRODUCT FROM THE SECONDARY SECTOR KERALA 1970-71-1980-81

(base 1970-71 = 100)

Year	Manufacturing Total		Manufacturing registered		Manufacturing unregistered		Construction		Electricity, Gas and Water Supply		Secondary sector	Total
	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices
1970-71 (Rs. Crores)	156	156	70	70	86	86	37	37	12	12	205	205
1970-71	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1971-72	114.44	110.91	127.49	121.78	103.77	99.58	111.61	108.94	116.44	107.62	114.11	110.37
1972-73	127.75	116.77	134.31	122.47	122.39	112.10	141.09	126.58	130.57	121.76	130.30	118.81
1973-74	146.62	114.98	159.37	117.86	136.27	112.63	141.41	116.53	153.17	132.35	146.07	116.27
1974-75	167.63	110.12	192.29	113.01	147.47	107.75	161.60	116.58	177.05	142.68	167.11	113.15
1975-76	189.65	117.42	205.23	116.40	176.91	118.25	196.24	122.87	196.19	156.65	191.21	120.66
1976-77	205.41	123.77	236.17	133.59	180.26	115.74	191.30	113.25	275.53	180.36	206.92	125.15
1977-78	216.15	123.43	263.01	144.33	177.84	106.34	228.93	127.92	389.59	207.87	228.44	129.10
1978-79	241.57	126.09	283.40	143.83	207.38	111.58	248.36	133.86	549.87	250.55	260.57	134.66
1979-80	303.14	139.62	354.86	161.14	260.17	122.02	273.56	141.79	552.75	259.10	312.24	146.89
1980-81	356.43	140.94	409.52	161.66	313.03	124.01	302.78	149.45	561.56	263.17	358.65	149.51
1980-81 (Rs. crores)	557	220	288	144	269	106	111	55	66	31	734	306

IV Transport, communication and trade:

Transport, storage, communication and trade are the industries constituting this sector. The increase in income during 1980-81 from this sector is about three times that of 1970-71, at current prices. But the real increase in the income

generated in this sector during the past one decade was only about 18 per cent. Even though a three fold increase can be seen in trading industry, no substantial increase is seen in this at constant prices. The structural changes and growth of this sector are presented in tables 5 and 6.

TABLE 5
STRUCTURE AND CHANGE IN COMPOSITION OF NET STATE DOMESTIC PRODUCT - TRANSPORT, COMMUNICATION AND TRADE, KERALA 1970-71 TO 1980-81

Sectors	1970-71		1980-81			
	Rs. Crores	% to total	At current Prices		At 1970-71 Prices	
			Rs. crores	% to total	Rs. Crores	% to total
Transport, storage & Communication	61	37.19	188	38.59	86	45.00
Railways	6	3.92	12	2.38	8	4.38
Transport by other means and storage	46	28.09	154	31.60	66	34.19
Communication	9	5.18	22	4.61	12	6.13
Trade and Hotels & Restaurants	102	62.81	298	61.41	106	55.00
Transport, Communication and trade	163	100.00	486	100.00	192	100.00

TABLE 6
GROWTH IN NET STATE DOMESTIC PRODUCT FROM TRANSPORT, COMMUNICATION AND TRADE, KERALA

Year	Transport, Storage and Communication		Trade and Hotels and Restaurants		Transport, Communication and trade Total	
	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices
	NDP 1970-71 (Rs. Crores)	61	61	102	102	163	163
1970-71	100.00	100.00	100.00	100.00	100.00	100.00
1971-72	113.36	104.96	106.56	104.00	109.09	104.25
1972-73	109.60	108.49	119.72	105.29	115.96	106.48
1973-74	140.18	108.03	136.20	103.91	137.68	105.46
1974-75	182.98	118.64	166.99	106.23	172.94	110.85
1975-76	226.80	125.83	194.48	106.53	206.50	113.71
1976-77	264.85	131.62	207.98	100.44	229.13	112.04
1977-78	288.65	138.17	228.43	101.02	250.83	114.83
1978-79	297.99	143.86	220.35	102.06	249.19	117.61
1979-80	311.78	157.45	272.10	102.64	286.85	123.02
1980-81	309.24	142.72	291.44	103.31	298.06	117.97
1980-81 (Rs. in crores)	188	86	298	106	486	192

V Finance and real estate:

This sector has recorded about a four fold growth from 1970-71 to 1980-81 at current prices and 2 1/3 times at 1970-71 prices. Substantial

progress can be seen in banking and insurance as well as in real estate and ownership of dwelling. Structural changes and growth of the industry in the sector are presented in table 7 and 8.

TABLE 7

STRUCTURE AND CHANGE IN COMPOSITION OF NET STATE DOMESTIC PRODUCT FINANCE
AND REAL ESTATE 1970-71—1980-81

	1970-71		1980-81			
	Rs. Crores	% to total	Rs. Crores	% to total	Rs. Crores	% to total
Banking and Insurance	16	37.00	94	55.78	47	45.31
Real Estate, Ownership of dwellings & business services	28	63.00	74	44.22	56	54.69
Finance and Real Estate	44	100.00	168	100.00	103	100.00

TABLE 8

GROWTH IN NET STATE DOMESTIC PRODUCT FROM FINANCE AND REAL ESTATE—KERALA

Year	Banking and Insurance		Real Estate etc.		Finance and Real Estate	
	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices
Net Product 1970-71 (Rs. crores)	16	16	28	28	44	44
1970-71	100.00	100.00	100.00	100.00	100.00	100.00
1971-72	143.03	135.91	98.48	95.53	114.96	110.47
1972-73	159.85	142.30	105.17	100.96	125.41	116.26
1973-74	200.12	148.07	121.80	101.10	150.78	118.49
1974-75	253.90	142.17	118.65	96.11	168.70	113.15
1975-76	314.00	160.16	135.05	98.02	201.27	121.01
1976-77	356.60	173.11	155.20	112.81	229.73	135.04
1977-78	431.98	205.65	177.26	141.83	271.52	165.46
1978-79	474.52	242.48	218.64	159.60	313.33	190.28
1979-80	523.82	279.13	249.38	197.01	350.94	227.41
1980-81	574.77	286.62	267.63	203.14	381.26	234.02
Net Domestic Product 1980-81 (Rs. Crores)	94	47	74	56	168	103

VI Community and personal services

Public administration by State Government and local bodies, Central Government administration and other services rendered by public, corporate and households are included in this sector. Public administration has grown more

than three times during the past one decade. The overall increase of the sector was more than two and three fourth at current prices and about 60 per cent at 1970-71 prices. Details of structural changes and growth sector are given in tables 9 and 10.

TABLE 9

STRUCTURE AND CHANGE IN COMPOSITION OF NET STATE DOMESTIC PRODUCT
COMMUNITY AND PERSONAL SERVICES 1970-71 TO 1980-81

Sectors	1970-71		1980-81			
	Rs. Crores	% to total	At current prices		at 1970-71 prices	
			Rs. Crores	% to total	Rs. Crores	% to total
Public administration and Defence	37	22.35	121	26.41	79	29.83
Other Services	129	77.65	339	73.59	186	70.12
Community and Personal services	166	100.00	460	100.00	265	100.00

TABLE 10

GROWTH IN NET DOMESTIC PRODUCT FROM COMMUNITY AND PERSONAL SERVICES—KERALA

Year	Public Administration		Other Services		Community and Personal Services: Total	
	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices	At current prices	At 1970-71 prices
Net Product 1970-71 (Rs. crores)	37	37	129	129	166	166
1970-71	100.00	100.00	100.00	100.00	100.00	100.00
1971-72	109.55	102.98	106.89	101.81	107.49	102.07
1972-73	121.80	120.48	117.57	103.83	118.52	107.58
1973-74	150.33	142.81	131.70	105.19	135.87	113.60
1974-75	176.45	143.31	166.16	107.52	168.46	115.53
1975-76	196.16	143.20	194.31	113.05	194.66	119.79
1976-77	212.86	153.27	208.50	115.71	209.48	124.11
1977-78	222.34	150.57	227.32	123.17	226.21	129.30
1978-79	235.68	153.65	244.73	125.24	242.71	131.60
1979-80	285.32	185.75	246.71	129.01	255.35	141.69
1980-81	327.61	213.28	262.75	144.07	277.25	159.54
Net Product 1980-81 (Rs. Crores)	122	79	339	186	461	265

VII State Domestic Product.

During the last one decade, the state domestic product has increased from about 1200 crores to about 3300 crores, recording an increase by more than 175 per cent at the present prevailing prices. But the actual increase in the income generated in all the sectors together was only about 25 per cent. Per capita income of the state at the prevailing prices has grown more than twice.

But in real terms, the increase in per capita income was only 4 per cent.

The primary sector has recorded a proportionate decline in income by about 10 per cent from that of 1970-71, and this decline was made up by the secondary, finance and real estate and Community and personal service sectors. (Table 11)

TABLE 11

STRUCTURE AND CHANGE IN COMPOSITION OF NET STATE DOMESTIC PRODUCT KERALA 1970-71 TO 1980-81

Industry of origin	1980-81		
	1970-71	At current prices	At 1970-71 prices
1. Agriculture	48.63	39.56	39.59
2. Forestry and Logging	0.92	2.12	0.69
3. Fishing	2.14	2.39	1.48
4. Mining and Quarrying	0.08	0.15	0.09
5. Sub Total: Primary	51.77	44.22	41.85
5. Manufacturing	13.05	16.81	14.79
6. Construction	3.06	3.35	3.68
7. Electricity, gas and water supply	0.98	2.00	2.08
Sub-Total: Secondary	17.09	22.16	20.55
8. Transport, Storage & Communication	5.06	5.66	5.81
9. Trade, Hotels and Restaurants, Transport, Communication & trade	8.55	9.00	7.10
	13.61	14.66	12.91
10. Banking & Insurance	1.36	2.83	3.13
11. Real estate, ownership of dwellings etc.	2.31	2.24	3.78
Finance and Real Estate	3.67	5.07	6.91
12. Public Administration	3.10	3.67	5.31
13. Other Services	10.76	10.22	12.47
Community & Personal services	12.86	13.89	17.78
Sub-total: Tertiary	31.14	33.62	37.60
Net State Domestic Product	100.00	100.00	100.00

TABLE 12

GROWTH IN NET STATE DOMESTIC PRODUCT AND PER CAPITA INCOME--KERALA 1970-71 TO 1980-81

Year	At current prices				At 1970-71 prices			
	Net Domestic Product		Per capita income		Net Domestic Product		Per capita income	
	Rupees lakhs	Index	Rupees	Index	Rupees lakhs	Index	Rupees	Index
1970-71	119872	100.00	567.18	100.00	119822	100.00	567.18	100.00
1971-72	122548	102.28	568.11	100.16	126098	105.24	584.57	103.07
1972-73	139366	116.31	632.76	111.56	129266	107.88	586.91	103.48
1973-74	174058	145.26	774.52	136.56	128660	107.38	572.51	100.94
1974-75	199075	166.14	868.79	153.18	130019	108.51	567.42	100.04
1975-76	215502	179.85	923.12	162.76	135630	113.19	580.98	102.43
1976-77	232772	194.26	976.56	172.71	134102	111.92	564.33	99.50
1977-78	246324	205.57	1019.26	179.71	136046	113.54	562.94	99.25
1978-79	268972	224.48	1095.43	193.14	140306	116.42	571.42	100.75
1979-80 (P)	303451	253.25	1217.70	214.69	146836	122.55	589.23	103.89
1980-81 (P)	331421	276.59	1311.83	231.29	149007	124.36	589.80	103.99

(P) Provisional.

VIII Per capita income of the Nation and the State:

At current prices, the per capita income of the State has grown by about 115 per cent during the period from 1970-71 to 1979-80. The corresponding growth in the per capita net national product was only 108 per cent. At

1970-71 prices, the growth in the per capita net State domestic product was about 4 per cent, while the corresponding growth at the national level was about 4.5 per cent. It is also noteworthy that the national per capita income at 1970-71 prices recorded a growth of about 13 per cent in 1978-79. (Table 13)

TABLE 13

COMPARATIVE STATEMENT OF PER CAPITA INCOME OF INDIA AND KERALA 1970-71 TO 1980-81

Year	At current prices			At 1970-71 prices		
	Kerala	India	Kerala as % of India	Kerala	India	Kerala as % of India
	Rs.	Rs.		Rs.	Rs.	
1970-71	567	633	89.57	567	633	89.57
1972-73	633	712	88.90	587	604	97.19
1973-74	775	871	88.98	573	621	92.27
1974-75	869	1006	86.38	567	638	91.75
1975-76	923	1024	90.14	581	661	87.90
1976-77	980	1081	90.57	564	633	86.37
1977-78	1019	1198	85.06	563	695	81.01
1978-79	1095	1250	87.60	571	715	79.86
1979-80	1218	1316	92.55	589	661	89.11

At the prevailing or constant prices, per capita income of the State is lagging behind the national per capita income by more than 10 per cent during the last decade. The net state domestic product has been generated by about 83 per cent of the labour force available within the State. Much progress can be expected with improvement in methods of production and further utilisation of manpower and other resources.

DATA SOURCE OF THE ESTIMATES ON NET STATE DOMESTIC PRODUCT

1. Agriculture and Animal Husbandry:

A. Agriculture

(i) Gross value of output is based on itemwise production of crops obtained from the annual sample surveys on area and yield of crops, under the scheme for Establishment of an Agency for Reporting Crop Statistics and farm prices of agricultural commodities.

(ii) Value of inputs:

Organic manures—base line data: National Sample 26th round (1971-72).

Chemical fertilisers—base line data: National sample survey round (1971-72).

Pesticides: Plant Protection Directorate
Irrigation charges—State Account.

B. Animal Husbandry:

(i) Gross value of output—base line data: Livestock Census—Sample Survey for estimation of Milk Production and Bovine practices 1965-66.

(ii) Value of inputs:

Livestock feed: Estimates of production of green and dry fodder—concentrates: National Sample Survey 30th round (1975-76).

C. Repairs and maintenance

All India Debt and Investment Survey.

2. Forestry and Logging: Annual reports of State Forest Department.

3. Fishing:

(i) Gross value of output: Annual Surveys on marine fish landings conducted by the Central marine fisheries institute, data on inland fisheries collected from the fisheries department and prices collected from the fisheries department.

(ii) Value of inputs: arrived at using suitable indicators.

4. Mining and Quarrying: Annual data supplied by Indian Bureau of mines.

5. Manufacturing:

(i) Registered: Annual Survey of Industries.

(ii) Unregistered: base line data: National Sample Survey 33rd round State Sample.

6. Construction: Annual Accounts of State and Central Government undertakings, local bodies etc., and All India Debt and Investment Survey.

7. Electricity, gas and water supply: Annual accounts of State Electricity Board, Electricity distributing agencies and State Public Health Department etc.

8. Transport, storage and communication:

(i) Estimates of supra regional sectors are supplied by Central Statistical Organisation.

(ii) Transport by other means and storage: (organised) Annual Accounts of the concerned undertakings.

(iii) Mechanised transport: Annual data collected from bus owners.

(iv) Non mechanised transport: base line data—National Sample Survey 29th round, 1974-75.

9. Trade, Hotel and Restaurants: base line data: National Sample Survey 34th round.

10. Banking and Insurance: Annual data supplied by Central Statistical Organisation.

11. Real estate and ownership of dwellings: Annual data collected from Registrar of Joint Stock Companies, Municipalities and Panchayats.

12. Public Administration: Annual Accounts of State and Central Governments and local bodies.

13. Other services (organised)

(i) Organised: Analysis of Annual Accounts of institutions engaged in the services.

(ii) Unorganised: base line data: National Sample Survey 29th round—1974-75.

2. "THE UNOBSERVED SECTOR" OF THE NATIONAL ACCOUNTING DATA BASE

Dr. T. Edwin

Official statistics of Kerala in recent years especially during the past decade has been characterised by declining real rates of growth in Agriculture and Industry i.e., decline in real output and productivity accompanied by increasing levels of unemployment. In other words, there is a widening gap between the plan targets or predictions of real growth and the measured observations of economic activity. In this regard one would like to analyse the hypothesis which can be called "Unobserved income hypothesis".

This is very much wider than the conventional "black money concept". Most simply stated, the hypothesis suggests that systematic biases unwittingly introduced into our official data bases, distort our perceptions of economic realities. This bias which creeps into our official information system may be directly caused by a large and growing sector. This sector may be termed as unobserved, unmeasured, non-reporting, under-reporting, underground, untaxed, unofficial, hidden or the evasive sector. Because of accounting conventions, by non-reporting by the unobserved sector, the social measurement apparatus (GNP system of accounts) is duped. The observed sector consists of governmental and private economic activities which are captured by our national accounting framework. The unobserved sector has two components: (i) the monetary or the market sector, (ii) non-monetary sector, (i) the market sector utilises money as a medium of exchange in the production of goods and services; in this component comes illegal and spurious production of goods and services e.g., usurious money lending, real estate transaction, multi-storey buildings, private practice by professionals etc., reports on which do not find a place in standard accounts. More significantly, in this sector there is a wide range of legitimate income producing activities which are not fully captured by the social accounting mechanism because they are either not reported or under-reported for purposes of tax evasion, regulatory evasion, avoidance of cost of compliance or simply mistrust of the Government. This type comprises a large chunk, (ii) the non-monetary sector is the one in which real goods and services are produced but are either directly consumed by the producing unit (e.g., child care, cooking, cleaning, education, owner-occupied rental income, self-employment and consumption services provided by business). In both these cases (be there so many reasons on either side) the first casualty or reduced compliance is the Social data base. This eroded data base forms the fundamental basis for our forecasting, our empirical tests and our policy prescriptions for economic and political decision-making. And

consequently our conventional economic indicators will give a more and more distorted picture of the true state of economic affairs in the following manner:

- (i) Official statistics will reveal a slow rate of real output even when the total economy is growing at its normal pace. Thus there is a systematic understatement of actual growth in real output.
- (ii) Official price statistics overstate the actual level since prices and wages in the unobserved sector are below those of the observed sector, may be by 20% to 40%; and such price differentials are likely to induce changes in consumption patterns in favour of goods and services produced in the unobserved sector. Moreover, when the unobserved sector grows and causes disequilibrium in the visible market, the supply of goods and services in this sector falls faster than the demand for them, thus temporarily forcing prices upwards.
- (iii) If the unobserved sector grows rapidly, with the employees in the observed sector searching for secondary untaxed jobs or "off the books" work (like private tuitions, teaching in tutorials and parallel colleges, private practice by professionals etc.) official productivity measures will appear to decline, as output is understated, more rapidly without reduction in inputs. This is because these employees utilise normal working time either to search for jobs or actually work in the unobserved sector, and this will naturally reduce their productivity in their normal jobs.
- (iv) Actually our unemployment figures are very much bloated up because many "people out of work" are really employed in the unobserved sector. Workers finding employment opportunities in this sector do not report it and enjoy the benefits of unemployment pension. From the policy point of view, higher observed unemployment rates trigger both automatic and discretionary increases in Government expenditures, which have

to be financed by deficits or by increase in money supply; the first induces higher interest rates and the second adds fuel to the fire of inflation; in both the cases there is a slow down in real economic activity.

- (v) Consumption and savings statistic will also be distorted downwards considerably. (Perhaps with our unobserved sector we will have double the official consumption and saving rates because the unobserved sector combined with the black money sector, recent estimates and studies show, form nearly 50% of the GNP sharing 25% each between themselves.)
- (vi) Macro-economic forecasts would be biased giving higher real growth rates of output and underestimating inflation as our policy makers have been doing.
- (vii) There will be official under-statement of the incomes of the poor and the rich since these groups have both the greatest incentives and possibilities for producing unobserved income.
- (viii) Policy makers and people will respond systematically to false economic signals, thus converting the perception of a fear into the reality of serious economic slide down.

These tentative conclusions based on the "unobserved income" hypothesis correspond closely with the economic realities of Kerala, may, indeed of India. Hence it is important to examine the empirical foundations of the hypothesis that such a type of income exists and that in recent times there has been a dramatic growth in the unobserved sector of Kerala's economy relative to the observed sector.

It is obvious that any attempt to measure social phenomena which defy observation is fraught with complex conceptual and empirical difficulties. All such estimates are likely to contain substantial errors. However, that does not deter one from attempting to venture:

(i) To the researcher who goes for this sector, different sources of data/information are available and these have an important role in the analysis. First, there is the massive and suggestive body of both official and anecdotal data collected either casually or deliberately and not easy to analyse by the systematic procedures of modern quantitative methods. Such information is, however, highly relevant as a qualitative guide to both the frequency and nature of this phenomenon and can illuminate its manifestations in both individual and institutional behaviour. It provides a necessary starting point for an alert inquiry for it raises

many key questions as to the nature, origin, increase, utilisation, processes etc., of such research orientation to the various unobserved economic activities some of which have been indicated earlier.

(ii) More codified and systematic data on these activities will be available in such micro level sources as tax returns field (Sales-tax, Agricultural Income Tax, Plantation Tax, Stamp Duty etc.,) Public Accounts Committee paras, Audit reports, survey questionnaires and employment record sheets. Enquiries in these areas can be conducted at the official level by technically qualified and experienced persons who can employ realistic methods and assumptions to assess the extent of unreported income.

(iii) Random sample survey methods are extremely useful in this sphere. After identifying, albeit rudely and roughly, the areas from where these incomes emanate (generally the sub-sectors that have been referred to in the earlier part), survey methods can be employed and suitable statistical conclusions drawn by extrapolation.

(iv) Opinion Surveys can also be employed fruitfully: e.g. A tax-payer opinion survey. Here, possibilities are that at least a fraction will admit of purposeful under-statement. (For instance, such a survey in the United States revealed that at least 26% of respondents underestimated their tax liability in the returns). They do this because they have immediate direct incentives to hide their real incomes. Moreover, non-response rates will also be high and it is probable that non-respondents are a self-selected group with a lot to hide. They can be made the target group and further studies carried out.

These are the direct measurement procedures. Given the cost of such surveys and the absence of historically comparable data, these methods may not perhaps throw light on the crucial question: 'What is the rate of growth of unobserved activity?' To measure this trend, there can be indirect approaches which have the major advantage that the data utilised in the analysis are uncontaminated by the phenomenon we are attempting to measure. Here one can rely upon collected macro-economic data. One such approach is given below:

(v) To measure, for instance, the size and growth rate of the monetised unobserved sector of the economy, one can rely upon the total volume of monetary transactions in any society with its variables of the aggregate quantity of the medium of exchange (rupee) and the velocity of its circulation. The volume of monetary transactions directly gives rise to both the observed and unobserved income in the monetary sector. It is, therefore, only necessary to postulate the relationship between the transactions in order to derive an indirect estimate of the proportion of total income thus produced

which goes unobserved. A basic assumption utilised in this analysis is that the volume of transactions is roughly proportionate to the income produced by those transactions¹.

If transactions are approximately proportionate to total income and if transactions can be measured more or less accurately—while income is subject to the types of under-reporting—then any growth in unobserved monetary income will be revealed by a rising ratio of transactions to measured income. Thus there is a straight forward conceptual basis for this measurement procedure. Its empirical application, however, requires considerable expertise since it depends heavily on institutional details often overlooked in empirical macro-studies.

Total transactions in an economy can be usefully disaggregated into: those associated with the production of final output (final plus intermediate transaction) those in which money is exchanged for assets whether real or financial and those relating to direct transfer payments. Now it would be most reasonable to limit the assumption of proportionality between transactions and income to a transaction concept that nets out, to whatever extendable manner possible, major financial transactions and transfer payments. Then the residuals are mostly transactions undertaken in the production of the total final product, i.e., observed plus unobserved².

Where there is an obvious enormous growth of the services sector which is a highly integrated sector—as in Kerala, one can safely make a prediction that the ratio of adjusted transactions to income would decline. This approach would give the impression of a down-ward-biased estimate of the unobserved income in the mone-

tary sector and that the bulk of the unobserved income is generated in the non-monetary sector, i.e., at the level where real goods and services are produced by the producing unit or are informally exchanged in the manner enumerated earlier. Even this conclusion, however, is subject to confirmation.

(v) Where the important parameters of unemployment and inflation are involved, a combined index of these for crucial years can be constructed for purposes of regression analysis with the measures of the relative growth and acceleration of the monetary unobserved sector. If there would be a positive relationship between changes in these two components one can expect that the unobserved monetary sector is growing at a fast rate. The position of Kerala where these have been eating into the very vitality of the economy has to be tested on empirical grounds.

Despite the inherent complexity of any effort to measure a phenomenon which seeks to defy quantification, these preliminary thoughts can hopefully stimulate and generate a constructive discussion on the statistical tools and techniques to improve the measurement procedures. These random ramblings also suggest that further indepth studies of the implications of the unobserved sector or economy is likely to produce at least partial explanations of the paradoxes of inflation, unemployment, productively slow down and macro-economic planning forecast errors. By expending the domina of the study to the other major and darkest component of the unobserved sector known as the "Black Money" sector, researchers can optimistically land in avenues and findings that can be invaluable for the real and healthy growth of our tottering economy.

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¹ This assumption has long been utilised by monetary economists and appears prominently in the works of Irving Fisher, JM Keynes and modern day monetarists. Indeed, this assumption is implicit in most empirical studies of the demand for money and has

gone essentially unchallenged during the past century.

Even here the degree of integration or disintegration of the economy is likely to affect the ratio of adjusted transactions to income.

3. NATIONAL SAMPLE SURVEY DATA

G. Ramachandran Nair

A. Abdul Gafoor

After the attainment of independence, the need for reliable statistical data in various aspects of the economic and social life in the country was keenly felt by Planners and Administrators. The Standing Committee of the Department of Statistics set up in 1948 and the National Income Committee appointed in 1949, found large gaps in the Statistical information available in the Country. With a view to bridge this gap, the Indian National Sample Survey (NSS) was organised in 1950 under the initiative of late Prof. P. C. Mahalanobis. Since its inception, the NSS has thrown up a large volume of data on a continuing basis through country wide surveys based on scientific principles of sampling.

Although, initially it was envisaged that NSS should concentrate on collecting data to fill the gaps in statistics required for National Income estimation, gradually the scope has widened to meet the needs of planning. NSS has now completed 37 rounds of surveys and has collected data on a wide range of socio economic subjects viz., agriculture, industry, livestock, demography, assets, debt and investment, consumer expenditure, employment and un-employment, housing condition etc. The data are collected from a sample of households, persons or establishments spread through out the country to provide precise estimates at the all India and State levels. NSS has generally used a stratified two stage design with census villages and urban blocks (specially prepared urban frame in urban areas) as first stage units and households (establishments or operating units are also being sampled for enterprise survey) as second stage units. The NSS consists of a central sample and an equal matching sample known as State sample. The responsibility of field work and processing of central sample is with the National Sample Survey Organisation, whereas that of the State sample is with respective State Directorate of Economics and Statistics. In Kerala the State sample for a round has generally been of the order of 360 census villages and 144 urban blocks in the first stage and about 6000 households in the second stage. In one NSS round primary data relating to two or more subjects involving more than 100 attributes or characteristics are collected.

As pointed out earlier, the NSS data are collected on a continuing manner over successive rounds. In the earlier rounds, certain subjects were canvassed on a continuing basis from round to round. These included subjects like consumer expenditure, population, births and deaths, labour force, etc. Apart from continuing en-

quiries some subjects were taken up periodically on an ad hoc basis in a particular round or rounds. Drawing upon the experience of the surveys conducted in the earlier rounds and also on the twin consideration of priority attached by the regular users of the NSS data on the survey subjects and the extent of standardisation of the relevant survey concepts and techniques, NSSO in 1970 drew up a ten year programme for the conduct of socio economic surveys. According to this programme the item of subjects to be covered in the NSS during a decade will be as follows.

- (i) employment — unemployment, rural labour enquiry and consumer expenditure.
- (ii) un-organised enterprises in non-agriculture sectors.
- (iii) population, births, deaths, disability, morbidity, fertility, maternity and child care and family planning.
- (iv) land holdings and live stock enterprises and
- (v) debt, investment and capital formation.

Of the five groups of subjects cited above (i) and (ii) are to be taken up quinquennially and the remaining three groups of subjects i.e., (iii) (iv) and (v) decennially. The remaining years of the decade would be kept open to accommodate subjects of special interests to data users. A list showing the NSS rounds in which important subjects were covered is given in an appendix to this Note.

Each survey in the NSS usually extends over a period of a few months or year which is termed a round. In so far as the scope, the subject coverage and the survey design are concerned, each round of the survey design is independent of the other rounds, the survey design being formulated on consideration of the requirement of the data users and the optimum utilisation of resources.

The data collection is carried out by a team of well trained Investigators by adopting the method of personal interview of the household members, in the surveys of socio economic subjects and by interviewing the owners of Industrial establishments, in the case of establishment surveys.

For quite a long time, the data collected in the NSS were being processed mainly through Unit Record Machines, while manual tabulation was resorted to in presenting the tables in the final form. But with the increasing demand for estimates at lower geographical units and cross classified data by multiple characteristics the work of data processing became huge and complex. Further, tabulated results were required to be made available within a reasonably short time to be of use in drawing inferences and formulating policies. The conventional Unit Record system broke down because of the limitations of its scope and slowness of operations. A technical working group set up by the National Sample Survey Organisation to look into this matter found that (i) due to limited resources there existed a large time lag ranging from 3 to 5 years between field work and release of results (ii) due to inadequacies of machine resources and sample size, the tabulation programme could include only simple tables with minimum cross classification (iii) estimation of sampling errors, deeper analysis of data, requests from research bodies and other users for special tables not included in the programme etc., could not be undertaken (iv) central and state samples had not been pooled to provide more precise estimates and (v) schedules and data cards had been stored in the most primitive manner needing huge space and rendering retrieval of data almost impossible. As per the recommendation of the work group, computerisation of data processing has been introduced in the NSS and the change over is being made in a phased manner.

The State Directorate of Economics and Statistics had a Unit Records System in which the processing of State sample data was being done. By 1974, the system had to be discarded as it had out lived its guaranteed life. Since then, the tabulation of NSS data is being done manually using the skeleton staff, originally posted for post machine tabulation. As a result, large arrears in tabulation began to be accrued. Schedules of some of the rounds have not been touched at all and some of the schedules of earlier rounds lost due to improper

storage. Although the State Directorate has been participating the successive NSS rounds, and collect a mass of valuable data year after year, most of the information is lost due to the inadequate system of storage and processing. Unless immediate steps are taken to store the existing data in magnetic tapes and the processing is switched over to Computer, valuable data collected through considerable cost and effort are likely to be lost.

Most of the earlier reports issued by the NSSO and the State Directorates from NSS data were in the form of 'Tables with Notes'. In these reports, the survey results are presented with explanatory notes required for their proper comprehension. These reports are to meet the immediate requirements of the users of the survey data with the least possible delay. But in recent years, a departure has been made in the presentation of these reports, where major high lights of the survey results are discussed and interpreted.

A particular procedure is adopted in the NSS in the publication of State sample results. The draft reports prepared by the State Directorates are sent to the NSSO where it is examined in detail. It is then circulated among the members of the Governing Council and the Agencies concerned for comments. The NSSO collects these comments and forwards them to the State Directorates for consideration. The State Directorates consider these comments and revise the draft reports to the extent considered necessary and resubmit them to the NSSO for concurrence, after which they are published. This procedure helps in improving the quality and utility of the reports even though some delay occurs.

The National Sample Survey Organisation now brings out a journal entitled 'Sarvekshana' where all the results of the NSS as and when they are ready are published. The aim is to make these results available to the readers with minimum possible delay. Analytical articles based on results previously released are also included in this journal.

APPENDIX

LIST OF IMPORTANT SUBJECTS COVERED IN THE VARIOUS ROUNDS OF
THE NATIONAL SAMPLE SURVEY

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<i>Sl. No.</i>	<i>Description of subject</i>	<i>Round(s) in which the subject was studied</i>
1.	Consumer expenditure	1, 2, 3 to 9, 15 to 18, 26, 27, 28, 32, 38.
2.	Income and expenditure	10 to 14.
3.	income of rural labour households	18.
4.	employment & unemployment	9 to 12, 13 (U) 14 to 17, 18 to 22(U) 27, 32, 38,
5.	employment, unemployment and indebtedness of agricultural/rural labour households	11, 12, 19, 20, 29.
6.	population birth and death	14(R), 15(R). 16(U), 17 to 22, 23, 28.
7.	family planning	16(u), 28, 35
8.	morbidity	17, 28.
9.	land holdings/operational holdings	8, 16(R), 17, 26, 37.
10.	production of milk and production of utilisation of cattle dung	12
11.	livestock no. & production, consumption of livestock products, livestock enterprises	15, 30
12.	small scale manufacture and handicrafts	
	(i) household	3 to 10, 14, 23, 29, 33.
	(ii) non-household	7, 23, 29, 33.
13.	Transport (i) household	3 to 10, 29, 34.
	(ii) non-household	29, 34
14.	Trade (i) household	3 to 10, 15, 24, 29, 34.
	(ii) non-household	29, 34
15.	hotels and restaurants	29, 34
16.	personal services	29, 34
17.	construction	15, 29, 35
18.	physically handicapped/mentally retarded persons	24, 28, 36
19.	social consumption (maternal and child care family planning, education, health care)	28, 35.
20.	Economic conditions of weaker sections	
	(i) in rural areas	25
	(ii) in urban areas (slum dwellers)	31
21.	Housing	10, 11, 12, 16, 21, 26, 27, 28
22.	Debt & Investment	8, 16, 26, 37
23.	Rural electrification	31
24.	Irrigation	31

4. A NOTE ON THE AGRICULTURAL PRICE STATISTICS IN KERALA

D. Narayana

Introduction

The note attempts at grappling with the agricultural price statistics in Kerala. It is well-known that the need for data on prices arises from the needs of three definite areas:

- (i) National income accounting
- (ii) Policy and Planning
- (iii) Economic Theory.

Needless to mention, the type of data and the coverage called for by the different areas are different. To begin with the national income accounting, what is needed here is some sort of an index of prices of a commodity—and hence a crude measure—for the purpose of valuation. But as regarding the latter two areas such indices may not be adequate. It is from the angle of the needs of these latter two areas that we propose to view the existing data on prices.

Scope of the Paper

Before taking up the question at hand two points need to be made on the limitations of the paper. As it is a vast task to cover all the agricultural commodities we have restricted ourselves to the so-called plantation crops: Rubber, Coffee, Tea, Pepper, Ginger and Cardamom.

One important consideration in taking these crops is their place in the economy of the state and our own familiarity. The second point pertains to the prices under consideration. Prices are of different types depending upon the sale point: farm prices, wholesale prices, retail prices, export prices.... etc. We restrict ourselves to the prices at which the produce leaves the hands of the producer or his agent—first point sale—as the case may be.

Sources and Types of Data**Tea**

As regarding tea the first point sale prices are of three types: (i) direct export/forward contract; (ii) ex-garden sales; (iii) Auction. Among the three, auction prices are, in a way, the guide for determining prices of tea in other primary channels. Auction prices—the Cochin prices which are relevant here—are regularly published in Tea Statistics by Tea Board, J. Thomas and Company and U.P.A.S.I. The basic sources for all these are the Cochin Tea Market Reports. The data as published are monthly averages for different varieties.

The author wishes to acknowledge M/s Sunil K. Muraleedharan.

Ginger and Pepper

For ginger and pepper weekly average wholesale prices for different centres: Kozhikode, Cochin, Alleppey in the case of pepper and Kozhikode and Cochin in the case of ginger are collected by the Directorate of Economics and Statistics and are published in the Indian Cocoa, Arecanut and Spices Journal.

Cardamom

Like tea for Cardamom also auction prices are the guide for determining prices ruling in other primary channels. Monthly average prices for different auction centres are published in the bulletin of the Cardamom Board, viz., Cardamom.

Rubber

As natural rubber is marketed in different forms there exist so many prices quoted for these different types. Data on prices are collected by the Rubber Board. The markets covered are Kottayam, Cochin and Calicut. Here the published prices are a simple average of the purchase prices from a sample of dealers. These may be found in the Handbook of Natural Rubber Production in India and the Indian Rubber Statistics published by the Rubber Board. But it needs to be noted that some forms in which natural rubber is marketed such as crepe rubber, centrifuged latex.....etc., are not covered by the agencies.

Coffee

The sale of Coffee is distinct from all other commodities and as such are not comparable with any of them. In the case of Coffee 'pooling' is practiced and the pool prices are published by the Coffee Board in its bulletin, Indian Coffee, every month.

Some Directions

The discussion so far has brought out the fact that the data on the prices of first point sale are averages—averaged some way or the other. Now, it is well-known that the averages as such need not have been paid by any buyer or received by any seller. In that sense these are only indices which are only good enough for accounting purposes.

The first point sales prices ruling in the market or in the auction centres would lie in a range and some would have received the prices at the lower end of the range, some others at the upper end of the range and many

Mani, Tharian George K. N. Nair and

would have been kept out of it altogether. Now the question which is often asked, in the context of policy and planning as well as economic theory, is which section of the farmers receives prices at the lower end of the range and which section at the upper end of the range. The published data fails to provide even a remote answer to the question. Is it possible to bridge this gap, at least to some extent, with the given marketing channels and the existing agencies collecting data? There seems to be a proximate answer.

As regarding coffee the above question does not arise and for pepper and ginger with the existing marketing channels there is nothing much we could do. But as regarding rubber, tea and cardamom the situation is entirely different.

Each of these commodities change hands within a regulated market and there exist commodity boards regulating the trade. In the currently existing set-up these boards to receive detailed data on quantity and prices though for rubber the data on prices are not collected by the board it should be no problem for them to collect the same along with the data on quantity transacted and it should be possible for them to publish on a selective basis some figures on lot sizes and prices, minimum and maximum lot sizes, and minimum and maximum prices. These together with data on size of holdings and productivity should go a long way in throwing some light on the question as to which section of producers receives what prices and who are kept out of the regulated markets.

5. A REVIEW OF PRESENT DATA BASE OF MARKET PRICES AND COMPUTATION OF INDICES

K. Easwarankutty
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Price of a commodity is its value per unit expressed in terms of money. The regular collection of price statistics of different types is necessary for various end uses. In an economy experiencing inflationary situations where prices are subject to change almost daily, price data have to be collected every day for monitoring the economy. For studying the impact of various development programmes in a developing country, analysis of price statistics is essential. The price data are also used for computation of consumer price index numbers which is utilized to regulate the wages of labour in the economy. They are also required by Government for settling its transactions with private agencies.

In this State, the Government agency for collection, compilation and dissemination of prices is the Economics and Statistics Department. The prices collected are utilized for both statutory and non-statutory purposes and are increasingly coming under the vigilant watch of various agencies. A number of indices based on the market prices and other related variables are being computed. These indicators help to study the changing economic situation in the State.

The Department has engaged its staff throughout the state for collection and supervision of price data. Efforts are being continuously made to improve the quality of the data and bring in more items for increasing the coverage.

The Department collects various types of prices from the farm prices to the prices paid by the ultimate consumer. Farm prices for agricultural commodities and factory prices for industrial commodities form the prices at the first stage of transaction. At the final stage of exchange of various commodities generally come retail prices. Some other prices like those of essential commodities are to be collected every day. Other types of prices like wholesale prices, retail prices of essential items of consumption etc., are to be collected with various periodicities. The following paragraphs discuss the details of the collection of prices.

1. Farm Prices

The price which the farmer gets for his produce at the farm site is known as the farm price. The prices which are collected during the peak harvest season are termed as farm harvest prices.

The Department has been collecting farm prices of various agricultural commodities produced in the State. Farm prices are collected

once in every fortnight from all the taluks in the state. The centres for collection of prices have been selected purposively on the basis of detailed enquiries conducted by the district statistical agency. For collection of data, two or three representations type of cultivators in each selected centre are chosen as informants and are contacted by the price collector regularly.

Rural Retail Prices of Farm Produces

Since November, 1975 the Department has been instructed by the State Government to collect the retail prices of farm produces from the market in the rural areas of all the taluks in the state. These prices are collected once a month. Price quotations are obtained from two selected shops in each centre and after scrutiny and compilation the data are published in Government Gazette. The purpose of publishing these prices is to form the basis of estimating the cash value of the prescribed agricultural wages paid in kind. All the commodities covered in the fortnightly farm prices are included for this item of work also.

2. Wholesale Prices

The Wholesale Price is to be taken as the rate at which relatively large transaction of purchase for further sale is effected. It should relate to the modal price, the price at which most of the transactions take place during the peak marketing period of the day.

The Department had been collecting weekly wholesale prices of agricultural commodities from selected centres. During the Second Five Year Plan a scheme known as 'Market Intelligence' was implemented for the improvement of collection of wholesale prices of agricultural commodities. The main object of the scheme is to make the primary producers conscious of the market trend and also for monitoring the daily prices of important agricultural commodities. Prices of both food crops and cash crops produced in the state and also brought into the state from outside are being collected from 36 centres spread all over the state. For some other commodities weekly prices and for yet others daily prices are to be collected. The staff of the department visit the market every day, collect the prices and communicate them to the headquarters the same day by phone and telex. These prices are compiled on the same day and broadcast by the radio and also published in daily papers. The timely collection, rapid processing and immediate dissemination of data help to provide useful price information to policy makers and administrators.

Over and above the collection of price data, the market intelligence scheme envisages collection of information regarding stocks, arrivals, despatches etc., from the market for the important commodities.

For attending to these work full time price reporters are engaged and they work under close supervision of two Regional Officers and other district level officers.

Wholesale Price of Manufactured Articles

Recently attempts have been made by the Directorate to collect prices of manufactured articles belonging to 16 commodity groups. Selection of items for price collection was done taking into consideration importance of each item as judged by the gross value of production. Besides, the stability has to be gauged by the firmness of specification. The availability in the markets for fairly long period have also been taken into consideration. A total of 38 representative items from organised sector and 27 items for the unorganised sector have been chosen for price collection. This work was started in 1981 and the information is utilised for construction index numbers of wholesale prices of manufactured articles.

Retail Prices

One of the important functions of the Directorate is the publication of consumer price index numbers every month. These index numbers are utilised by the employers of factories and plantations to adjust the wages paid to the workers in consonance with the changes in price situation of essential commodities. For this purpose retail prices of 92 essential commodities of consumption of industrial workers are collected every Friday from 20 centres in the state.

Retail prices of certain important commodities are collected for other purposes also. There may appear to be some overlapping with respect to both commodities and centres. The objectives for which these prices are collected and the specification of commodities differ and hence there is not much redundancy of efforts.

Retail prices of 50 essential commodities are collected from all the district headquarters, except those of Idukki and Wynad, every day and furnished to the State Planning and Food Departments. These data help monitor the daily changes in the prices of these commodities.

Weekly retail prices of 70 items are being collected by Price Inspectors from the district headquarters except those of Idukki and Wynad to be furnished to Government of India.

A fresh Family Budget Survey for the purpose of computing a new series of consumer price indices has been completed in the state. For providing the base prices of the new series retail prices of various commodities of consumption are being collected from 20 centres.

As part of an All India scheme the State Directorate of Economics and Statistics collects retail prices of 78 items from Kottayam, Kozhikode and Trivandrum to give a comparative picture of the price situation prevailing throughout India.

Retail Prices of Dietary Articles and Hospital Necessaries

Government institutions under the Medical Department, Jail etc., enter into contract with private parties for supply of dietary articles and other hospital necessaries every year. In order to settle the contract authoritative prices of these articles are required to be collected and intimated to them. On the first Friday of every quarter the field staff of the Directorate are engaged to collect these prices from all taluk headquarters. After proper scrutiny and compilation these prices are furnished to the Government agencies.

Market Rates of Forest Produces

Price details of 18 species of timber are collected from 4 centres, namely, Quilon, Kottayam, Ernakulam and Kozhikode. Data are collected once in a month. The price data are forwarded to the Government for the use of a statutory committee constituted to fix the prices of timber for supply to wood using industries.

Other Items

Other items for which prices are collected are (1) coir and husk, (2) paddy, (3) salt and (4) onion. These prices are furnished to certain agencies as per their request.

Prices of nutmug, cinnamon, cloves, vanilla etc., are collected on weekly basis from Kottayam and Trichur centres. These prices are forwarded to the Director of Arecanut and Spices Development, Government of India.

Index numbers

One of the areas where the various types of price data are being utilised by the Department is computation of a number of indices relating to the economy of the state. The following index numbers are being compiled regularly by the Department.

1. Consumer price index numbers.
2. Index number of parity between prices received and paid by farmers.
3. A set of indices relating to area, production, productivity, yield cropping pattern and cropping intensity of agricultural crops.
4. Index number of wholesale prices of Agricultural Commodities.
5. Index numbers of wholesale prices of manufactured articles.
6. Index of Industrial production.

Consumer Price Index Numbers.

Consumer price index is designed to measure over a period the average change in the prices paid by the consumers for a fixed basket of goods and services consumed by them. This index which is calculated every month has now been accepted by both employers and employees as the basis for fixation of dearness allowance meant to compensate the price increases.

The consumer price index number is a weighted average of the current price relatives on each item of consumption in the basket, the current price relative being the percentage changes of current price to the price which existed at the base period. The weights are fixed as percentage of expenditure spent by the family on each item of consumption. In other words the index number is the relatives value of a fixed basket of goods and services which were being used by an average consumer household expressed as the percentage of the value during the base period.

The three components necessary for the computation of consumer price indices are 1. weighting diagram, 2. base prices and 3. current prices.

The weighting diagram is based on the consumption pattern of the population to which the index relates and is derived from the data collected during the Family Budget Survey. The weighting diagram gives the relative weights of the value of consumption of times in the Family budgets. Base prices are those prices of commodities or services included in the basket which prevailed in the selected base year. Current prices are the prevailing prices for the period for which the indices are worked out.

Family Budget Survey

Originally the Bureau of Statistics was computing consumer prices index for 12 centres. The base for 11 centres in the former Travancore-Cochin area was August 1939 and for Kozhikode in Malabar area it was the year ending June, 1936. The weighting diagram for the series was based on a survey conducted in 1955-56 for the centres in the Travancore-Cochin areas. For Kozhikode the weighting diagram is that followed by the Madras Statistical Department. The need for a revision of the weighting diagram was felt because; 1. The consumption pattern of the working class population might have undergone significant changes; 2. the quality and availability of some commodities might have undergone changes and 3. the comparison base was far too removed from the current period.

Hence a new Family Budget Survey was ordered in 1965-66 for revising the weighting diagram under a committee. The committee submitted its report in September 1966. But the findings were not accepted because the users interests were not adequately represented in the committee on directions which guided the survey.

Accordingly a new committee of directions was constituted for the conduct of a fresh Family Budget Survey in 1971-72. Under the direction of the committee a fresh family budget survey was conducted in 15 centres in Kerala. This was a sample survey of the working class families in these centres. A working class family is designed as a family which draws more than 50 per cent of its income from the earnings of its members employed for hire or reward to do any work, skilled or unskilled, manual or clerical in any industry, trade or agricultural operations. Trivandrum, Quilon, Ernakulam (including Cochin & Alwaye), and Kozhikode were treated as major centres and from each centre 600 families were chosen to collect data. From the other centres 300 working class families were selected for the survey. Based on the weighting diagram formed from this survey a new series of consumer price index indices was started with 1971 as base. In order to help those industries which still based their agreement on the previous index, linking factors were also worked out. The following 15 centres were included in the current consumer price index number serieses. 1. Trivandrum, 2. Quilon, 3. Punalur, 4. Alleppey, 5. Kottayam, 6. Munda-Kayam, 7. Munnar, 8. Ernakulam (including Cochin and Alwaye) 9. Chalakudy, 10. Trichur, 11. Palghat, 12. Malappuram, 13. Kozhikode, 14. Meppadi and 15. Cannanore.

The basket of commodities included in the present index was substantially enlarged to cover 92 commodities under food, fuel and lighting, clothing and other items.

In response to some complaints that the present consumer price index numbers are not reflecting the true state of affairs a new committee was constituted in August 1977 to go into various aspects of consumer price index numbers and to make recommendations. This committee inter alia recommended that a fresh family budget survey in 1980 and collection of base price concurrently. A committee on Directions was constituted and a fresh Family Budget Survey was undertaken in the existing 15 centres in the state. The survey has now been completed and the report is under preparation.

The Labour Bureau in Simla functioning under the Government of India is computing Consumer Price Index Numbers for over sixty centres spread throughout India and also an all India Index. They conduct family living surveys of their own and have an independent price collection and supervision agency. The present series computed by the Labour Bureau has 1960 as base.

Index Number of Parity between Prices Received and Paid by Farmers

Parity index is an indicator of the balance of payments of the agricultural sector in the state. It indicate the state of affairs of the farmers receiving value for the products and

expending money for cultivation of the crops and for their own living. There are 3 components for the parity index namely, 1. index of prices received by the farmers, 2. index of prices paid towards cost of cultivation and 3. index of household consumption.

The following farm products of the state which have marketable surplus from the producers point of view are included for the computation of the prices received. They are paddy, coconut, cashew, arecanut, ginger, pepper, banana, tapioca and sugarcane. Farm prices of the above commodities are collected from the different Taluk Headquarters in the state. The simple average of the prices quoted from the different taluks in the district is taken as the district average. The weighted arithmetic mean of the district-wise figures gives the average price for the state. The weights are proportional to the value of the total estimated out-turn of the crop in the district. In the state the agricultural year 1952-53 is taken as the base for computation of the index. The price relatives are calculated for the state and the weighted geometric mean for the price relatives of the commodities is taken as the index of prices received.

The index of prices paid has two components, namely, the farm cultivation cost and household consumption. This is calculated as the simple geometric mean of the indices of consumer price and farm cultivation cost. In the absence of a separate consumer price index for the farmers, the working class consumer price index numbers compiled by the Directorate are being taken for calculation of the index. The Index of Farm cultivation cost is taken as the weighted geometric mean of (1) the relative for wages paid (2) the price relative for manure, (3) the price relative for agricultural implements and (4) the relative for livestock and fodder. These four indices are combined with weights in the proportion 60:15:10:15. The arithmetic average is used in the calculation of the relative of wages paid. The simple average price of cowdung and woodash is considered for the price relative of manure. The average of the price relatives of bullock carts, pumping sets and other agricultural implements is taken as the price relative for implements. For calculation of the amount spent on livestock and fodder the cost of maintenance of a pair of bullocks (taken as 3½% of the cost of a pair of bullocks) and money spent on fodder are taken.

The ratio between the index of Prices received and the index of prices paid multiplied by 100 is the index of parity. The limitations of the parity index as computed at present are obvious. First the base is far too removed for meaningful index. Second all the primary produces are not included in the index of Prices received. For example livestock and fishery produces fishery products are glaring omissions.

No family budget survey has been undertaken for the class of agriculturists and no separate index of their living cost is being computed. To use the working class consumer price index in the place of cost of living index for the farmers is not realistic. Finally many of the important items for the cultivation cost have not been accounted for. Chemical fertilisers and insecticides are some of the chief omissions. Again weights assigned to the components of the cultivation cost are arbitrary. In the light of the above comments it is seen that the present computation of parity index is no realistic index of parity for the agricultural sector.

Index numbers of area under crops, production productivity etc.

Indices are computed as indicators of area under crops, production of crops, productivity, yield of cropping pattern, cropping intensity etc. The statistics of area and production of various crops in the state are estimated by annual sample surveys by the Directorate. Also farm prices of various crops are collected fortnightly from all the taluk headquarters.

Index numbers of area under crops, agricultural production, productivity and yield enables the study of trends in production and to assess relative contribution of area and yield in the variations of over-all agricultural production over a period of time. Similarly index numbers of cropping pattern, index of cropping intensity etc., are useful indicators for the agricultural sector.

Agricultural production is generally influenced by uncertain factors like rainfall, floods, sunshine, temperature etc., and is therefore subject to wide fluctuations from year to year. Therefore as per the recommendation of the General Advisory Council of Statistics, the three year average including the last year of the second plan was selected as the base period for computing the index. Accordingly the triennium ending 1961-62 is chosen as the base. At present the series of indices computed in the state covers the following farm crops only.

I. Food Grains:

- (i) Cereals (1) paddy, (2) jowar, (3) ragi
- (ii) Pulses

II. Non-food crops:

- (i) Oil seeds (1) Coconut, (2) groundnut (3) sesamum (4) lemon grass oil
- (ii) Cotton

III. Plantation crops:

- (1) Tea, (2) Coffee, (3) Rubber

IV. Miscellaneous crops

- (1) Sugar, (2) Pepper (3) Cardamom, (4) Ginger, (5) Turmeric, (6) Arecanut, (7) Banana, (8) Tapioca, (9) Cashewnut, (10) Tobacco.

These crops account for 90% of the agricultural production in the state. The selection of a crop is done on the joint consideration of the value of production and extent of area covered by it.

1. Index of area under crops

This index is calculated on the basis of gross sown area under crops. In other words the total gross area under crops during the current year divided by total gross area during the base period multiplied by 100, is the index of area under the crops.

2. Index of net area sown

With the improvement in irrigation facilities there is a considerable increase in the double or multiple cropped area. Therefore the gap between the gross area and the net area sown is widening. In order to have a measure of the rise or fall in the cultivated area, the index of net area sown is calculated as the net area sown in the current year divided by net area sown in the base period multiplied by 100.

3. Index of cropping intensity

The Index of cropping intensity of a crop is measured by the ratio of the gross area under the crop divided by the area sown under the crop multiplied by 100. In other words this index is equal to the index of gross area divided by index of net area sown into 100.

4. Index of cropping pattern

In calculating the index of area equal weightage is given to areas growing different crops with divergent yields and incomes per unit area. Further it does not take into consideration the changes in cropping pattern. In order to provide a basis for the assessment of the changes in cropping pattern, weights have been assigned to different crops in proportion to the gross value of production per unit area in the base period.

5. Index of yield

Changes either in the yield rate or area of crop will result in a variation in the production. In order to study the effect of the change in yield rate alone, the other variable namely, the area is kept constant. When the value of production for an year is calculated there are three relevant variables. They are area, yield rate and prices. Therefore in order to study the effect of changes in yield rate, we keep the area and price at constant levels.

The index of yield represents the ratio of the value of production in the current year to that in the base year due to the changes in the yield rate alone, cropping pattern and prices kept at constant levels.

31.5195|MC.

Index of wholesale Prices of agricultural commodities

This is a monthly index with the agricultural year 1952-53 as base. Wholesale prices of various agricultural commodities from selected centres are collected by the field agency of the Directorate. The centres are selected taking into consideration, the relative importance of the area, production and marketing of agricultural commodities. 17 agricultural crops important to the state are included. They are grouped into two classes, namely, food crops and non-food crops. The list is given below:—

Food crops

- (i) Rice
- (ii) Sugar, molasses
- (iii) Condiments and spices including pepper, ginger, turmeric, arecanut and cardamom.
- (iv) Fruits and vegetables including banana, tapioca and cashewnut.

Non-food crops

- (i) Oil seeds comprising cocoanut, ground nut, sesamum and Lemon grass oil.
- (ii) Plantation crops consisting of Tea, Coffee and Rubber.

The simple arithmetic mean of the week end wholesale prices is taken as the average monthly price of each commodity. The weights to be attached should theoretically be the total value of each commodity actually marketed. (In other words the marketable surplus plus flow from outside the state). In the absence of reliable data on the marketed value of the commodities weights are assigned in proportion to the value of production for most of the crops. For rice and molasses weights are assigned in proportion to the value of consumption estimated by sample survey conducted by the Directorate. For cashewnuts the value of production and imports are taken into account. The weighted arithmetic average of the price relatives of 17 commodities included in the index is defined as the index of wholesale prices.

The above index has a number of limitations:

1. the base is far removed from the current period;
2. the prices of livestock products and fish are excluded; and
3. the weights assigned are not what they ought to be.

**index numbers of wholesale prices of
manufactured articles**

Wholesale price index numbers of manufactured articles of Kerala have been constructed since 1981 and are available for the period from 1970-71 onwards. The indices have been published for the period upto 1979-80.

Base period and weighting

The price base for the index is the year 1975-76 (April to March). The weight base for

organised sector is 1975-76 and for the unorganised sector 1973-79. Weights were assigned to commodity groups (in certain cases few groups were clubbed together) in proportion to their respective contribution to the gross value of production. For the organised sector, the production data from the Annual Survey of Industries 1975-76 have been used and for the unorganised sector, value of gross production estimated from the follow up surveys of Economic Census conducted in 1978-79 have been used to assign weights.

6. DATA FOR PRICE ANALYSIS—A SYNOPTIC VIEW

George Mathai

I. A Framework for Price Analysis

Price is at the core of economic theory. Basically price analysis examines the interaction of demand and supply in determining the price as also the response of demand and supply to price. The role of this price mechanism is greatest in market economies where the resource allocation process is carried out by it, and least in the extreme case of rigidly planned economies where price forms part of the accounting system and enters resource allocation process in the form of 'shadow prices'. In mixed economies like that of India market mechanism is dominantly present but amended by the planning process.

Price analysis is important from the point of view of prices policy of the Government. It is also important for the different constituents of the market for their price output policies. The data requirements of price analysis stem from its above role. The prices policy has to be in accordance with the goals of planning and is necessarily an adjunct to other economic policies including incomes policies.

A brief account of economic goals of Indian planning is relevant here. India aims, like all countries, at full employment, growth with stability and self-reliance. In addition, goals specific to the planning process of India are equity (in the sense of reduction in inequalities, inter-personal and inter-regional) and improvement in the standard of living of all. Needless to emphasise here that these goals are at times mutually conflicting and prices policy along with other policies has to hold a precarious balance. In all these, relative benefits and harms of price movements are the most important concern. Unlike in a market economy where the various constituents, through their bargaining process take care of their economic interests during the course of price movements, in the planned economy of India the Government has to guide deliberately the price movements to maintain the required balance among the various objectives. This also brings in the fact that price analysis leading to prices policies needs much data besides prices. (It may be noted that the aspect of money supply is not given attention to in this paper).

Relative price movements can be studied from different angles: (i) different sectors of the economy (production sector and consumption sector; agricultural sector and non-agricultural sector with sub sectors; import export sectors etc.); (ii) different income groups, (iii) different regions of the economy, (iv) different commodity groups and different grades of the

same commodity; and (v) different time periods (long time movements, short time movements and cyclical variations).

The relevance of price analysis in the above terms in the context of the economic goals may be exemplified here. Relative price movements for the production sector and the consumption sector are important from the point of view of savings and hence growth; price movements of commodities consumed by lower income groups have bearing on equity considerations; proper balance has to be maintained among price movements affecting the different production sectors like agriculture and industry; relative price movements in the import and export sectors have relevance for the goal of self-reliance; violent price movements affect net income position of the various sections drastically which in turn affects stability and so on.

II. Assessment of Data Requirement

It could be seen that the data collected by the Directorate of Economics and Statistics which is the major authoritative source of price data present a wide coverage from the aforesaid angles. The various series of price data for different centres of the State—wholesale prices, retail prices, farm prices and export prices—are all useful for sectoral analysis. Major deficiency in ready availability of sectoral data relates to import prices and service sector prices. Some amount of income group-wise analysis is possible with the data available from the Family Budget Surveys and household consumption surveys. As regards prices of agricultural sector, crop prices are directly collected by the prices division of the Directorate of Economics and Statistics while prices related to animal husbandry and fishing sectors are collected by the concerned departments. Ready availability of the latter data along with and on a par with the former data is desirable in this respect. Wholesale prices of manufactured commodities are collected only for commodities manufactured in Kerala and are separately available for organised sector and unorganised sector. Retail prices have a mixed coverage, amenable to representative classification of commodity groups and the various sectors. Analysis of price data for the various grades of the same commodity is possible for a number of commodities. However, the coverage cannot be claimed to be exhaustive. Regionwise analysis is possible as the data are collected from different centres of the State. (It may be noted that prices used for state income computation are not considered here).

As regards analysis of price trends over time, the requirement is time series data. In this

respect ready availability of wholesale prices of crops, farm prices (of crops), retail prices (mixed coverage) and export prices (mostly of farm products) is confined to a period starting from 1955 onwards. Earlier prices, even if were collected, are not readily available now. As regards the wholesale prices of manufactured articles of Kerala data are readily available from 1970-71 onwards for organised and unorganised sectors.

It was argued earlier that an important consideration of price analysis is the impact of price movements on the relative income positions of different sections of the people. There is a major gap in data availability for this purpose. The main requirements for this purpose are the change in the net income on the production side brought about by a change in price as also a change in net income faced by the consumption sector. That requires on the consumption side the relative quantities of commodities consumed by various classes of society and the price changes in those commodities. The various retail price series, household consumption surveys and the family budget surveys together satisfy this need. The real deficiency is in the production sector. While output levels and output prices are known, information on the input side is not adequate. We do not have adequate data not only of input prices, but also of a commoditywise input list. Cost of cultivation data are collected under the aegis of the Central Ministry of Agriculture since 1971. Already data have been collected for paddy and coconut. However, they are meant for almost exclusive use by the Agricultural Prices Commission in its decisions about levy prices (which for all practical purpose become the support prices also). As such it may not be readily available for use by others and it is hoped that this gap will be filled by the data that will come through a study initiated in 1979 by the Directorate of Economics and Statistics on the cost of cultivation of important crops viz., paddy, coconut, arecanut, pepper, tapioca, ginger and turmeric. However no efforts have yet started to map the cost structure in other areas—animal husbandry, fishing and the non-agricultural sector consisting of both organised and unorganised sectors.

Already we have entered the demand and supply aspects and in the following sections a more detailed discussion of data requirement for demand analysis and supply analysis is attempted.

Demand Analysis

Demand analysis should assess the likely total demand for a product and changes thereof assuming that tastes remain the same. In a market economy this is generally done using the estimates of disposable income, the income elasticity, price elasticity, substitution elasticity and cross elasticity of demand. Aggregate data of consumption levels are not of much avail in

this respect. Reliance has to be made on cross section data which are obtained through special surveys. For instance we can get the income elasticity of demand from the ex-post expenditure of various income groups. Alternatively there could be an estimation of income elasticity of demand by posing to the consumers hypothetical situation of changed income levels, supported by enough probing questions. Such inquiries are possible to obtain other elasticities. The major difficulty with respect to the former method is that the income groups usually taken are having wide class intervals and also they will be marred by other forces operating. The main defect of the latter method is that the situation posed is hypothetical. Another method of getting information is to have bench mark surveys for the same households or same regions. Depending upon the size of the population covered this method can yield good results. In all these surveys the relevance of probing questions to bring out the consumption behaviour of the respondent is very great.

The assessment of disposable income through such surveys will have to adopt a detailed procedure and should not be confined to a one question affair. The disposable income should include net remittances also. Remittance is one of the most neglected areas of statistical investigation. However remittance is very important in the context of Kerala and this is one reason why, for purposes of demand analysis, assessment of income level of the economy from estimates of net domestic product alone is not satisfactory.

There are some sources of demand for commodities other than State's internal household demand for consumption. These are internal and external demand for industrial purposes and external demand for household consumption. The extent of these demands and the factors governing their determination are also to be assessed. In fact in these cases a fully satisfactory assessment is difficult. One way to do this is to make year to year extrapolations assuming some availability of past data. These extrapolations can be further amended for developments which are likely to take place in the demand sectors. Efforts at demand forecast will be a desirable step in this respect.

Demand analysis in a planned economy has much more to do than the above. If the ultimate aim is to affect production, imports and exports of a commodity the planning exercise should take cognizance of normative requirements of consumption. For example, in the case of food nutritional standards should be the basis for assessing normative demand.

Thus for planning purposes two sets of demand informations are relevant viz. (i) the market demand for commodities, and (ii) the normative demand for commodities. The gap between the two will, then be self-evident with important implications for prices policy, incomes policy and investment policies.

Supply Analysis

Supply analysis in the context of an economy like that of Kerala has to consider supply generated by internal production and the flow from outside the State. It is doubtful whether there could be a full assessment of the latter. However, this may be possible by deducting from total consumption for a specified period the internal production during the period. It will be noted that conceptually this is not fully justified as total consumption represents demand, and supply is taken to be equal to that. That means we are getting a minimum estimate of the flow from outside the state. Such assessment of external supply, although tedious are essential especially in the case of commodities like paddy. In fact the external supply of rice is crucial in its price determination.

Supply and production are not always the same thing (even ignoring the external supply). This is because of hoarding. Besides, from the point of view of marketing, allowance has to be made for self-consumption by producers and therefore an assessment of marketable surplus is essential. Marketable surplus in the *ex-ante* sense will show the likely quantity that will be available for sale out of production after the normal consumption requirements are met. Therefore if marketable surplus for a period is to be assessed we should have an estimate of the likely production (based on production forecasts or so) and a ratio of normal self-consumption. This ratio will have to be region specific and can be obtained through sample surveys. At present we do not have satisfactory estimates of the above ratio.

There are certain methodological problems involved in assessing the marketable surplus. There could be different methods in fact. Attention is centred here on paddy as it is most important in the context of Kerala. Assuming that kind wage payments are entirely consumed (which is true for paddy but not for coconut) attention can be concentrated on producer households alone. Sample surveys can assess marketed surplus (in the *ex post* sense) and obtain a ratio of marketed surplus to production for different holding classes and then at the aggregate level. In this the problem is under-reporting of production and the lack of accurate data on distribution according to size of holding of either area under the crop or of households engaged in the production of the crop.

Therefore there is need to obtain marketable surplus through methods which use size of holding data and production data as reported by farmers relatively to a lesser extent. For all practical purposes what we should know is the quantity that will be available after the own consumption of the producer households. This needs an assessment of the consumption requirements of the producer households which can be obtained through surveys. What we require is an average per capita consumption level of the members of

the cultivating households and an estimate of the number of persons or atleast the number of households engaged in the cultivation of the crop. The average consumption level can be applied to obtain total consumption of producer households, assuming that farmers of a crop generally consume as much as they want out of own production (A refinement possible in this respect will be to obtain the age groupwise membership and age groupwise average consumption levels). Using these an estimate of total consumption in the producer households can be obtained. We have independent estimates of production from the Timely Reporting Surveys and after adjusting this for seed, feed and wastage (using standard ratios or ratios obtained through surveys) marketable surplus can be estimated from this. Marketable surplus in the *ex-ante* sense can be obtained by using the production forecast figures and any adjustment needed for likely changes in the consumption levels of the producer households (Limitations of this method mainly due to the case of small farmers are insignificant and can be adjusted for, if need be).

Assessment of market arrivals (at wholesale markets) is also important. Ultimately spot prices are decided by these arrivals in the wholesale market which in turn decide the retail prices. Periods of shortages are more crucial from policy point of view and the public distribution has to be all the more vigilant on such occasions. One of the general features during times of shortages is the development of *epi-centres* of price spirals which are to be identified for special attention like cordoning and such other measures. Regional informations are useful in this respect.

It is in times of shortages that hoarding assumes maximum proportions. However, this is elusive for accurate measurement. Nor are their measurements always important. For instance, in the case of paddy which cannot be hoarded for long assessment of production, marketable surplus and market arrivals are sufficient informations and a rough idea of hoarding is obtained residually. But there are commodities, agricultural and non-agricultural, which can be hoarded for longer periods. Assessment of this will be helpful for policy purposes. In certain cases this could be found out by finding out the difference between produced quantity and traded quantity. Cases where production is higher than trade, hoarding may be assumed and cases when production is less than trade unleashing from hoarding may be surmised. These movements are to be watched over several years and conclusions arrived at logically. Pepper offers a good example for this. Such quantitative behaviour could be related to respective price movements. Additional informations required for firmer conclusions are the extent of internal consumption, flow in from other states and flow out from the state.

Supply Response to Price

Theoretically supply responds to price directly and price elasticity of supply is measured

generalising from this premise. Much of the controversy in this respect relates to the agricultural sector of under-developed economies. However positive price response in the farm sector has been established by several studies negating earlier hypotheses of passive price response and backward sloping supply curves.

Prices affect production in agriculture in two ways: (i) through change in cropping pattern, and (ii) through change in the efforts by the farmers including change in resource allocation.

Studies on acreage allocation among different crops can be had at the aggregate level by using time series data of area and prices published by the Directorate of Economics and Statistics. However, at the aggregate level many of the micro level forces get concealed. Therefore special studies at the farm level are indispensable in this respect. In certain regions acreage response to price change other than following are less amenable to investigations because of conditions that force mono-crop cultivation, as for instance in the case of 'Punja' fields of Kuttanad. Whatever the long run possibilities of alternative cropping pattern through modification of the physical conditions, for a long time the mono-crop cultivation of paddy has been continuing in this tract despite drastic changes in the price ratios. Therefore scope for study of acreage response to price changes other than following gets limited. But then this is an excellent crucible for studying price response of farmers with respect to their investment efforts including capital formation, as the instance is devoid of acreage allocation among different crops. Here again assuming no change in the physical condition, vying between paddy and other crops (especially coconut) for the investment efforts of the farmers is not significant. Therefore attention can be concentrated on price response of investment efforts in paddy. It may be noted here that the recently talked about rubber cultivation in the punja fields of Kuttanad involves change in the physical conditions of the land. However, the very inclination supports the hypothesis of positive price response of farmers.

Production milieu changes with technological change; here the changed relative price ratios are important in the adoption of the new technology which would entail additional inputs including new inputs. To what extent price ratios enter into the decision making of farmers in the adoption of new technology is important for purposes of prices policies. Our knowledge in this respect is also limited. As a beginning we should have comparative price ratios for inputs and outputs under different technologies and also the related net income positions. As already stated we do not have a satisfactory regional picture of cropwise input use and much less input use classified on the basis of various technologies.

Farmers' expectations and attitudes in the face of risk and uncertainties are important in

deciding the course of investment outcomes. Price and yield expectations are most important in this respect and are generally based on past experience amended by foreboding changes at the time of growing. The role of support price is relevant in this context. An important set of information that are required in building up expectation models in this respect relates to variables like whether, extent of pest attack etc. Systematic compilation of such data is necessary. Another closely related area which needs investigation is about the rational behaviour of farmers. Do the farmers try to maximise yield or maximise net income? And what are their attitudes to the prevalence in the economy of high and low prices in general? We do not have much information on any of the above aspects. These are domains of opinion surveys.

Pricing Practices

It is useful to examine how various prices get ultimately shaped. Whether the practice is 'cost plus' pricing or basing point pricing or MC MR pricing can be examined. This investigation may be relevant mainly for industrial products as in the case of agricultural products prices are mostly 'given' to farmers.

It will be interesting to examine in the case of all commodities, the regional variation in prices to assess whether the differences are brought about by 'transportation costs' or due to some other factors. Similarly the components leading to various prices—ex-factory prices (or farm prices), wholesale prices, retail prices, export prices etc.—can be studied. How far various elements like taxes, transportation costs, storage costs, commissions etc., enter into price can be identified. From this Economic analysis can draw conclusions on several aspects like 'fiscal inflation' 'cost push inflation' etc.

Another area which needs investigation is futures trading. We have very little official or unofficial information of this with respect to Kerala. To what extent it is prevalent and how they influence prices are interesting areas for investigation.

III. Data for Regulation and Planning

Demand and supply interaction can be studied only with a proper understanding of the aforesaid matters. In the special context of planning everything cannot be left to the free play of demand supply interaction. This calls for prices policies which are regulatory in character having regard for the various economic goals. Besides, in several areas public distribution has to be undertaken. Such policies should properly follow what is known as 'budgeting' with a view to attaining the economic goals. For instance 'food budgeting' would involve assessment of supply side and demand side of food items; such an exercise should not only be market oriented but also based on normative standards. One area where ready availability of data should be improved relates to public

distribution—information on levy targets and achievements, levy prices, fair prices, off-takes (monthwise or seasonwise) etc. A few fair prices are at present collected by the Directorate. It is expected that the off-take survey would also add to the stock of information in this field.

From the point of planning resource allocation prices and related informations are important. They are not only relevant in guiding the market mechanism for achieving desirable resource allocation to various investments but also enter directly investment decisions under planning. In this context market prices are relevant for financial analysis and 'shadow prices' for economic analysis. Here also there is scope for several improvements especially in arriving at right prices with enough regional specification. In the case of shadow prices some of the present practices seem to be inadequate. Using international prices, or prices used at the national level may not be adequate at a regional level. Again the appropriate prices for various items like land and labour are not matters which have received enough discussion in the context of Kerala. Since generally shadow prices for land appear in economic analysis in the form of opportunity costs (use foregone) there is a tendency to under-estimate its price and on the basis of economic analysis a project may get approved for execution. In an overall planning process by the state, financial analyses of projects have to consider land prices at their actual levels. Since we do not have accurate region specific prices of land (for various reasons) this exercise is very difficult. In any case the prices relevant for private sector investment will be far higher than what it would be for the public sector. Therefore drawing up investment outlays on the basis of prices relevant to public sector will not

be relevant for private sector. A consequence of this will be that private investment will not be forthcoming in the designed direction even when they are planned up on the basis of benefit cost analysis. Therefore assessing land prices at their actual market prices is essential even for overall planning.

Shadow pricing of labour is also a problem area which has not received specific attention in the case of Kerala. One feels uncomfortable in valuing labour even in economic analysis on the basis of the concept of 'zero marginal productivity of labour'. This is also a way how planning exercises are rendered unrealistic.

Apart from land and labour prices, the price of private capital viz., the market interest rates too belong to the category of inadequately treated price data. These latter might be entering the planning exercise in as much as they are monitored by the Reserve Bank of India. However such sensing of price impulses are very much aggregate in nature and are therefore only of remote use in region specific planning.

That the above inadequately treated price aspects pertain to three of the factors of production, viz., land, labour and capital speaks for itself about the seriousness of the neglect involved. Needless to say that these prices are crucial in deciding the relative income position of various segments of the economy and the impression is that at least some of the changes in these prices have, in their stride, imposed deviations from the goals of planning. Nevertheless it is also to be recognised that data on them can be collected only after enough discussions elapse on the required coverage and methodologies.

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Wages constitute an important component in all types of economic activities. Wages can be defined as remuneration paid to the service of labour. Wages vary from activity to activity and from place to place. Wage rates of workers in various sectors of the economy differ according to the nature of activity, skill of labour, productivity of labour, place of work etc. The main motive force behind any economic activity is the satisfaction of human wants and this could be achieved only by assuring a reasonable level of earnings to the worker class.

The need for a realistic wage policy has been stressed by the Industrial Truce Resolution as early as in 1947: "The system of remuneration to capital as well as labour must be so devised that while in the interests of the consumers and primary producers excessive profits should be prevented by suitable measures of taxation and otherwise both will share the product of their common effort after making provision for payment of fair wages to labour, a fair return on capital employed in the industry and reasonable reserves for the maintenance and expansion of the undertaking".

A Wage Policy aims at increasing level of real earnings has great significance in recent years. Wage Policy can be regarded as economically sound only if it encourages increase of the national income and secure to the wage earner a legitimate share of the increased income.

Evolution of Wages Policy

Before the Second World War, the approach to wage policy was based on the doctrine of *laissez faire*, which was the dominant economic philosophy in the 19th century England. The pauperisation of the rural India owing to the British economic policies and the consequent unlimited supply of labour to urban industry resulted in a wage level far below even a subsistence level in India. However, the Royal (Whiteley) Commission on Labour modified the *laissez faire* approach by recommending Wage Boards to fix minimum wages for certain industries and suitable legislation to prevent the malpractices in wage payments. The Payment of Wages Act was enacted in 1936. The Indian Trade Disputes Act of 1920 also emphasised Government intervention to regulate wages. The period before the Second World War was thus characterised by *laissez faire* modified by minimum government intervention to deal with the 'sweat shops' in the country. The after effects of the Second World War brought the Government under great pressure to deal with

the problem of wages and earnings of factory workers in India. However, the Bombay Textile Labour Enquiry Committee which was appointed at that time and even the Rege Committee of 1943 which laid emphasis on minimum wage, fair wage and living wage could not contribute substantially to the guiding principles for a national wage policy. The Fair Wages Committee set up by the Government of India in 1948 had defined the three wage concepts viz. the minimum wage, the living wage and the fair wage. The minimum wages was expected to provide 'not merely for the sustenance of life, but for the preservation of the worker'. The living wage was defined as an ideal level of wages which would enable the worker to provide 'not merely for a bare physical subsistence but also for maintenance of health and decency; a measure of frugal comfort and some insurance against misfortune'. The fair wage lies between these two extremes, the lower limit set by the minimum wage and the upper limit set by the industry's capacity to pay, depending on productivity of labour, prevailing rates of wages, level of notional income and its distribution and the place of the industry in the economy of the country. However, the report of this committee did not provide an operational framework for a national wage policy. The failure of the various committees in evolving an operational frame work for a national wage policy has been enunciated in India's Second Five Year Plan. "A Wage Policy which aims at a structure with rising real wages requires to be evolved. Workers' right to a fair wage has been recognised, but in practice, it has been found difficult to quantify. In spite of their best efforts industrial tribunals have been unable to evolve a consistent formula".

Legislations relating to wages

Various legislations have been enacted to secure minimum and fair wages to the labourers in the organised sectors of industry and agriculture. Important among them are the Minimum Wages Act, the Payment of wages Act and the Bonus Act.

Payment of Wages Act 1936

The main purpose of the Act is to ensure regular and prompt payment of wages and to prevent the exploitation of wage earners by prohibiting arbitrary fines and deductions from wages. Statistics of per capita earnings of factory workers are collected on the basis of data received from factory owners under the Payment of wages Act 1936. The wage

limit for data collection which was fixed at Rs. 200 p.m. has been raised to Rs. 400 p.m. and again to Rs. 1000 p.m. which is the prevailing rate for data collection. The wage details for the workers below this norm are being regularly collected.

Minimum Wages Act 1948.

The Minimum wages Act of 1948 was considered as a land mark in the history of labour legislation in India. The Act requires the Central State Governments to fix minimum wages rates payable to employees in different scheduled occupations (see Table 1). Even though the minimum wage has been recommended as the need-based minimum wage, in actual practice the main factors considered by the wage fixing authorities both at the centre and at the States have been (a) prevailing rates of wages, (b) rise in prices and (c) minimum rates of wages fixed for similar scheduled employments in the same State or the neighbouring States. However, it has been agreed by the State Labour Ministers that the minimum wages should not be below the poverty line as defined by the Planning Commission. Planning Commission has defined the poverty line as Rs. 52 and Rs. 71 per capita per month for rural and urban areas respectively (1976-77 prices) on the basis of recommended nutritional requirements of 2400 calories!

TABLE I

OCCUPATIONS COVERED IN KERALA UNDER THE MINIMUM WAGES ACT 1948

1. Woolen Carpet making or shawl making establishment
2. Tobacco including Beedi
3. Rubber plantations
4. Tea, Coffee or cardamom
5. Local bodies
6. Oil Mills
7. Construction or maintenance of roads
8. Stone-Breaking or stone crushing
9. Ice manufacturing
10. Rice mills
11. Public motor transport
12. Tanneries and leather manufacturing
13. Cashew manufacturing
14. Coir manufacturing
15. Tile manufacturing
16. Toddy tapping
17. Match industry
18. Any park
19. Timber and plywood
20. Bricks
21. Handloom
22. Shops and establishments
23. Plywood
24. Minor ports
25. Construction of dams
26. Rubber products industry
27. Minor engineering
28. Fish industry

29. Salt pan
30. Manufacture of Ayurvedic and Allopathic medicines
31. Power-looms industry
32. Drying of coconuts and copra industry
33. Ice factory
34. Manufacture and sale of umbrella
35. Rubber crape mills
36. Hosiery manufacturing
37. Forest
38. Agriculture
39. Hostels
40. Handling and care of elephants

The Payment of Bonus Act 1965

This Act is aimed at enabling the workers to share the prosperity of industry. As per the recommendations of the Fair Wages Committee, Wage Boards have been set up in some industries. Apart from considering fair wages, the Board takes into account the needs of the industry in developing economy, the requirements of social justice and the need for adjusting wage differentials in such a manner as to provide incentives to workers for advancing their skill. In industries where there are no wage boards, wages are determined by collective bargaining and industrial adjudications. All such measures of governmental action together have contributed to a marked improvement in wages.

With the emergence of the report of the National Commission on Labour, there is greater awareness about the need for establishing a national wage structure and giving it statutory enforcement. The Planning Commission Expert Committee on National Wage Policy had suggested the setting up of a National Wage Board or Commission at the Centre and the States to supervise, guide and co-ordinate Wage fixation.

In the following paragraphs an attempt is made to analyse the trend of wage rates in the various sectors of Kerala's economy. The analysis has also been directed to gauge whether wages have risen commensurate with the increase in cost of living indices.

Agriculture

Agriculture continues to be the main source of livelihood for a majority of the population in India. This is true of Kerala also. The percentage of the total working force engaged in agriculture has not shown any appreciable change during the last few decades. According to the 1981 Census agricultural labourers formed 28% of the total working force in Kerala.

Most of the agricultural labourers do not possess land and they are not properly organised. Agricultural labourers are not gainfully employed all through the year and wages they get are much lower than that of wages in other sectors of the economy. Security of employment, fixity in working hours, share in the profits and labour welfare

laws are not applicable to agricultural labourers in the manner and degree as they are applied to industrial labourers. The reason for this lies mainly in the peculiar nature of agricultural operations. Agricultural work is closely related to certain seasons and even during these seasons agricultural work may not be of a continuous nature. Hence the difficulty in organising agricultural operations. The rates of wages alone cannot give an idea of the standard of living of the agricultural workers the seasonal character of his employment also has to be taken into account. As Mrs. Howard says in her book 'Labour in Agriculture', "The outstanding problems of agricultural workers is not so much rates of wages, as possibility of work, not so much what to earn but whether to earn at all".

In 1950-51 and 1956-57 two intensive studies were made on the socio-economic conditions of agricultural labourers in the country. These studies throw some light on unemployment, income and expenditure, indebtedness etc. of the agricultural labourers. These studies indicate that nearly 85 per cent of the agricultural labourers in India were working for wages while the others were attached to land lords and were serving more or less as bonded labourers. The Agricultural Labour enquiries revealed that nearly a third of the total number of agricultural workers were in excess of requirements. The worker participation rates of females is quite high in the agricultural sector. The findings of the Agricultural Labour enquiries and Rural Labour Enquiry conducted during the years 1950-51, 1956-57 and 1963-65 respectively shows that wage rates were comparatively higher in Punjab, Assam and Kerala (vide Table 2)

TABLE 2

AVERAGE DAILY WAGE RATES OF MEN
IN AGRICULTURAL OPERATIONS (RS.)

State	*1950-51	*1956-57	1964-65
India	1.09	0.96	1.43
Assam	1.90	1.54	2.21
Punjab-Haryana	1.84	1.98	2.13
Kerala	1.26	1.28	2.11
Tripura	..	..	1.97
Jammu & Kashmir	..	..	1.95
West Bengal	1.66	1.43	1.81
Rajasthan	1.23	0.98	1.76
Delhi	..	..	1.75
Gujarat-Maharashtra	1.01	0.87	1.47
Tamilnadu	0.97	0.84	1.39
Bihar	1.26	0.91	1.39
Orissa	0.72	0.80	1.33
Andra Pradesh	0.97	0.87	1.21
Mysore	0.90	0.84	1.21
Madhya Pradesh	0.79	0.76	1.11
Uttar Pradesh	1.18	0.92	1.10

*Relates to casual agricultural labourers only.

Source: Rural Labour Enquiry 1963-64-Final Report
Labour Bureau, Government of India.

During the olden days remuneration to agricultural labour was being paid mainly in kind. This practice is still being continued in some parts of the State, especially Palghat and Kuttanad regions, while payments for harvesting charges are made. Though minimum wage rates have been fixed in the agricultural sector, the actual wages are generally determined by the free play of forces of demand and supply. The prevailing wage rates are comparatively higher in Kerala especially in the urban sector where the supply of agricultural labour is limited. However, agricultural labourers are not gainfully employed all through the years and the wages they get are much lower when compared to the wage rates in other sectors of the economy.

The wage data already being collected by the Directorate of Economics and Statistics in the agriculture sector relates to skilled as well as unskilled labour. Skilled labour includes carpenters, blacksmiths and mason. Among unskilled labourers, the wage rates of field labour (paddy field, garden land and estates), other agriculture labour and herdsmen are being collected separately for men, women and children.

Wage rates of agricultural labourers are being collected regularly on a monthly basis from selected centres in all the districts of the State. The method of collection is by contacting them or from leading employers in the selected centres. The wages thus collected have to be checked by conducting enquiries among employees. The wages thus collected are being published in the Gazette regularly. These wage statistics are also utilised for computing wage index. The base selected for comparison is 1952-53.

Among the Indian States agricultural wages are comparatively higher in Kerala. During the first half of the sixties agricultural wages in real terms in the country were generally low except in Kerala, Punjab and Tamilnadu. The average daily wage rate of an agricultural (paddy field labour-Men) labourer in Kerala increased from Rs 1.85 in 1960-61 to Rs. 5.09 in 1970-71 and Rs. 11.13 in 1980-81, recording an average decadal variation of 250.81%, i.e. an average increase of about 25 per cent per annum. An analysis of the agricultural wage rates in Kerala shows that the rate of increase in wages has been comparatively high among female labourers than male labourers. This is evident from the figures given in Table 3.

TABLE 3

INDEX NUMBERS OF AGRICULTURAL
WAGES IN KERALA (1952-53=100)

Year	Paddy field labour-other Agricultural Labour			
	Men	Women	Men	Women
1960	119.2	137.2	118.3	125.2
1970	315.8	365.1	319.2	369.4
1980	644.6	816.3	664.6	812.6
1981	755.1	936.6	772.7	994.2

The trend in the growth of agricultural wages in some of the Indian States in comparison with the trend in the growth of the consumer price indices for agricultural labourers during the period 1969-70 to 1978-79 is shown in Tables 4 and 5. It can be seen that the earnings of agricultural labourers in Kerala in real terms have declined during this period.

TABLE 4
AGRICULTURAL WAGES (MEN)

State	(Rs.)			
	Field Labour		Other agricultural labour	
	1969-70	1978-79	1969-70	1978-79
Andhra	2.59	4.65	2.59	4.52
Assam	3.74	6.08	3.81	5.94
Kerala	4.80	7.32	3.81	8.20
Maharashtra	2.14	5.69	2.98	6.19
Tamilnadu	3.03	4.00	2.00	5.40
W. Bengal	2.92	6.27	2.67	4.18

TABLE 5
TREND IN WAGES AND COST OF
INDICES IN THE AGRICULTURAL
SECTOR (1978-79)

(Base: 1969-70 = 100)

States	Index of		Parity indices
	Wage rates (Field Labour indices men)	Cost of Living	
Andhra	179.43	160.23	112.05
Assam	162.56	178.49	91.08
Kerala	152.50	160.40	95.07
Maharashtra	181.21	172.68	104.94
Tamilnadu	132.01	156.32	84.45
W. Bengal	214.73	166.67	128.84

Industrial sector

With the enactment of the Minimum Wages Act 1948 a clear distinction was made between organised group of industries and 'sweated' industries and minimum rates of wages were fixed in the organised sector. The Act also provides for the creation and maintenance of machinery at central and state levels regulating fixation/revision of minimum rates of wages in 'sweated industries'.

Wages in the factory sector are collected on the basis of the returns received from the

factory owners as per the Payment of Wages Act 1936. An analysis of the per capita daily earnings of factory workers (earning less than Rs. 1000 p.m.) during 1979 shows that Maharashtra ranks first closely followed by West Bengal. The trend in the growth of wage rates in some of the Indian States during the period 1971 to 1979 is shown in Table 6.

TABLE 6
PERCAPITA EARNINGS OF FACTORY WORKERS

State	Per capita earnings	
	1971*	1972**
Andhra	7.02	11.32
Assam	5.71	13.97
Bihar	8.72	16.33
Gujarat	9.30	21.69
Karnataka	8.66	11.84
Kerala	7.03	16.11
Madhya Pradesh	9.63	22.40
Maharashtra	10.20	25.40
Orissa	9.09	22.96
Punjab	7.64	15.57
Rajasthan	8.11	16.14
Tamilnadu	8.52	19.31
Uttar Pradesh	8.33	17.86
West Bengal	10.03	24.51

*Relates to earnings less than Rs. 400 p.m.

**Relates to earnings less than Rs. 1000 p.m.

Legislations together with bargaining power of labour have contributed to a comparatively high level of wage rates in the industrial sector.

Industrial wages in Kerala are low when compared to many other Indian States. The trend in the per capita daily earnings of factory workers (industry-wise) in Kerala during the last two decades is shown in Table 7.

TABLE 7
PER CAPITA DAILY EARNINGS (IN Rs.) OF
FACTORY WORKERS

Industry	1960	1970	1980
Rice Mill	1.68	5.05	12.67
Sugar	..	9.05	19.31
Edible oils	2.68	4.90	14.41

Industry	1960	1970	1980
Tea factories	2.41	4.12	14.61
Cashew factories	1.25	3.35	9.88
Cotton textiles	3.13	7.12	21.35
Coir	2.63	7.55	16.78
Umbrellas	2.45	6.20	11.15
Saw Mills	2.97	5.78	13.23
Plywood	2.65	7.27	} 9.25
Splints & Veneers	1.44	2.86	
Furniture & Fixtures	3.11	9.36	18.90
Printing & Publishing	3.49	10.24	18.92
Tyres and Tubes	3.87	18.22	19.67
Rubber	2.80	6.97	18.68
Artificial manures	4.26	4.99	20.68 (1979)
Pharmaceuticals	3.73	6.56	23.72
Matches	2.43	2.10	8.03
Soaps	7.77	10.25	26.94
Bricks and Tiles	2.58	5.12	16.94
Pottery, China clay & earthenwares	2.94	7.08	17.45
Metal products	3.13	7.44	20.32
General jobbing engineering	4.93	7.21	18.44
Electrical machinery	3.94	9.87	25.94
Repair of Motor vehicles	3.58	10.06	31.32
Sanitary services	..	10.29	..

1960 & 1970 Earnings relate to less than Rs. 400 p.m.
1980 Earnings relate to less than Rs. 10.10 p.m.

Wage structure Survey in Kerala

A Survey on Wage Structure in the 'Construction' and 'Trade & Commerce' sectors in Kerala was initiated by the Directorate of Economics & Statistics in 1963-64 with the object of studying the trend of wages in these two sectors on an annual basis. The survey is being conducted on a random sample basis covering the entire State. The revenue districts form the Strata.

The survey is being conducted every year in four quarterly rounds. Fresh samples were selected every year upto 1971-72. But later (i.e. from 1972-73 onwards) it was decided to retain the same sample list for a period of five years with the intention that fixed samples will enable a better comparison of data over a period of years. However the number of units selected was the same as in the previous years. In case

any selected unit stops functioning it will be substituted by another nearby unit.

Construction sector

For the purpose of the Wage Structure Survey in the 'Construction sector' separate samples are being selected in the urban and rural areas in each of the districts. In the urban sector, apart from the district headquarters, one more municipality, if any, is also selected at random from each district. In the rural sector three panchayats each are randomly selected from all the districts. Five construction units are selected from each corporation/municipality and three units from each panchayat. From each unit thus selected, the average daily wage rates of the following categories of labourers are being collected on a quarterly basis by contacting the contractors or owners.

- A. *Skilled labour*
1. Mason I Class
 - Mason II Class
 2. Carpenter I Class
 - Carpenter II Class
 3. Sawyer
 4. Plumber
 5. Electrical wiremen
- B. *Unskilled labour*
1. Men
 2. Women
 3. Children

Carpenters and masons which come under skilled labour have been divided into two classes on the basis of their skill or proficiency in the work.

The trend of wage rates of skilled labour in the construction sector is shown in Table 3.

TABLE 3
WAGE RATES OF LABOURERS IN THE
CONSTRUCTION SECTOR (Rs. Per day)

		A. Skilled labour (urban)					
		Carpenter (I Class)	Mason (I Class)	Painter (I Class)	Sawyer	Plumber	Electrical Wiremen
1963-64	U	4.98	4.78	..	..	..	..
	R	4.59	4.51	..	..	..	..
1965-66	U	5.54	5.41	..	..	..	..
	R	5.03	5.01	..	..	..	..
1970-71	U	8.63	8.71	7.84	7.62	9.16	9.28
	R	8.19	8.20	6.22	7.19	8.29	8.31
1975-76	U	13.78	13.80	12.79	13.23	13.23	14.73
	R	13.30	13.25	12.46	12.94	12.90	14.04
1980-81	U	19.33	19.36	17.97	17.48	17.96	18.51
	R	18.66	18.75	18.08	16.80	18.08	18.06

U—Urban
R—Rural

Wage rates of skilled labour showed a steady increase during the period 1963-64 to 1980-81. The rates were comparatively high in the urban sector than in the rural sector. It can be seen that wage rates have more than, doubled during the last decade.

As regards unskilled labour males were paid a higher wage rate than females. However, the rate of increase in wages is higher among females than for males. Between 1970-71 and 1980-81 the wage rate of an unskilled male labourer increased by about 129% while that of a female labourer went up by 161 per cent (see Table 9).

TABLE 9

WAGE RATES OF UNSKILLED LABOUR

Year	(Rs. Per day)			
	Men		Women	
	Urban	Rural	Urban	Rural
1963-64	2.93	2.53	2.09	1.73
1975-66	3.31	3.00	2.41	2.03
1970-71	5.71	5.10	3.92	3.68
1975-76	9.31	8.48	6.54	5.93
1980-81	13.07	12.30	10.22	9.62

Trade & Commerce Sector

The Wage Structure Survey in the Trade and Commerce sector has been confined to the urban sector since trade activities are rare in the rural areas. All the district headquarters and one more municipality from each district were selected for the survey in the trade and commerce sector. From each municipality/corporation two wards are selected and from each ward three shops each of the following categories are selected for the survey.

A. Wholesale shops

1. Foodgrains and provisions
2. Textiles
3. Metal and metal products

B. Retail shops

1. Foodgrains and provisions
2. Textiles
3. Stationery and toilets

The Investigators visit the selected shops every quarter and collect the monthly wages relating to shop assistants and shop attenders from the pay rolls kept by the owners of shops and also by oral enquiries.

Table 10 shows the trend of wage rates in the trade and commerce sector over a period of years, as obtained from the results of the survey.

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TABLE 10

AVERAGE MONTHLY WAGE RATES OF SHOP ASSISTANTS IN THE TRADE & COMMERCE SECTOR

Year	(Rs. per month)					
	Wholesale shops			Retail shops		
	I	II	III	I	II	III
1963-64	72	91	87	67	86	72
1965-66	85	110	101	78	96	84
1970-71	136	162	143	123	146	138
1975-76	274	310	255	222	260	270
1980-81	329	416	325	306	393	343

Year	Whole sale shops			Retail shops		
	I	II	III	I	II	III
I. Foodgrains shops				I. Food grains shops		
II. Textile shops				II. Textile shops		
III. Metal & Metal products shops				III. Stationery shops		

TABLE 11

AVERAGE MONTHLY WAGE RATES OF SHOP ATTENDERS IN THE TRADE & COMMERCE SECTOR

Year	(Rs.)					
	Wholesale shops			Retail shops		
	I	II	III	I	II	III
1963-64	63	70	62	49	61	52
1965-66	75	87	74	61	75	65
1970-71	107	123	113	93	113	103
1975-76	201	241	189	176	203	192
1980-81	263	314	242	242	281	258

Wages of Female labour

Women play an important role in the economy of Asian countries and their work participation rate is increasing since the last twenty five years. Their participation rate varies from one country to another being much important in agriculture than in other sectors of the economy. However, in India, it is seen that the trend of women employment is rather disquieting while in some countries it is increasing at a faster rate. The celebration of the International Women's Year and the International year of the child recently indicate at the interest and keenness towards them and the anxiety to solve their problems.

Employment of women is quite common in Kerala. In agriculture and plantations a large number of women are employed. There is a considerable volume of employment of women in the industrial field also. In cottage industries

a large number of women are employed. Women workers constitute nearly one fourth of the total working force in Kerala. 43% of them are employed as agricultural labourers.

Eventhough the principle of equal pay for equal work has been accepted in the Minimum Wages Act of 1948, generally the wages of female labour are lower than those of men. However, unlike men, they have to be paid benefits like maternity benefits, prohibition of night work etc. A comparison of the wage rates of male and female labour in Kerala can be had from the following figures.

TABLE 12
WAGE RATES OF MALE AND FEMALE LABOUR
IN KERALA

		(Rs.)	
		Male	Female
Agriculture sector	1976-77	8.41	5.89
(Paddy field labour)	1980-81	11.13	7.91
Construction sector	1976-77	9.65	7.15
(Unskilled labour)	1980-81	13.07	10.22

Wages and Cost of Living

The ratio between money wages and cost of living indices indicates the level of real earnings of the workers. The following figures show the parity between the index of money earnings and cost of living indices in the various sectors of Kerala economy. It is seen that real earnings are higher in all the sectors of agriculture, industry, construction and trade and commerce, with a comparatively higher parity ratio in the industrial sector.

TABLE 13
PARITY BETWEEN WAGES AND COST OF LIVING
INDICES IN KERALA (1980-81)

Index of Wage rates and Cost of Living indices		
(Base: 1970-71 = 100 Parity index)		
(i) Wage Index		
1. Agricultural sector	218.66	107.25
2. Industrial sector	319.26	156.59
3. Construction sector (Urban)		
Skilled labour	223.99	109.86
Unskilled labour	224.90	112.27
4. Trade & Commerce sector		
Shop Assistant	242.86	119.12
Shop Attender	239.47	117.46
(B) Cost of Living Index	203.88	100.00

Limitations and gaps in Wage Statistics

As regards wage data relating to Kerala economy, limitations and data gaps exist in the major productive sectors of agriculture and industry where a large majority of the working force is concentrated. In the agriculture sector wage rates of certain important groups of labourers like toddy tappers, coconut pluckers etc. are not being collected. Again in the plantation sector which constitute a very important segment of the economy, wage data are lacking at present. The Department of Economics & Statistics has been collecting and compiling these data as per the Plantation Labour Act 1951 till 1975. However in spite of the department's best efforts the response from the Plantation authorities became very poor and the department was forced to discontinue collection of wage data of Plantation labourers.

In the industrial field only the wage rates of workers in the organised sector are being collected on a regular basis. The wage details of factory labourers are being collected and compiled from the statistical returns obtained from the factory owners according to the Payment of Wages Act, 1936. However this relates to only those workers earning less than Rs. 1000 p. m. Even with regard to the wage data thus collected and analysed there are certain limitations owing to the poor response from the factory owners in submitting the returns in time and in the proper form. In spite of the joint efforts of the Factory Inspectorate, the Labour Department and the Department of Economics & Statistics, only around 50% of the returns are received in time and even among them, there may be some defective returns. Wage rates of factory workers are being compiled on the basis of the information compiled from these returns and therefore are subject to a number of limitations.

8. NEEDED STATISTICS FOR CIVIL SUPPLIES ADMINISTRATION

A. Shahul Hameed

Kerala is chronically deficit in most of the essential commodities of mass consumption and this fact is well recognised by all concerned, as traditionally the deficiencies in this respect are met out of supplies from other parts of the country. As a State with a long history of rationing on a statutory basis, Kerala has evolved an infrastructure considered to be the best organisational set up available in the country as a whole for public distribution system. Kerala has also got one of the oldest well organised Statistical Agency available among the Indian States. Crowning all these conducive elements for building up scientifically arrived basic estimates of requirement, availability and consumption of the various essential commodities required in the State, we have the most literate population available in the country. However, as the adage goes, facts are stranger than fiction. From the point of view of an administrator concerned with Civil Supplies problems and their efficient management for yielding best results an information vacuum of bewildering size exists.

2. This paper attempts to demarcate the blind spots from the point of view of C. S. administration in the hope that it may rouse the enthusiasm of the scientific workers associated with the various agencies like the Directorate of Economics and Statistics, State Planning Board, Centre for Development Studies etc., already in the field.

3. The primary task before us is to identify the commodities both agricultural and industrial, that can be considered as the most essential ones from the point of view of the welfare of the common man. Commodities like cereals, grams and pulses, edible oils, spices, food products, cloth, tea, coffee and beverages, sugar, molasses and jaggery, paper and paper products, HSD, Motor Spirit and Kerosene, Tyres and tubes, vegetables, building materials like, cement, steel rods, bricks and lime etc., etc., will have to be covered (vide Appendix).

4. Next we will have to assess for each of these commodities the consumption level, the internal production and availability and the gap in supply, if any. The inter-district and intra-district variations in consumption pattern and availability and the nature and size of the traditional imports, the traditional supplying centres outside the State etc., are the finer aspects of the problems to be studied in this area.

5. From the point of view of Civil Supplies administration the immediate requirements of data, the availability of which will greatly improve the efficiency of any imaginative administration in tackling the day to day problems of supply and distribution of essential commodities can be identified. They are indicated below:

Consumption Pattern

6. The basic pattern in the consumption of rationed commodities like rice, wheat, sugar and kerosene on a pro-rata basis for different areas (such as taluk, district etc.) will be an efficient tool in the hands of an administrator grappling with the problems of scarcity management.

7. The per capita consumption of commodities like rice, tapioca, greengram, blackgram, turdhal, bengalgram, coriander, dry chillies, onions, turmeric, tamarind, coconut oil, gingelly oil, dalda, sugar, molasses, jaggery, washing soaps, toilet soaps, razor blades, vegetables, fish, egg, cloth etc., will be the basic information required by him.

II. Production and availability

8. An assessment of the local production and availability of the various essential commodities for the different administrative units like taluk and district will be required. There may be seasonal variations in local availability. Such information will also be of great use to the administrator.

III. Trade statistics

9. At present information on import and export of important consumer goods by road, rail and ports is not available. Also we have no reliable data on commodity-wise transaction by private trade. For a careful analysis of the availability situation of essential commodities these statistics are highly essential. Hence efforts to collect these data on a continuous basis will have to be made.

IV. Price Trend and Price Statistics

10. Useful time series data on prices of important essential commodities are available with the Directorate of Economics and Statistics for different centres for about three decades. However these data are not put to deeper probing and analysis to bring out the basic trends in their price fluctuations. Long term as well as short term fluctuations in prices can be laid bare which will be helpful for the administrator for taking advance action in supply management.

11. Also in support price administration reliable farm price statistics for different areas on a continuous basis are required. Such statistics on a few commodities are even now collected by the Directorate of Economics and Statistics but there is always a gap between the price reported and the price level indicated by other responsible agencies. Hence it will be necessary to review the farm price data now collected with a view to improving the coverage of commodities and centres and increasing the reliability of the prices reported.

V. Data collection

12. The requirements of the administrator, planner, trader and the consumer for data may be widely divergent in their details. However it is possible to define a set of data basic to meet the essential requirement of all users. Various departments and agencies may be interested in such data on a continuous basis. A comprehensive schemes for the collection of such data will have to be evolved. Simple standard statistical forms for different departments and agencies will have to be evolved with uniform concepts and definitions so that after due processing of the data, any key information required by the users can be extracted from them. A co-ordinating body under the guidance of a non-governmental agency like the Centre for Development Studies may be thought of as a positive step forward in this direction.

13. To sum up the following points may be given due consideration:

- (i) A basic list of essential commodities may be drawn up.
- (ii) Per-capita requirement of all important commodities may be ascertained and made available.

- (iii) Assessment of production of important commodities, their availability through various channels and the potential demand for each administrative area may be made by some central agency, so that supply management can be thought of in advance.
- (iv) Inter-district and intra-district variation in consumption, availability and demand may be assessed.
- (v) Import and export statistics by road, rail and ports for all important commodities may be collected on a permanent basis.
- (vi) Price and production trend for important commodities should be forecast and made available to the concerned administrative departments sufficiently early.
- (vii) It is high time to think of devising standard statistical forms for the various departments and agencies, data from which may be processed and made available to all users by some Central Agency.

Appendix

LIST OF ESSENTIAL COMMODITIES FOR CIVIL SUPPLIES

I. Cereals and pulses:

1. Rice
2. Wheat
3. Greengram
4. Blackgram
5. Bengalgram
6. Tur dhall
7. Others (specify)

II. Spices and condiments:

1. Chillies
2. Coriander
3. Salt
4. Turmeric
5. Tamarind
6. Coconut
7. Onions

III. Edible oils etc.

1. Coconut oil
2. Groundnut oil
3. Gingerly oil
4. Vanaspathy (Dalda)
5. Other refined oil (Specify)

IV. Vegetables (item-wise)

V. Food products:

1. Maida
2. Sooji
3. Babyfood (specify)
4. Other Milk products (specify)

VI. Soaps:

1. Washing soap (specify)

2. Washing soap powder and detergents (specify)
3. Toilet soap (specify)

VII. Paper and paper products:

1. Writing paper (variety-wise)
2. Printing paper (variety-wise)
3. Note Books (Diff. size)

VIII. Building materials:

1. Cement
2. Brick lime
3. Bricks (specify)
4. Steel rods (specify) variety
5. Paint
6. Wood

IX. Cloth and garments:

1. Dhoties
2. Mull (variety-wise)
3. Shirtings
4. Printed cloths (specify variety)

X. Tyres and Tubes:

1. Cycle tyres
2. Cycle tubes
3. Motor truck tyres
4. Truck tubes
5. Scooter tyres
6. Scooter tubes

XI. Fuel and lubricants:

1. Kerosene
2. Petrol
3. H. S. D.

XII. Firewood

SESSION VII
PLAN PROGRAMMES AND EVALUATION

1. DATA BASE OF INSTITUTIONAL FINANCE

K. K. George

All the State Governments in India today suffer from an acute shortage of budgetary funds. One way to get out of this situation, created by the disproportion between the resources and their uses by the state governments is to attract more institutional finance to the state budgets by means of borrowing. Another way is to off-load as many developmental activities as possible from the state budgets and to get them financed by the financial institutions. Both these techniques have been employed successfully by the Central Government to tackle its own problem of budgetary stringency. The states can as well emulate this practice of the Central Government.

The present and future roles of institutional finance in the States' economics warrant more studies on the flow of institutional finance by the policy makers in the States. It is to be remembered that the institutional finance formed 43% of the total financial flows to the states from the Centre (comprising of budgetary transfers from the Central Government and disbursements of the All-India financial institutions under the ownership of Central Government. The volume of finance flowing to the states is very high in comparison with the size of states' own disbursements from their capital budgets. For instance, the states' capital disbursements to industry in per capita terms was only Rs. 1.9 as compared to the disbursements of Development Banks to industry. The states' disbursements to agriculture and allied activities amounted to Rs. 4 as against the term loan disbursements of Rs. 10.8 by Agricultural Refinance and Development Corporation (ARDC) and Commercial banks. Ninety four per cent of the state government securities are owned by the Commercial banks, Life Insurance Corporation and the Employees' Provident Funds. Bank deposits, Life Insurance fund and Provident Fund accounted for 74.2 per cent of the gross financial assets of the household sector.

The institutional finance flows from a wide variety of institutions. They can be grouped into:

1. Commercial Banks, Corporate Banks, Life Insurance Corporation (LIC), Unit Trust of India (UTI) and General Insurance Corporation (GIC) which mobilise resources from the public.
2. Industrial Development Banks, comprising of:
 - (1) Industrial Development Bank of India (IDBI)
 - (2) Industrial Credit and Investment Corporation of India (ICICI)

- (3) Industrial Finance Corporation of India (IFCI)
- (4) Industrial Reconstruction Corporation of India (IRCI)
- (5) State Financial Corporations and State Industrial Development Corporations (SIDC).

These institutions mainly rely on the Reserve Bank of India and the Union and State budgets for their funds.

3. Institutions catering to other specified sectors like the National Bank for Agricultural and Rural Development (NABARD), Rural Electrification Corporation (REC) Housing and Urban Development Corporation (HUDCO). These organisations too depend on the Union budget and the Reserve Bank of India, for funds.

4. Institution like the Reserve Bank of India lend money though lending is not their primary activity. Semi-financial organisations like the University Grants Commission (UGC), National Co-operative Development Corporation (NCDC), Commodity Boards and Khadi and Village Industries Commission (KVIC) etc can also be included in this group. These organisations depend mostly on the Union Budget.

All the institutions covered in the above list except the co-operative institutions, the state financial corporation and State Industries Development Corporations come under the administrative control of the Central Government, though the impact of their activities is felt in sectors included in the State List under the constitution. Even the co-operative institutions and the state level financial institutions come under the financial control of other institutions under the ownership of Central Government like the Reserve Bank of India and the IDBI.

Because of the above ownership and Jurisdictional pattern, the state statistical bureaus showed little interest in the data base of institutional finance and its limitations till recently. For the same reasons, the data base of these organisations is traditionally organised to satisfy the requirements of formulating and evaluating national policies. As the regional dimension to these policies were lacking, till recent years, the institutional finance data had only limited regional disaggregation and was therefore of only limited use to state level policy makers as well as for researchers on regional economies.

One feature of the institutional finance data is the relatively higher degree of its accuracy.

Relatively, the time gap between the date of data and its publication is also less, though the gap is increasing with the increase in the number of collection points. Another major drawback of institutional finance data is the difference in the dates to which these data relate to. Most of the data for the Commercial banks pertain to calendar year (Data on their investments pertain to the end of financial years). Data for the co-operative banks and societies pertain to the co-operative year ending in June. The data of all other institutions are organised on financial year basis. This leads to problems in aggregation. For instance, if one wants to calculate the credit plus investment deposit ratio in a state, it cannot be done with accuracy as the deposit and credit data are collected on half yearly basis (June and December) while data on investments are compiled on financial year basis.

Commercial Banks.

Of all the financial institutions, the role of commercial banks in a State is the biggest, firstly because they provide more finance and secondly because they mobilise more savings from the states' economies. The data for commercial banks are compiled from their numerous offices. Depending on the objectives of collecting these data, they are consolidated either at the regional office or at the Central Office level and eventually reach the Reserve Bank of India, bank-wise. Some of the data are compiled as part of the statutory returns to be submitted to the Reserve Bank of India under the Banking Regulation Act and the Reserve Bank of India Act. Some of the returns like the Basic Statistical Returns and Returns for Priority Sector Advances are collected mainly for statistical purposes, to be used eventually for policy formulation and evaluation.

The traditional sources of state-wise data for bank credit, investments, deposits, offices, employees etc., are the different annual publications of the Reserve Bank of India. They are (1) Statistical Tables Relating to Banks in India (2) Annual Report of the Reserve Bank of India (3) Trend and Progress of Banking in India (4) Report on Currency and Finance.

From December 1982 onwards, the Reserve Bank of India is publishing the Basic Statistical Returns (B. S. R.) as at the end of every half year (June and December). One innovation introduced in the Basic Statistical Returns is that they give credit data on the basis of the offices of utilisation in addition to credit data on the traditional basis, i.e. according to offices of sanction. The former data is more meaningful to assess the quantum of finance flowing to each region. Credit data for the earlier periods are available only according to the offices of sanction. In some of the statements given in the published BSR data, they still give data according to the offices of sanction and one has therefore, to exercise great caution in using the right data depending on one's requirements. State-wise credit data on utilisation basis is available according to (1) different

types of banks and (2) occupation of the borrowers. District-wise disaggregation according to board occupational classification of the borrowers also is available. Further, disaggregation of deposits and credit data for each centre, and for centres classified according to population, (Rural, Semi-urban, urban/metropolitan) are available. But the credit data given here are according to offices of sanction.

One of the policy objectives of the banking system after the nationalisation of major commercial banks had been the augmentation of credit to priority sectors comprising of agriculture, small scale industry, retail trade, transport operators etc. District-wise data on these are available in the BSR Returns. Credit data with more details regarding the size, repayment period and purpose are published state-wise in some of the Reports on Currency and Finance. These latter data however have to be interpreted with caution as the content and coverage of these sectors have varied over time. These are compiled by means of special returns by the RBI. A tendency for banks to inflate these figures to achieve a better public image has been observed in these returns.

The banks' investment portfolio is steadily increasing due to the progressive increase in the statutory liquidity ratio. In addition to Central Government securities and other trustee securities issued by organisations in the Central Sector, they also invest in the securities of state governments and state associated bodies. The data relating to these investments in different types of securities of different states are available in the Statistical Tables Relating to Banks in India as also in an annual study of the Reserve Bank of India, published in the Reserve Bank of India Bulletin every year.

As seen earlier, the credit data, though according to offices of sanction, are available population-wise (i.e. rural, semi-urban and urban/metropolitan). But the Reserve Bank's classification of the Centres is based exclusively on the population of each centre and does not conform to the classifications followed in the Census. The rural/urban data given in the B. S. R. have to be used with caution. In fact, it will be advantageous for the Bureau to get the centre-wise data presented in the B. S. R. reclassified according to the Census definition of rural and urban areas, as the latter definitions take into account the occupational characteristics of the population. This will be possible if the B. S. R. data is fully computerised.

Another important organisation which both mobilises savings from the states and redeploys them is the Life Insurance Corporation. LIC premium accounts for 7.5% of the gross financial assets of the household sector. State-wise data of the premium collected are not available readily as the statistics relating the premium collected and policies in force are given in the Annual Reports according to Divisions. But for Kerala, it is possible to add these division-wise

data and arrive at state-wise figures, as unlike in other states, the jurisdiction of divisions in Kerala does not cross the State's boundaries. Data on investments of L. I. C. in different types of securities of state governments and the state associated bodies are published in L. I. C. Annual Reports. Besides, both investments and loans to corporate sectors by L. I. C. are available state-wise.

But unlike L. I. C. the Unit Trust of India and the General Insurance Corporation do not publish state-wise data of either the resources mobilised on the investments made. It is important that these data are collected by the Bureau of Statistics by approaching these organisations.

Employees' Provident Funds, though not treated as a financial institution occupy an important position in mobilising savings and making investments in States. The Employees Provident funds account for 17.7% of the gross financial savings of the household sector. They own 22.7% of the state government securities too. The state-wise collection of provident funds as also their investments are not known. And these data can and should be collected by the Bureau of Statistics.

The all India Development Banks catering to industry numbering from— IDBI, IFCI, ICICI and IRCI—give State-wise data of their disbursements in their annual reports. In addition, the 'Operational Statistics', a publication of the IDBI which now functions as a holding company for these institutions publishes these data separately for each institution as well as together. Further, data of credit to the backward districts in each state are also available separately and together. This publication also gives the state-wise data of assistance-total and to backward districts— by L. I. C., G. I. C., U. T. I., SFC (s) and SIDC (s).

The 'Operational Statistics', the annual publication of the IDBI (from 1976 onwards) is progressively increasing the range of data covered on development banks. The first issue of this publication covers the period 1964-65 to 1975-76. For IDBI, this publication gives the following additional state-wise information on its activities. They are:

1. Data on project finance to
 - (a) Public Sector
 - (b) Joint Sector
 - (c) Private Sector
2. Refinance to Small Scale Sector
3. Total assistance sanctioned and disbursed according to different schemes.

More disaggregated statistics regarding the lending operations of the term lending institutions are available with the IDBI. It will be possible to obtain further state-wise and district-wise cross classification of these data which are relevant from the state's angle.

The data regarding the lending operations of NABARD, REC and HUDCO in different states are available in their annual reports.

State-wise data regarding the operations of the different semi-financial organisations like the University Grants Commission, Commodity Boards, Khadi and Village Industries Commission are difficult to obtain from published sources. Taking into account the source of their funds (which is mainly the Union Budget) and the increasing scale of their operations in sectors included in the State List under the constitution, it is desirable that the state machinery for data collection bestows more attention on their activities.

Though the primary objective of the working of the Reserve Bank of India is not financing, it does substantial lending operations to agriculture and industry. Of late, with the establishment of NABARD and the elevation of IDBI to an apex institution lending to industry, the importance of RBI in these fields has come down. But short term credit to co-operative banks is still in the domain of the RBI. And the data pertaining to these lending operations are available from the annual RBI publication— Statistical Tables Relating to Co-operative Movement in India and their biennial publication— Review of the Co-operative Movement in India.

One area of darkness in the lending operations of the Reserve Bank of India is related to their overdrafts to state governments, both authorised and unauthorised. There is no need for this data to be shrouded in mystery unless of course that the discretion of the Reserve Bank of India is not used properly. It is essential that for a more informed discussion of the states' overdrafts, the state wise data regarding these overdrafts are made available to the public and to the policy makers at the state.

The above discussion leads us to a larger question of state-wise disaggregation of national level data. The importance of collecting state-wise data has been felt only in recent years. In this context, it may be recalled that even state income data on comparable basis have come to be collected only from 1960-61. Even during some of the subsequent years, these data are not available. Besides, the comparability of these data leaves much desired. The absence of regional disaggregation of national level data compiled by national level agencies is a reflection of a more serious shortcoming of our national planning process, viz. the absence of a space dimension. It is also due to the absence of pressures exerted by the state level agencies. Like any other resource, data belongs to the whole nation including its component units-states.

In passing, we had in the earlier paragraphs mentioned the feasibility and desirability of obtaining further useful state-wise data

which are being compiled by the financial institutions, but not being published. What are being published are mostly aggregate figures relating to the operations of these institutions in each state. Though useful for quick evaluations, in each state these data are inadequate for a deeper analysis of the operations of these institutions and their impact on state's economies. Before these institutions are approached for further regionally disaggregated data, it is essential that a consensus on the requirements of additional data is formed among the different

user agencies in the state-the Planning Board, different ministries and academic institutions. Better liaison between the Bureau of Statistics and these institutions is also a must. On the organisational plane, the existing Banking and Institutional Finance Cell in the Planning and Economic Affairs Department has to be strengthened considerably. It may be remembered that collection of institutional finance data does not require much outlay of state government funds, as compared to collection of any other data.

2. PLAN PERFORMANCE IN KERALA

S. Krishna Iyer

Despite the development in social services and industrial infrastructure, Kerala State continues to be among the less developed States in the Indian Union. The spread of education and health services started by the earlier princely States was intensified during the plan era. As a result of the many welfare measures and development of social services the social consumption of the people measured by literacy, education, health services and water supply is quite high in Kerala compared to the rest of the country. There has also been considerable advances in creating the infrastructure for development. In the availability of electric power in communications, and the availability of an educated workforce with varied skills, the State is quite advanced. Growth in agricultural sector has been also slow despite the structural changes that have been brought about through land reforms and other measures. The fall in the production of coconut, the principal cash crop in the State, has been caused negative growth rates in some districts. In the industrial sphere, the technologically and managerially backward traditional industries have been struggling to survive in the face of rising wages and costs. The growth of modern industry has been sluggish and it has been unable to absorb even a small fraction of the growing number of the unemployed.

The positive aspects of Kerala's planned development hitherto are that a good infrastructure has been created, that there is a large body of intelligent and educated workforce available and that land reforms, welfare measures and progressive labour policies have given some egalitarian trend to development. The discouraging aspects are that growth has been slow in agriculture and industry, that real incomes of a vast majority of the people are very low and that unemployment has become pervasive. The aim of the State in the coming two decades should be rapid growth in Agriculture and Industry accompanied by rapid creation of employment opportunities.

Past Performance

An assessment of the past performance of Kerala's economy has to be made in relation to the objectives set forth in the previous Plans. Broadly, the Plan objectives were:

(i) to reduce the gap between the per capita income of Kerala and the per capita national income; (ii) to attain self reliance in food production through intensive cultivation; (iii) to terminate the tenancy system and bestow full ownership right on the real tillers of the soil; (iv) to create employment opportunities with the perspective of solving the massive unemployment problem; (v) to reduce regional disparity in economic development within the State; (vi) to ensure that the vulnerable sections of the society, particularly scheduled castes and tribes, get an increasing share in the fruits of planned development consistent with social justice.

As far as the first objective of reducing the gap between the per capita state income and national income is concerned, the past trends do not indicate any definite improvement. The long-term annual average growth rate of the economy as measured by State income in real terms was however only 3 per cent during the period 1950-51 through 1975-76 in Kerala, as against 3.6 per cent in the national economy. This indicates that the overall growth rate of the State's economy was lagging behind that of the national economy. Kerala's per capita income which was Rs. 249 in 1950-51 rose to Rs. 297 in 1975-76 at 1960-61 prices, the increase being 19.3 per cent over a period of 25 years. During the same period, the all-India per capita real income rose more sharply from Rs. 253 to Rs. 366, recording an increase of 44.7 per cent. These facts suggest that the absolute level and the relative pace of development as measured in the per capita real income was lower in Kerala compared to India as a whole. In consequence, the difference in per capita real income between Kerala and all India which was only Rs. 4 in 1950-51 increased to Rs. 69 in 1975-76.

The second main objective of the plan was attainment of self-reliance in food requirements of the State. The actual production of rice in the State during 1980-81 was only about 12.72 lakh tonnes as against the Fifth Plan target of 16.6 lakh tonnes. Many factors contributed to the shortfall in rice production in the State. Firstly, there has been undue delay in the completion of irrigation projects with the result that the benefits of these projects did not reach the farmer in time. Secondly, the consumption of fertilisers did not increase at a rate necessary for ensuring a higher level of productivity. Thirdly, there has been a considerable short fall in the coverage of high yielding varieties of seeds.

Speedy implementation of land reforms which will provide incentive to the tillers of the soil was another objective of the plan. Much headway could not be made in this field till the middle of the sixties as the process of implementation of the measures adopted on different occasions got delayed due to various reasons. However, as a result of the intensive effort made in recent years to expedite implementation of the Land Reforms Act, the situation has improved remarkably. Ownership rights have been conferred on nearly 24 lakh tenants.

Another major plan objective was the stabilisation and expansion of employment opportunities. As at the national level, at the State level also no dent could be made into the problem of unemployment which has now assumed serious

proportions. The two causative factors in the aggravation of unemployment, viz., increase in labour force and the slow growth in productive activities, are more acute in Kerala than in many other States. Hence the unemployment situation tended to worsen over the plan periods. The total number of work seekers registered with the Employment Exchanges which numbered about 2 lakhs on the eve of the Fourth Plan shot up to 19 lakhs by the end of 1981, registering a nine-fold increase. Out of the 19 lakhs of work seekers 9.2 lakhs are having educational qualifications of SSLC and above. The National Sample Survey data relating to the year 1977-78 shows that Kerala with less than four per cent of the population of India accounts for 11.09 per cent of the total unemployment and under employment. Unemployment equivalent in standard person years in Kerala was 21.3 lakhs compared with 191.7 lakhs in India as a whole (A standard person year is taken as the work put in by a person in a full year of 273 working days). It is also seen from the above survey that the rate of unemployment defined as the ratio of unemployed to the total labour force is 21.05 per cent in Kerala the highest among the Indian States.

Reduction of regional disparities constituted yet another important objective of the plan. For historical reasons, the constituent regions of Kerala revealed marked variations in the degree of economic development even at the time of the formation of the State. For reducing such disparities in development measures designed to promote investment and growth in the backward regions were taken from the inception of the plan era. Despite these efforts the disparities still remain to a certain extent.

The plans had also kept before them the objective of ensuring that the poorer sections of the community get a fair deal in sharing the fruits of planned development consistent with social justice. The sharp increase in the prices of essential consumables had an adverse effect on the vulnerable sections of society. To mitigate this, the public distribution system in the State was strengthened and this proved effective in ensuring the supply of foodgrains, though not always in sufficient quantity, at reasonable prices, which in turn had a sobering effect on the general price line. In fact, Kerala has the best public distribution system among the States in the Indian Union.

Within the overall constraints of investible resources, fairly sizeable provision has been made in the plans for the uplift of the backward classes and other vulnerable sections of the society. The basic objective has been to make it possible for these sections to undertake productive operations both in agriculture and industry through an integrated programme of land assignment, financial assistance and technical training programmes. Separate schemes for housing were also included in the plans with a view to solve the severe housing problem of these sections of society.

After thirty one years of planned development in the State, agriculture still holds the key to the overall economic development of the State. Within the agriculture sector crop production continues to dominate over the other sub-sections like animal husbandry, forestry and fisheries. The fisheries sector assumes particular importance in Kerala not only because of its employment and export earning potential, but also because of its crucial linkage with the nutrition programme in the State. This sector being export-oriented, the investment in the successive plans had gone largely to the development of off-shore and deep sea fishing sectors, to the detriment of the traditional fishing sector which employs about 80 per cent of the total sea-going fishermen in the State. During the period 1951-81, a State Plan expenditure of Rs. 333.88 crores was incurred on agriculture and allied services. This works out to 16.76 per cent of the total Plan expenditure in the State sector during the period.

As an important item of infrastructure for development, power generation was given high priority in the allocation of plan resources. Till March 1981 a total amount of Rs. 528 crores was invested in power development. The installed power generation capacity rose from 28.5 M.W in 1950-51 to 1011.5 M.W in 1976-77. Power generation sharply increased from 363.54 million kwh in 1957-58 to 5242 million kwh in 1980-81. However the rate of capacity utilisation is still less than 70 per cent. In the past adequate resources could not be diverted to development of transmission and distribution systems in the State. This has resulted in inadequate line capacity, frequent interruptions, very low voltage, and a considerable back-log of pending connections. The State continues to depend entirely in hydro system for power generation. Nearly a fourth of the total plan expenditure was incurred on power development during the period 1951-81.

The net value added by the industry and mining sector in the State registered a growth rate of 4.7 per cent per annum during the period 1960-61 through 1975-76. The manufacturing sector alone recorded an annual growth rate of 4.8 per cent during the same period. The number of registered working factories in the State increased from 2474 in 1961 to 9104 in 1980 and the volume of factory employment from 1.70 lakhs to 2.96 lakhs. The traditional industries such as cashew, coir, handloom, and handicrafts which provide the major share of the industrial employment in the State have been facing rough weather owing to raw material shortages, contraction of markets and loss of competitiveness. All past efforts at resuscitation of these industries have not had the desired impact. In spite of the promotional efforts at the industrial financing and development agencies like the Kerala State Industrial Development Corporation, Kerala Financial Corporation and the Kerala Small Industries Development and Employment Corporation, the pace of industrialisation in Kerala has not yet picked up.

The mini-industrial estate programme launched in 1975, with the destined objective of starting 1000 mini-industrial estates each with 10 industrial units, could establish only 108 estates comprising only about 400 and odd units. In spite of the growth of public and private sector industrial units, the industrial progress in the State leaves much to be desired. During the period 1951-1981 an amount of Rs. 211 crores was spent on industry and minerals under the State sector Plans.

The transport and Communications sector registered an annual rate of growth of 6.1 per cent, due to the significant progress achieved by the State in the provision of transport and communication facilities by the combined efforts of the State, Central and Private sectors. The State's transport system consists of road, rail, inland water, sea and air transport. Eventhough the total length of roads in the State has reached a high level of 94,145 km. in 1980-81 only about a fourth of this is surfaced roads. The number of registered vehicles on road increased from 13,457 in 1956-57 to 1,94,597 in 1980-81. The number of goods vehicles increased from 3697 in 1957-58 to 22886 in 1980-81 and stage carriages from 2298 to 9159. The vehicles operated by the Kerala State Road Transport Corporation during this period increased from 901 to 3112. The State has a total length of 1903 km. of navigable inland waterways. The total route length of the railway system in the State at present is about 916 km. Conversion of the Ernakulam-Trivandrum metre-gauge into broad gauge was the most significant achievement in recent years. However, a coordinated approach towards the development of an integrated transport network in the State has been lacking in the past.

The services sector registered a substantial growth during the past three decades of planned economic development. Between 1960-61 and 1975-76 this sector had registered an annual rate of growth of 4.2 per cent per annum which was higher than the growth rate achieved in the combined commodity producing sectors. Considerable stress was laid in the previous plans in developing the social infrastructure by stepping up the outlays in respect of education, health services, nutrition drinking water etc. Altogether an amount of Rs. 462 crores was spent till the end of 1980-81 accounting for 23.2 per cent of the aggregate State Plan expenditure. Kerala is far ahead of other States in respect of literacy and enrolment at primary and secondary school stages and it university level. The literacy rate went up from 41 per cent in 1951 to 71 per cent in 1981.

Kerala ranks first among the States in India in respect of health facilities. As a result of the expansion of health facilities death rate of the State was reduced drastically from 16.1 per 1000 population during 1951-60 to 6.4 in 1980. Expectation of life went up from 48 years during 1951-60 to 65.35 years in 1979. The intensive

family planning drive brought down the birth rate from 39 per 1000 population during 1951-60 to 25.5 in 1980. There has been considerable increase in the number of medical institutions under all systems of medicine. The number of Government medical institutions under allopathy increased from 230 in 1950-51 to 968 in 1980-81 and the bed strength from 6673 to 32447. Consequently, the bed strength per lakh of population also increased significantly. For modern medicine alone the bed-population ratio rose from 77 in 1950-51 to 128 in 1980-81.

The State could make good progress in the provision of protected drinking water during the plan era. The rural water supply schemes were taken up only with the launching of the five year plans and 29 per cent of the rural population of the State has been provided with protected water through the operation of 995 rural water supply schemes. As a result of the plan and non-plan efforts of the past the State could provide safe drinking water to about 63 per cent of the urban and 29 per cent of the rural population. The loan assistance from the LIC of India is a major source of finance for the coverage and water supply programmes in the State. Thirty one out of 33 urban water supply schemes and 186 out of 995 rural water supply schemes in operation in the State were financed by the LIC of India at one stage or other. In view of the heavy investment required for the International Decade for Water Supply and Sanitation, efforts are being made to secure substantial loan assistance from the World Bank and bilateral assistance from foreign countries. The Netherlands Government has come forward with offer of assistance for piped water supply programmes in the State under bilateral terms.

Shortage of housing is another serious problem facing Kerala State. In 1971 the shortage was estimated at 1.25 lakh houses. Nearly 1.5 lakh houses are estimated to be repaired additionally every year. Besides, it is estimated that 20 to 25 per cent of the existing houses are not fit for human dwelling. Besides the housing schemes for Government servants, the major schemes taken up during the plan are the low and middle income group housing schemes, village housing project, 'one-lakh' housing scheme and the housing schemes sponsored by the Kerala State Housing Board. In addition to taking up public housing schemes and rental housing schemes at different centres of the State, the Kerala State Housing Board extends financial assistance for the construction of 10,000 houses every year to the economically weaker sections of the society. Another scheme sponsored by the Board is the development of satellite towns near the rapidly growing urban centres by constructing low cost houses.

The State Plan expenditure under the major heads of development during the previous plan periods is presented in Table 1.

TABLE I
EXPENDITURE DURING PREVIOUS PLANS

(Rs. in lakhs)

Sl. No.	Sector	First Plan (1951-56)		Second Plan (1956-1961)		Third Plan (1961-1966)		Annual Plans (1966-1969)	
		Expenditure	Percentage	Expenditure	Percentage	Expenditure	Percentage	Expenditure	Percentage
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	Agriculture Allied Sectors	248.51	9.60	1335.01	16.64	3683.62	20.21	3890.22	26.94
2.	Irrigation and Power	1570.62	60.66	3273.67	40.81	7634.58	41.88	5441.91	37.69
3.	Industry & Mining	50.43	1.95	603.98	7.53	1437.02	7.88	1334.99	9.25
4.	Transport & Communications	335.89	12.97	718.31	8.95	1195.78	6.56	1066.79	7.39
5.	Social Services	383.83	14.82	2019.42	25.17	4170.29	22.87	2660.74	18.43
6.	Miscellaneous	..	..	71.39	0.89	109.72	0.60	42.72	0.30
	Total	2589.28	100.00	8021.78	100.00	18231.01	100.00	14137.37	100.00

Sl. No.	Sector	Fourth Plan (1969-1974)		Fifth Plan (1974-1978)		Annual Plans (1978-1980)	
		Expenditure	Percentage	Expenditure	Percentage	Expenditure	Percentage
(1)	(2)	(11)	(12)	(13)	(14)	(15)	(16)
1.	Agriculture and Allied Sector	5619.01	16.25	8127.69	16.74	69.78	16.28
2.	Irrigation and Power	15469.05	44.74	19437.62	40.03	149.78	34.93
3.	Industry & Mining	2602.11	7.53	5406.07	11.13	67.08	15.65
4.	Transport & Communications	3075.28	8.89	3788.13	7.80	32.97	6.69
5.	Social Services	7765.48	22.46	11023.40	22.70	102.99	24.03
6.	Miscellaneous	44.07	0.13	778.79	1.60	6.10	1.42
	Total	34575.00	100.00	48561.70	100.00	428.70	100.00

The Sixth Plan

The State's Sixth Plan (1980-85) anticipates a total investment of Rs. 4200 crores. The size of the State sector plan was fixed at Rs. 1550 crores after the discussions with the Planning Commission. The contribution expected from the private sector is Rs. 1800 crores. Taking into account the central projects likely to come up and also the needs of the existing central sector units in the State, the total central sector investment during the Sixth Plan period is expected to be about Rs. 850 crores.

As in the case of the national plan, Kerala's Sixth Plan also aims at achieving an annual growth rate of 5.2 per cent. The broad

objectives of the Plan are maximisation of production in industry and agriculture, optimum utilization of existing capacity and infrastructure, enhancement of employment opportunities, utilisation of local level material and manpower resources, bringing about balanced regional development, strengthening of the public distribution system, amelioration of the living conditions of the poor and distribution of benefits of development to the weaker sections. An outline of the State Sector Plan is provided in Table 2.

The State Plan of Rs. 1550 crores was proposed to be financed through State's own resources of Rs. 1120 crores (of which Rs. 311 crores was the expected additional resource

TABLE 2
SIXTH PLAN-SECTORAL ALLOCATIONS

Sl. No.	Sector	Outlay (Rs. Crores)	Percentage
1.	Agriculture and Allied Service	336.13	21.68
2.	Co-operation	22.00	1.41
3.	Irrigation & Power	593.78	38.31
4.	Industries & Minerals	159.50	10.29
5.	Transport	106.75	6.88
6.	Social Services	306.79	19.79
7.	Other Sectors	25.45	1.65
	Total:	1550.40	100.00

mobilisation) and Central assistance of Rs. 430 crores. The approved outlay for the first year (1980-81) of the Sixth Plan was Rs. 273 crores. The actual expenditure during the year was Rs. 298 crores. For 1981-82 the approved outlay was Rs. 275 crores. As against this the actual expenditure was of the order of Rs. 303 crores. Thus during the first two years of the plan period an amount of Rs. 601 crores could be spent against the approved outlay of Rs. 548 crores. The Central assistance received for 1980-81 and 1981-82 was Rs. 188 crores. The net result of Plan and Non Plan expenditure for the first two years (1980-81 and 1981-82) was a deficit of Rs. 150 crores of which Rs. 65 crores was met by using the earlier balances and the rest by way of over draft. The over draft has been cleared as a long term loan granted by the Government of India.

In the third year (1982-83) of the Sixth Plan also the State sector plan was fixed at Rs. 275 crores (as in 1981-82). The plan expenditure however is expected to be the order of Rs. 307 crores. The Central assistance fixed for the year was Rs. 95 crores. In order to correct the shortfall in the plan outlay in the first two years in the case of certain important heads of development, it became necessary to step up investment in these areas during the third year. Measures are now being taken to ensure faithfulness in plan implementation through increasing expenditure on sectors in which it has been low and on externally aided schemes, avoiding large additional items of expenditure on non-plan, increasing collection of revenue even above budget estimates and by ensuring mobilisation of anticipated additional resources of about Rs. 35 crores.

It can be seen that the actual plan expenditure during the first three years of (1980-81, 1981-82 and 1982-83) has been considerably in excess of the outlays provided in the plan budgets. In the case of social services heads education, medical and public health, labour and labour welfare and also co-operation,

the plan expenditure has been quite high. The expenditure on Community Development is also on the increase due to the introduction of IRDP and NREP. In the case of Co-operation the excess expenditure was due to the extended schemes of interest subsidy. In the case of labour and labour welfare the excess was due to the booking of expenditure on unemployment allowance. There has however been considerable shortfall under agriculture, minor irrigation, irrigation and flood control, roads and special area development programme. The imbalances that have occurred in plan implementation during the first three years of the Sixth Plan needs to be corrected. Greater priority has therefore to be assigned to productive sectors like agriculture, fisheries, irrigation, power, road development and industries during the remaining period of the Sixth Plan.

An important feature of the plan has been the inclusion of a number of programmes to directly benefit the rural poor. The objective is to enable about 5 lakh families below the poverty line to become economically strong. It has been stipulated that about 10 per cent of the outlay on all sectors should be earmarked for the benefit of scheduled castes and scheduled tribes. The annual Special Component Plans for the Scheduled Castes and the Sub Plans for Scheduled Tribes have been prepared and are being implemented. It is estimated that nearly 25 per cent of the plan outlay is for schemes directly benefiting the rural poor. Most of these programmes form part of the new 20-point programme announced by the Prime Minister. Though several suggestions for strengthening district planning and co-ordinated implementation of all programmes intended for the rural poor have been under consideration, concrete measures are yet to be evolved. The plan therefore continues to be implemented through vertical departmental plans and departmental budgets.

Assuming that nearly a ten per cent increase in the State sector outlay will materialise when the Sixth Plan runs its course, the total State plan expenditure will be of the order of Rs. 1700 crores. Though the expenditure of around Rs. 908 crores during the first three years of the plan period is satisfactory, there is need for making greater provisions during the annual plan years 1983-84 and 1984-85. The plan outlay for 1983-84 has been fixed at Rs. 320 crores in January at a meeting of the Chief Minister and the Central Minister for Planning held at the Planning Commission. Of this the share of the Centre will be Rs. 94.12 crores. As in the previous years a buoyancy in expenditure is likely to materialise during the coming years also. In 1984-85, the last year of the Plan, an expenditure of over Rs. 400 crores is anticipated. Unless the Plan implementation moves in tune with the objectives, targets and strategies laid down in the Sixth Plan, achievements in physical terms is likely to lag behind considerably.

The Sixth Five Year Plan of Kerala, states that a meaningful solution to the problems of poverty and unemployment can be achieved only through a sustained step up in the rate of growth of the economy. Therefore the plan expects to achieve an overall annual growth rate of 5.2% at the end of the plan period. It is not clear from the sixth plan document whether this rate of growth was fixed in the basis of the needs of the people or of the resources that can be mobilised. If it is fixed on the basis of the pressing needs of the people, this cannot be considered as a rapid rate of growth to make any reasonable increase in per capita income during the plan period. With a given volume of investment what concerns us more is the strategy of growth and pattern of investment in the crucial sectors of the economy to achieve the expected rate of growth. An attempt is made in this paper to examine the possibility of increasing per capita income with the pattern of investment and strategy of development adopted in the plan.

The annual rate of growth of 5.2% is dependent upon a combination of several factors, the most important of these being (1) the degree of efficiency in the use of stock of capital (2) volume, pattern and priority of investment (3) technology utilised (4) capital output ratio and (5) strategy of growth. An examination of most of the above factors in the sixth five year plan, in the light of the achievements of previous plans raises certain question. (1) Is this rate of growth sufficient to increase per capita income to any reasonable extent and can it be achieved with this plan outlay (2) Is it possible to generate employment for 9.2 lakh persons in 1985 as contemplated in the plan (3). Is the strategy of the plan appropriate to achieve rapid rate of growth with the generation of adequate employment.

Per capita Income

Increase in the rate of economic growth is mainly aimed at increasing per capita income. In other words, the index of economic development is the increase in per capita income. The objective of a rapid rise in per capita income should always be given highest primity for the simple reason that the source of all material well being is the availability of goods. Increase and differences in per capita income between India and Kerala from 1960-61 to 1979-80 will should light on the standard living of the people of Kerala.

TABLE I
ECONOMIC REVIEWS 1961 to 1981,
OF ECONOMICS & STATISTICS AND STATE
PLANNING BOARD, TRIVANDRUM

Year	at current prices			at constant prices		
	India	Kerala	diffe- rence	India	Kerala	differ- ence
	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs.)
1960-61	306	259	47	306	259	47
1965-66	425	379	46	311	261	50
1968-69	552	496	56	327	286	41
1973-74	856	800	56	349	301	48
1974-75	1007	884	123	343	299	44
1975-76	1008	909	99	366	297	69
1979-80	1316	1141	175	661	550	106

per capita income in Kerala was lower than that of India in 1960-61 both at current and constant prices (2) Increase in per capita income in Kerala was too inadequate to catch up with that of all India from 1960-61 to 1979-80. (3) The difference in per capita income between Kerala and India has increased considerably during this period. This shows that Kerala is lagging for behind in the case of per capita income increase from 1960-61 to 1979-80. Insufficiency of economic growth is, undoubtedly, the reason for this alarming and anomalous situation in the state. In order to even out this existing disparity and to achieve more increase in per capita income a sufficiently higher rate of growth is necessary.

Growth rate

Date of growth achieved in Kerala from 1975-76, 1979-80 is given in Table II.

TABLE II

Year	Rate of growth percentage
1975-76	4.5
1976-77	4.0
1977-78	5.9
1978-79	8.9
1979-80	6.7
Average	6.0

At current prices 6% average annual rate of economic growth could be achieved in Kerala between 1976 to 1980. This rate of growth is a little more than that contemplated in the sixth Five Year Plan (5.2%). Despite this average annual rate of growth between 1976 and 1980 increase achieved in per capita income was negligible with the results that the gap between India and Kerala in per capita income, increased from Rs. 99 to Rs. 175 during this period. This

implies that annual rate of growth (5.2%) envisaged in the Sixth Five Year Plan of Kerala is far lower to make any reasonable increase in per capita income in the near future.

Suitable strategy

Increase in growth rate can be achieved by (1) increase in investment or by (2) a decrease in capital output ratio or by both. Given the value of investment, a decrease in capital output ratio is inevitable to step up the rate of economic growth. This is a matter of strategy of growth of the plan.

It is the purpose of planners to formulate what may be called broad strategy of development appropriate to the economy concerned. As a general rule, a country with a rapidly rising population has to determine the avenues. A Economic Reviews—State Planning Board, Trivandrum of employment that it can successfully create. Where the traditional field of productive activity is agriculture, it is logical to determine first whether there is any scope for its further expansion. The magnitude involved and the time needed to achieve this expansion should be estimated. If there are serious limitations, in the case of availability of land and technical factors, to further expansion they should be ascertained.

Economic growth deals mainly with physical output. From the point of view of rapid economic growth, in the context of backwardness and poverty, what concerns as more is the volume of output obtained from a given amount of investment. The broad strategy of the plan should seek for a shift of resources from low productivity and stagnant and declining sectors to high productivity sectors to obtain a faster expansion and higher rate of growth. Therefore plan for development must be based on a differentiation of sectors according to their relative importance.

Relative importance of sectors

Productivity and percentage contribution of the main sectors of the economy of Kerala to state income will show the relative importance. Percentage share of the sectors to State income and their trend of change from 1970-71 to 1979-80 is shown in Table III.

TABLE III.

Sector	Percentage to state	Income
Primary	1970-71	1979-80
Primary	51.1	44.8
Secondary	16.9	21.0
Tertiary	32.0	34.2
Total	100.0	100.0

It is clear from Table III that contribution of primary sector to state income has decreased from 51.1% in 1970-71 to 44.8% in 1979-80 while shares of secondary tertiary sectors have increased from 16.9% to 21% and 32% to 34.2% respectively during the same period. This implied that agricultural sector of Kerala, in expansion has reached all the elastic limits and there is very little scope for further expansion. Therefore, economic development of Kerala depends mainly on industrialisation. Industrialisation is essential not only to increase productivity and tempo of economic development but also to produce the dynamism for the basic transformation of the economy from agrarian to industrial one.

Neglect of industrial sector

Percentages of investment to the main sectors of the economy will give an idea of the relative importance given to these sectors in the plan.

TABLE IV

Sectors	Investment (Rs. in crores)	Percentage of total investment
Agriculture & allied services	336.13	21.63
Co-operation	22.00	1.35
Irrigation, flood control and power	593.78	38.25
Industry and minerals	159.50	10.25
Transport and communication	106.75	6.90
Social and community services	306.79	20.00
Economic services	6.25	0.40
General services	10.20	1.20
Total	1550.40	100.00

It is clear from table IV that industrial sector has been totally neglected. Only 10.25% of the total plan investment is provided for industry as against 21.6% to agriculture. Industrial sector is a rapidly growing sector with ample scope for development. The obstacle to industrial development in Kerala is shortage of investment. (Sixth Five Year Plan 1980-85 State Planning Board, Trivandrum pp. 237 to 239). The importance and crucial role of industrial sector in the overall development process has been accepted in the all India Sixth Five Year Plan. As much as 28.70% of the total plan investment has been provided for industrial development in India. This strategy of economic development ignoring the most vital and dynamic industrial sector is, in no way, helpful to accelerate the process of development and step up the rate of growth. This will defeat the very purpose of planning.

Diversion of Resources

An important point that needs emphasis, in this context, is that a substantial part of the plan resources will be absorbed by ongoing spill over projects from the previous periods with the result claims of the new projects in the current

plan are likely to be crowded out from consideration. This diversion of resources from the projects in the current plan will have an adverse effect on the expected rate of growth. Thus, the claims of on-going projects as well as priority investment needs in capital intensive sectors like energy and transportation will perpetuate the current trends in the sectors of the economy "reflecting regressive capital output rates".

Declining agricultural sector

The overall growth of 5.2% per annum expected in the plan is to be made up of 4.1% growth in agriculture, 6.5% in mining and manufacturing, 5.5% in power, 6.1% in transport and communication and 5.5% in social services (Sixth Five Year Plan p. 10). It is clear from the above figures that the expected rate of growth in agriculture is the lowest and that of industry is the highest. In the Sixth Five Year Plan of India agricultural growth is projected only at the rate of 3.83% per annum while growth in mining and manufacturing is envisaged at 6.90% per years. The strategies of the plan of agricultural development in the Sixth Five Year Plan of Kerala consist of (1) check of spread of pests and diseases among crops (2) optimum utilisation of resources of land, water and other resources (3) promotion of mixed farms (4) diversification of production base and (5) application of modern technology.

It will be very difficult with these strategies to achieve the expected annual growth rate (4.1%) in agriculture in view of the continuing decline of this sector. According to the Economic Review 1981 (p. 34) during the three years between 1975-78 and 1980-81 both productivity index and production index of almost all crops marked considerable decrease inspite of an increase in the area brought under cultivation. With the exception of pulses all other items of food crops registered marked decrease in production. Production index of condiments and spices came down. In the non-food grain sector decrease in the production of plantation crops is notable.

This unfavourable situation in agricultural sector cannot give any optimism for achieving the expected rate of growth. Apart from the lower rate of growth gainful employment that can be generated in this sector is extremely limited with intensification. Experiences have show that the process of economic development will generally lead to transfer of working force from agriculture to industrial and service sectors for employment or better employment because of the decreasing absorptive capacity of this sector with intensification. In this context the undue importance given to agriculture with as much as 21.6% of the total plan investment is at the cost of industrial development.

The strategies of industrial development of the plan include (1) increasing utilisation of existing capacity (2) promotion of industrial

units with appropriate technology (3) setting up of major units in the central sector (4) re-organisation of public sector units and (5) promotion of village and household industries and private investment.

According to the Economic Review 1981 (pp. 81, 82) rate of industrial growth increased from 1976-77 onwards. In 1976-77 rate of growth was 8.1% which increased to 10.8% in 1978-79. The first three quarters of 1979-80 recorded 12.2%, 8.8% and 2.9% rates of growth making an average rate of 8%. Value added by manufacture in registered and unregistered sectors at 1970-71 prices between 1970-71 and 1979-80 registered nearly 50% increase.

In view of the performance of the industrial sector a fairly higher rate of growth could have been computed to compensate for the deficiency in the growth of agricultural sector if a greater percentage of investment was earmarked for industrial sector. The neglect of industrial sector reflected in inadequate percentage of investment, lack of metal, mineral, chemical and engineering industries are serious hindrances to industrial development.

Capital output ratio

In estimating average annual rate of economic growth with a given amount of investment, the crucial question is capital output ratio. What really matters in planning economic growth is not the average capital output ratio, but marginal or incremental capital output ratio. For instance if we want to increase output by 20 with a capital output ratio 4, then the required addition to capital stock to be provided by new investment is 80. The figure 4 here stands for incremental capital output ratio. No capital output ratio either average or marginal has been worked out in the sixth Five Year Plan for estimating annual rate of growth. From the total plan investment and annual rate of growth computed, average capital output ratio in Kerala can be roughly worked out 3.5. It should be noted, in this connection, that incremental capital output ratio worked but in the Sixth Five Year Plan of India is only 5.21. This is far higher than the ratio 3.5 in Kerala. In view of the productive efficiency and productivity of the economy of Kerala a capital output ratio of the order of 3.5 is, undoubtedly unrealistic and will make the expected growth rate for remote.

Suppose that expected population increase is 2% per annum, investment ratio 8% and capital out ratio 4. This will yield a growth rate of 2% (8/4) and the standard of living is unchanged. If we want to increase per capita income by 5% a year, state income must be increased by 7% (2 + 5) every year. This implies that the same capital output ratio, investment must be increased from 8 to 25%. Thus, it is clear that the rate of growth can be increased either by an increase in investment or

a decrease in capital output ratio or by both. With the same investment capital output ratio can be decreased only by the application of advanced technology

Gestation period

In addition to investment and capital output ratio, gestation period of investment is of more significance in planning economic growth. In spite of the required amount of investment and capital output ratio, rate of growth will be some what less than the estimated one if the gestation period is longer. It is because the estimate generally assumes that capital created by investment in one period can be used productively in the following period. It is not correct, the extension of period has the same effect of increase in the value of capital output ratio. Percentage of total plan investment likely to be diverted for on going and spill over projects, actual amount of investment for the current plan, real incremental capital output ratio, and gestation period of projects should be carefully estimated in planning economic development. Inadequacy of investment, higher capital output ratio, and longer gestation period than the estimated ones will hamper economic growth and actual rate of growth will be falling short of the estimated one.

Inadequacy of plan outlay

Interstate comparison of percapita plan outlay of the Sixth Five Year Plan will show the inadequacy of investment in Kerala.

TABLE A

States	Outlay (1980-85) Rs. in crores	Per capita Outlay (Rs)
Andhra Pradesh	3100	711
Assam	1115	743
Bihar	3225	572
Gujarat	3680	1378
Haryana	1800	1800
Karnataka	2265	773
Kerala	1550	728
Madhya Pradesh	3800	911
Maharashtra	6175	1225
Punjab	1957	1450
Rajasthan	2025	785
Tamil Nadu	3150	765
Uttar Pradesh	5850	663
West Bengal	3500	790

Table V shows that among the major states of India, there are only three States (Andhra Pradesh, Bihar and Uttar Pradesh) which have lower percapita plan outlay than that of Kerala. All other states have higher outlay. Haryana with Rs. 1800 ranks first followed by Punjab, Gujarat Maharashtra and Madhya Pradesh. The States which have substantially higher percapita outlay are already industrially and economically

far advanced states in India. Andhra Pradesh, Bihar and Uttar Pradesh are also far ahead of Kerala in economic development though their percapita outlay in the Sixth Five Year Plan is lower.

Kerala's percapita plan outlay (Rs. 728) is lower than that of all India (Rs. 891). In view of economic backwardness reflected in lower percapita income (Rs. 1141) than that of India (Rs. 1316) as well as rapid population growth and widespread unemployment, this percapita plan outlay is very inadequate to achieve any reasonable improvement in standard of living. A rate of growth which cannot double percapita income with 15 years (three plan period) cannot be considered as a rapid rate of growth in Kerala. In order to double percapita income by 1996 the required annual rate of growth must be computed on the basis of (1) population increase and (2) capital output ratio. Investment necessary for such a rate of growth care, than, be estimated.

In 1996 population of Kerala at compound rate of growth will be 342 crores. In order to double percapita income in 1996 state income should be increased to Rs. 7800 crores. That is to say an additional state income of Rs. 4926 crores should be produced. Investment to achieve such an increase with a marginal capital output ratio 4.5 (lower than that of all India 5.21) will be around Rs. 22157 crores. This implies that an average investment of Rs. 7389 crores will be required every plan.

Reorientation of plan strategy

In view of the investment that could be mobilised for the past Five Year Plans it will be very difficult to mobilise capital of such a huge magnitude. Therefore in the Sixth Five Year Plan, the state sector outlay was to be limited to Rs. 1550 crores. This shortage of investment necessitates the adaption of such a new strategy to increase the productivity of the economy to the maximum possible extent. This requires sectoral differentiation in investment decision and choice of technology. In Kerala in the absence of scope for expansion of an innovation in agriculture, productivity of the accompany can be increased only by rapid industrialisation. Therefore greater percentage of plan investment should be allotted to the industrial sector with maximum utilisation of modern, technology appropriate to the economy. This implies a through and timely reorientation of the approaches, strategies and targets of the Five Year Plans. In the face of gross industrial backwardness, and economic stagnation, as Bosensteen Podan has observed the movement of machinery and capital towards labour instead of moving labour towards capital is the process of industrialisation which together with agrarian improvement is the most important aspect of economic development (The International Development of Economically Backward Areas).

4. EVALUATION STUDIES

C. R. PARAMESWARAN
R. SUBRAMANIAN

With the advent of Plan Process in India, Evaluation Studies also began making headway in our economic activities. Gradually the Evaluation Studies became an integral part of the Plan process, in that, they helped the policy makers and the implementing authorities to keep track of the execution of the schemes and the realisation of their objectives. Over the years, the concept of evaluation has undergone many changes. Presently it has assumed significance as an exercise that establishes a relationship between formulated policies and their methods of execution on the one hand and the end results achieved on the other. Going a step further, it also helps in clinical dissection and diagnosis of the whole process of implementation and suggests curative resource. Viewed in this context, the need to take stock of the data on Evaluation Studies cannot be over emphasised. In this paper, based on the Studies completed so far by the State Planning Board and the Directorate of Economics & Statistics, and an attempt has been made in that direction.

At the outset it has to be pointed out that the approach in this paper may differ from those made in other papers, where the availability, deficiency or gap of data in a particular sector or area of economy has been examined. Evaluation studies are not restricted to any one particular sector and pervades all the fields of Plan activity. Hence it is difficult to confine the discussion to one particular area. Also it would be an enormous task to attempt a detailed discussion on the merits or defects of all the studies made so far. Such an attempt could not possibly be bound, into a small paper like this. Hence the effort here has been to identify the areas covered by the Evaluation Studies, to examine the methodology employed, and to have a general discussion on the source and adequacy of data, the level of development attained and the limitations thereof.

Hitherto a total of 46 studies have been completed in a period of 12 years from 1969 to 1981. 18 (39 per cent) of these studies have been on programmes in Agriculture and 9 (20 per cent) on Soil Conservation. 3 Studies (7 per cent) on Minor Irrigation and 1 study (2 per cent) each on Fisheries and Animal Husbandry make a total of 32 (70 per cent) Studies on Agriculture and related subjects. Studies made on other subjects are as follows.

Subject	No. of Studies	Percentage
1. Industry	3	7
2. Health	2	4
3. Education	1	2
4. Banking	2	4
5. Rural Employment	2	4
6. Social and Harijan Welfare	3	7
7. Five Year Plan	1	2

An idea of the developmental activities that have taken place in different sectors can be obtained from the amount of money spent on these sectors till the end of the fifth Five year plan.

SECTORWISE CUMULATIVE EXPENDITURE TILL THE END OF THE FIFTH PLAN

(Rs. in lakhs)

Head of Development	Cumulative Expenditure	Percentage
1. Agricultural Programme	21810.19	15.9
2. Community Development and Co-operation	4243.85	2.9
3. Irrigation and Power	59429.72	44.8
4. Industry and Mining	13724.06	9.4
5. Transport and Communication	11182.87	7.7
6. Social Services	33714.49	23.1
7. Economic Service	412.70	0.3
8. General Service	929.66	0.6
9. Miscellaneous	267.90	0.2

Source: Statistics for Planning 1980, published by the Directorate of Economics and Statistics, Kerala.

The largest investment has been in Irrigation and Power. Investments in Social Services and Agricultural Programmes have also been substantial.

It would be worthwhile to examine the coverage of the developmental programmes in different sectors in relation to the pattern of investment in these sectors. It is seen that the studies conducted so far do not adequately cover any of the sectors except Agricultural programmes. Some of the important sectors have not

been taken up at all. A realistic attempt to evaluate the effectiveness of the programmes on which so much of money has been invested is needed.

The 18, studies under Agriculture can broadly be divided into 5 groups.

1. Studies on innovative developmental programmes. There have been 8 such Studies. Package Programmes in Kerala, Yela Development Programme, Kerala Agricultural Development Project, Intensive Agricultural District Programme, Small Farmers Development Agency, and Integrated Rural Development Programme are the specific projects, the data on whose implementation and impact have been collected and analysed.

2. Studies on Programmes related to inputs of Agriculture. There have been 5 studies; One on Programme for Multiplication and Distribution of Improved Seeds, another on Adoption of Improved Agricultural Practices and three studies on High Yielding Varieties Programme in Kerala.

3. Studies on financial aspects of cultivation: Three studies come under this group; (i) Cost of cultivation of Paddy—An analytical tool for evaluation, (ii) Utilisation of Short Term Agricultural Co-operative Credit in Kerala and (iii) Loan Scheme for Kayal reclamations.

4. Studies on Plantation Crops: There has been only one study in this group, that of the scheme for raising Cashew Plantations in Private Sector, and

5. Studies on training: Here also only one study has been conducted a Study on Farmers Training Programme.

Among the 9 studies on Soil Conservation, one has been on Programmes in Kerala and another a Bench Mark Survey on Selected Scheme areas. The other Studies are on Soil Conservation work on the following Projects.

- (i) Attumuttathu Thekkenathi Kayal area
- (ii) 'R' Block Kayal area
- (iii) Kundah Project
- (iv) Kandakadavu Maruvakad Padasekharam and
- (v) Hilly Agricultural Lands in Kerala.

The other 5 studies on subjects related to Agriculture are;

1. Minor Irrigation

- (i) Two Studies on Minor Irrigation works in Kerala.
- (ii) The Scheme for free supply of Pumpsets to Panchayats.

2. Fisheries: Anjengo Fisheries Development Project.

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3. Animal Husbandry: Pig Breeding Farm-Cum-Bacon Factory.

Studies on Schemes in other Sectors, which together constitute 30 per cent, are the following.

1. Industry

- (i) Industrial Estates in Kerala
- (ii) Oil Palm Station at Thodupuzha and
- (iii) Working of the Central outright grant/subsidy Scheme for Industrial units in Backward districts.

2. Health

- (i) Co-operative Rural Dispensaries in Kerala.
- (ii) Applied Nutrition Programme in Kerala.

3. Education: Merit-Cum-Means Scholarships.

4. Banking

- (i) Working of Labour-Cum-Development Bank.
- (ii) Lead Bank Scheme in Malappuram District.

5. Rural Employment: Crash Scheme for Rural Employment in Kerala.

6. Social/Harijan/Tribal Welfare.

- (i) Scholarships to backward class students.
- (ii) Production-Cum-Training centres and other training centres of the Harijan Welfare and Tribal Departments.
- (iii) Socio Economic Survey of Tribals in Kerala.

7. Five Year Plan: Fourth Five Year Plan—Review of the period 1969-72.

Generally studies are conducted to evaluate two aspects of a project, viz., Implementation and Impact. Implementation is studied by looking into Plan formulations, its objectives, organisation and execution. Materials for such Studies are Secondary data collected mainly from the Implementing Officers. When the impact is studied, it is done by resorting to detailed sample survey, wherein primary data is generated from the beneficiaries. In an actual field situation it may not be possible to strictly adhere to all the scientific principles of sampling. This can be justified on three counts: (1) In Evaluation Studies, implementation rather than impact is given more emphasis and the nature of such studies does not warrant application of sampling methods. (1) Evaluation Studies are considered to be qualitative exercises as opposed to quantitative ones. In collection of data more weightage

is given to variability rather than to standardisation. Thus the studies tend to be purposive. (3) In impact studies, since the beneficiaries are studied, it may become necessary to select samples, where there is a concentration of these beneficiaries. In such cases also purposive samples are selected. Looking into the sampling methods adopted in the Evaluation Studies so far, it is seen that the techniques vary with the nature and purpose of the study. In impact studies, two of the methods are seen adopted most commonly. They are Multistage Sampling and Stratified Sampling. Other methods used are, Simple Random Sampling and Systematic Sampling. In a few studies Census method has been adopted.

As in the case of all statistical enquiries, Evaluation Studies are also bound by the Time and Cost factors. In order that the findings of the study are relevant to the purpose at hand, the study should be conducted within the time limit set. The cost factor influences the organisational set up and the coverage of population. The sample size is fixed by giving thought to these aspects. In the studies made so far, the sample size has varied with the nature of the project studied, the type of the beneficiaries and the method of study. While some of the studies have state wide coverage, others have limited local coverage as necessitated by the case at hand.

The source of data for an evaluation study can generally be classified into two, (1) Implementing agencies and (2) the Beneficiaries. When the study gives emphasis to implementation rather than impact, the data mostly comes from the Implementing Officers. When the impact of a programme is studied, it is done by Collecting data from the beneficiaries. It is seen that, for the studies under discussion, both these sources have been relied on for data. A clear division does not emerge. Even in studies with stress on implementation, a certain percentage of beneficiaries has been contacted for collection of data. Similarly, in some of the impact studies, primary data has been collected from lower level implementing officers also, in addition to that collected from the basic beneficiaries.

Having looked into the coverage, methodology and other related aspects of the studies so far, it would be worth while now to examine the limitations in respect of the different aspects of making the studies. Since the Evaluation Studies are conducted with specific purposes and as the results are likely to have far reaching effects, it is imperative that the data collected is quite accurate and truly reflective of the field situation. In implementation studies the difficulty in getting accurate data from the lowest level is very high, because, the data becomes instrumental in assessing the performance of these officers. The same difficulty arises when the cost benefit ratio, which is an aspect of the Evaluation study is to be worked out. The basic informants do not always furnish the exact data relating to the assessment of the ratio. These

limitations are overcome to a certain extent by resorting to what is called participant observation. Another drawback in the organisation of the field work is the lack of adequate personnel for collection of data. Just because it is not possible to deploy sufficient members of the staff to the field, it becomes necessary to limit the sample coverage and in some cases to change the selection of the sample itself. This affects the reliability of the data.

As far as dissemination of the findings is concerned, the reports of the studies are duly published. Often the medium of newspapers is utilised for publishing the reports. As for the preservation of the data for posterity, no arrangement is available at present. It is felt that there is no need to store the data, in view of the fact that the Evaluation Studies are conducted with specific objectives and that once the data has been processed and conclusions arrived at, it is time to take necessary follow up actions. Since the data has served its purpose, it is no more retained in the original form. Further the conduct of these studies is a continuous process and there are practical difficulties of storage and preservation of the enormous amount of used up data. This also acts as a bar for retaining the data for long.

An assessment of the adequacy and usefulness of the available data in analysing a particular sector is superfluous. The data collected for making an Evaluation Study is not concerned with Policy making and Plan formulation. It is, on the contrary, concerned with the Post analysis and Planning stage. It is intended to check on the direction and proper implementation of the Projects and the impact they make.

The effectiveness of an Evaluation study is judged by the extent, to which it has been able to cater to the needs of the various types of users. The primary users of the studies are the Policy makers and the Implementing Officers. In some cases these studies have helped in bringing forth corrections in further plan formulations. A number of Studies have been of academic use to the secondary level users like the Universities. It may be pointed out that the Primary users may have their own limitations in following up the recommendations. In such cases the Evaluation studies cannot be deemed to have failed altogether.

In the light of the review on Evaluation Studies conducted so far, the following facts emerge.

It is seen that a vast area of Economic activity remains to be covered. Practically little has been done to evaluate the Plan performance in all but one sector namely Agriculture. Even its allied subjects have not been dealt with much. A systematic and continuous effort is seen lacking in taking up schemes and Projects for making the Evaluation Studies. What has been done so far has been results of sporadic activities. Important sectors of economy like

Irrigation, Power, Industry, Transport and other Service Sectors offer great scope for making Evaluation Studies.

The organisational set up needs to be strengthened with adequate field staff so as to facilitate the necessary coverage of the sample, adhering to the scientific principles. The continuity of the study team has also to be ensured for the smooth conduct and follow up of the studies in a systematic manner.

There has to be a good liaison between the Evaluation Division and the Planning and Implementing Bodies. This would help in taking up studies and following up recommendations and taking corrective measures. This is more so in the case of concurrent evaluations. Diversions

from and dilutions of the original objectives could be spotted out before it becomes too late for rectifications.

It is quite possible that some of the Implementing Officers have their own in built system of evaluation. The possibility of some academic or other independent agencies conducting evaluation studies cannot also be ruled out. There is a case for identifying such agencies and co-ordinating their activities. This would help in larger coverage of plan area and, in avoiding overlapping and repetition of studies.

And finally, a certain amount of professional competence has to be acquired and exhibited by the evaluators for ensuring the credibility and usefulness of the Evaluation Studies.

5. GAPS IN INFORMATION FOR THE PREPARATION OF A REGIONAL PLAN FOR WESTERN GHATS

SHRI N. GOPALAKRISHNAN

The Western Ghats form the great sea-wall for the west side of the peninsula, with only a narrow strip of land between them and the shore line. The South-West Monsoon brings abundant rainfall which cloth even the hill slopes as luxuriant vegetation. The National Development Council has accepted in principle the adoption of an area approach for accelerated development for important regions of the country with a view to bringing them on a par with the adjoining developed areas. One such region identified by the Planning Commission is the Western Ghats. The Western Ghats Region is considered as the area occupying above 600 metres of elevation and contiguous in location to the area demarcated by the Second Irrigation Commission. The Region lies in the States of Maharashtra, Karnataka, Tamilnadu, Kerala and the Union Territory of Goa. The Region has remained comparatively less developed as compared to its adjoining areas mainly because of undulating topography, poor surface soil, heavy rains, soil erosion and inadequacy of transport and communication network and is predominantly rural in character. Agriculture including plantation is the predominant occupation (63%) of the people in the Region.

The Western Ghat Area is spread over 29 taluks in 11 districts of Kerala State excepting Alleppey District. The total area covered under the programme in the State is 28068.2 sq. km. with a population of 12374103.

During the Fifth Plan period, the Western Ghats Development programme laid emphasis on the objective of achieving the economic well-being of the hill area people. Eco-restoration, eco-preservation and eco-development combined with watershed-management are being contemplated under the new strategy adopted for Western Ghat Development Programme during the Sixth Five Year Plan.

Hill area development plans of which Western Ghat Development Programme forms only a part aim at the development of the area. For any area development plan, the data on the following items are required:

- (i) Land Use Pattern
- (ii) Agriculture, Industrial and other wastes
- (iii) Climate
- (iv) Forest resources including wild life (plant/animal)
- (v) Ground and Surface water
- (vi) Physical and engineering properties and distribution of geological materials--Proneness to natural hazards.
- (vii) Soil ecology
- (viii) Soil structure (Physical, chemical and Biological)

- (ix) Energy resources
- (x) Education
- (xi) Communication facilities
- (xii) Industry
- (xiii) Mineral Resources
- (xiv) Manpower

"Data Management for urban and Regional Development" WNCHS (HABITAT) 1981.

Inadequacies of present data for spatial planning:

State departments usually collect data for specific purposes. For regional or spatial planning such data may not be of much use. Break-up of land use information not supported by maps is not of much use. At present the State Bureau is maintaining the data at district level. List of data maintained at district level covers quite a good deal of information needed for regional/district level planning. But no information is maintained at taluk, Block or Village level. For the Western Ghats Development Programme, both the ecologic and resources development aspects are given emphasis, taking care of soil conservation, afforestation and other environmental aspects. Some districts are not fully covered by the Western Ghats Development Programme and as such the need of data collection at Taluk level has become a necessity. The Planning Commission has laid down certain objectives for the development of this region. The Town and Country Planning Organisation, Government of India was entrusted with the preparation of a comprehensive plan for the development of this region based upon the detailed investigation of the present level of development in the various sectors of the economy including infrastructure and after assessment of the potentials of development in the fields such as agriculture, horticulture, including plantation, animal husbandry including fisheries, forestry, irrigation, power, mining industries, communication and tourism. Therefore, detailed information on economic, social and physical aspects had been collected into the following broad categories:--

- (a) Population
- (b) Land Use
- (c) Forestry
- (d) Agriculture, Animal Husbandry & Fishery
- (e) Mining and Industry
- (f) Tourism
- (g) Water and power
- (h) Transport
- (i) Education and Health
- (j) Miscellaneous

Data on many of the items were not readily available. The published data is generally available at District or State level. For the Western Ghats Programme, Taluk is adopted as the basic unit and hence taluk level data is required. Even the taluk level data for land use was not available and hence some estimation had to be adopted which had vitiated the conclusion on considerably. Land use data under the following heads are required for Taluk level and Regional level planning.

1. Net area sown
2. Fallow lands
3. Culturable waste land
4. Permanent pastures
5. Area not available for cultivation
6. Area under Forest

There is another important aspect to be considered. The emphasis in land use statistics has so far been on the areal extent of such uses but not on the great variations in the intensity with which the land is used. While area is an important factor in a country like India where pressure of population on land is much more acute, reliable information on intensity with which lands are used, become important. Although general land use data are available for each year, the corresponding land use maps are not available. Along with the land use map, it is essential to have proper land-capability maps to assess the potential for development of agriculture and forestry activities.

Identification of Information Gaps

Comparison of users' requirements with existing information resources would bring out the gap which needs to be bridged. These important tasks are involved for the formalization of collection system.

- (i) Re-orientation of existing collection system to suit needs.
- (ii) Identification and formalization of working arrangements with resource institutions and reporting channels to bridge the information resource gaps.

(iii) Formalization of working arrangements with model agencies to ensure actual flow of information system, information should be collected at taluk level. The District Statistical Offices should be strengthened so that the data collected for agricultural statistics should be processed there itself on a Taluk-wise basis. At present agricultural statistics data is not available at Taluk level. As far as Western Ghats Development Programme is concerned the data is not readily available with respect to the following sectors also at taluk level.

1. Mineral resources.
2. Irrigation potential.
3. Details regarding raw materials for industries.
4. Details of village roads and their categories.
5. Power potential sub-station wise - Transmission and distribution net work.
6. Forest resources.

Action should be taken to collect and consolidate the data in the above sectors by creating statistical machinery in the respective departments so that planners should not be allowed to waste their time in collecting the data from the various sub-offices and other agencies.

For planning purposes, the collection of large quantities of data, its storage in a computer and organizing and analysing the data towards some end leads to a methodology known as "Information system". Thus depending on the type of requirement, an organisation can develop a "regional data bank" and "regional information system". This won't cover all the data required because such a system may not be fully exhaustive. However a substantial amount of specific data can be collected and stored. The next step for a planner is to retrieve this data as and when required.

6. LOGICAL ORGANIZATION OF DATA BASE

K. Kalyanaraman

One of the most important data processing activities is the development of data bases. Data is increasingly regarded as a vital resource for research and planning, which must be organized so as to maximize its utility. The development of computer facilities in their hardware structure has reduced the cost of storage in much cheaper storage devices. With the help of such modern devices the data must be so organized as to fully help the evolution of society which, directly, depends upon new ideas in all walks of life based on the information already available in a usable form in the related fields. The computers have to be taken as a necessity like printing is being considered at present, by institutions which are yet to pull out from their conservative ideas on computers. It may be remembered that the growth of information is competing with the need for information and the later will out run the growth of information itself and hence an efficient organisation of the data is to be achieved much before such a takeover actually comes in.

With this view, an expository paper is presented that will try to point out some aspects of data base organisation. This article may have a computer bias in itself however it is expected that the ideas presented may be useful in organising data bases with a manual operating system as at present.

A data base may be defined as (i) a collection of inter-related data stored together with as little redundancy as possible to serve one or more applications in an optimal way; (ii) the data are stored so that they are independent of the need and way of using them; (iii) a common and controlled approach must be available to add new data and to modify and retrieve existing data.

In simpler data organisation a collection of records is designed for one time use. However the data base is more meaningful if it serves as many applications as possible. It is a repository of information needed for running certain functions in a factory, Government department or other organisations and for planning future functions based on ideas emerging out of them by meaningful studies.

The objectives of a data base may be characterised in the form of what it is supposed to do.

(1) It must be possible for different users, perceiving the same data differently, to employ them in their own way.

(2) It may be organised in such a way that, when changes are made in the data base, the users are not put to much complex exercises.

(3) The cost of storing data is minimized.

(4) Whenever new applications use the data, it must be effective enough to provide the

necessary informations at a minimum manipulation.

(5) The required data must be made available in a minimum time and the user has to understand and know what is available to them.

(6) Spontaneous requests for data can be handled without much work on the part of the administrator.

(7) It must have provisions for accuracy, consistency, privacy (if required), protection from loss or damage and easy availability.

While organising a data base, it must be seen that an efficient organisation leads to simple ways of retrieving information. The important concept that help such an activity is what is called as data independence. It implies that the data and the applications (that includes retrieval) which use them are independent so that either may be changed without changing the other. In particular any application is to be insulated from the effects of changes made to data, their organisation, on the physical storage. It is, however, not possible to achieve this complete independence. To a large extent it may be reduced with the help of organising relationships between data items and records.

The ideas relating to data independency may be understood with an example suppose in a town one wants to see a film by name 'X'. A taxi is engaged and the instructions to the taxi driver may be given in any one of the following ways.

1. Simply, the name of the film is mentioned (taxi driver finds the theatre that is screening the same). If the movie is changed to another theatre, the request need not be changed (the taxi driver does it).

2. The name of the theatre, may be mentioned to the driver (The driver is supposed to find the theatre).

3. The address of the theatre is to be given, so that the theatre is reached.

4. The worst possible request at each stage like turn left, go straight etc.

One may get an idea, that the data, i. e., the cinema, has a less and less degree of independence as one goes from 1 to 4. Similarly the user may nearly give the data item or more particulars or every minute details. It may be noted that with no degree of independence, user may be expected to know, every aspect of the required data that he requires. This shows that the question of data independence is directly related to an efficient organisation of the data base that includes all relationships among the data items. This implies, that the required data shall be available with little amount of information provided by the uses, when the degree of independence is more.

If the function of the data base were merely to store data its organisation would be simple. Most complexities arise from the fact that the data base is required to show the relationships between various items, so as to enable it to provide such informations required by different users having different perception about the data. It may be noted that the same data item which is physically stored may be perceived by in various ways by different types of users. This implies that the data base must have facilities and abilities to separate the physical organisation from the users' view of data or 'Logical organisation' i. e. if a request comes from a user in any form without considering how the data is physically available, the data base must be able to provide the same. The data-wise organisers are expected to, theoretically at least, formulate possible users' views without concern for physical representation. That is to say that the data base must be ready to communicate between this logical organisation and physical organisation, so that any users' view of the data is accommodated.

(Once this is achieved to a considerable level, it is necessary to describe the organisation of the data in a formal manner. In the computer based data-base systems this logical data-wise descriptions are referred to as scheme. A scheme is a chart of the types of data that are

used. It gives the names of the entities and specifies the relation between them. The communication between data-base administrator and the users may be made better in a manual data-wise, if an attempt is made to provide such schemes of the available data to the users. Such scheme may contain the following attributes.

1. Neat diagrams may be employed to distinguish clearly between record names, data-item names and other names.
2. The process of aggregation resulting in aggregates may be available.
3. Data aggregates and recorded data must be distinguished.
4. The diagram may make it clear the relationship between data-items.

These ideas are borrowed from computer based data-base systems, where a consolidation is already available in these lines. To attempt such broad ideas, academically at least, may in the long run help in making the available data-base to switch over to computer-based systems in two lines. First, it helps the present personnel to get used to these ideas and secondly, the switch over is simple if the data-base organisation is already done in these lines.

Reference: Martin, I., Computer Data-Base Organisation, Printice Hall Inc. 1975.

7. DATA ON CO-OPERATIVE SOCIETIES IN KERALA

P. Kochunarayana Pillai

The Co-operative movement in our State started in the early years of the Twentieth Century. The first Co-operative Society in the State was registered in the year 1912. Even though it started very early the influence of the Societies made impact on the economy only very late with the introduction of the five year plans. At the beginning the movement was confined to the field of credit later it was branched out to different fields of economic activities, to the effect that the Co-operative movement in Kerala conquered our economy with more than 12,000 Societies covering almost all of our activities such as agriculture, minor irrigation, dairying, fisheries, small industries, marketing and processing, manufacturing, housing, distribution of essential commodities etc.

The Co-operatives in the State are regulated by the provisions of the Kerala Co-operative Societies Act and Rules 1969. The powers of Registrar of Co-operative Societies under the Act have been delegated to other Heads of Departments also except those in respect of Audit. Thus the Societies in the State come under the administrative control of the Registrar of Co-operative Societies and other Heads of Departments like Director of Industries and Commerce and Fisheries. The general information regarding the Societies under the administrative control of other Heads are available from the annual reports of the respective Departments. In addition the Reserve Bank of India published certain important informations like number of Societies, membership, paid up share capital, liabilities, assets, Profit and Loss etc., regarding this type of Societies viz., Milk Supply Unions, Ghee Unions, Fisheries Societies, Weavers Societies, Industrial Societies, Co-operative Spinning Mills, Co-operative Industrial Estates etc. broadly grouped into (A). Credit Co-operatives and (B). Non credit Co-operatives. Among the credit Co-operatives Primary Agriculture Credit Societies with District Co-operative Banks at District Level and Kerala State Co-operative Bank at the Apex levels comes under one group. The Primary objective of this group of Societies is to provide loans mainly to agriculturists with special attention to the Weaker Sections of the Society. The other credit co-operatives are Primary Land Mortgage Banks with apex agency, Kerala Co-operative Central Land Mortgage Bank. The Primary Land Mortgage Banks generally provide long-term loans to agriculturists. Urban Banks and Employees Credit Societies are non agricultural Credit Co-operatives. The Urban Banks are intended to provide financial assistance generally to small scale and

cottage industries and Employees Credit Societies confined its activities to the Credit needs of their members.

The Non-credit Co-operatives which are mainly intended for the Socio-economic Development by providing promotional assistance. They include (1). The housing, (2). Labour Contract, (3). Farming, (4). Marketing, (5). Processing, (6). Consumer's, (7). Women's, (8). Hospitals and Dispensaries, (9). Irrigation, (10). Autorickshaw Drivers, (11). Taxi Drivers, (12). Literary, (13). Educational, (14). Job Workers Societies etc. In addition to the above there are Harijan and Girijan Co-operatives intended to their exclusive development.

The major source of information relating to the functioning of the Co-operative Societies is the "Statistical Statements" relating to the Co-operative movement of India published by the Reserve Bank of India annually. The primary data for this publication in the State is collected and classified by the Office of the Registrar of Co-operative Societies, in the proforma provided by the Reserve Bank of India. The data thus collected are tabulated and cross-tabulated at District and State levels at the Office of the Registrar of Co-operative Societies and from this office "A hand book on Co-operative movement in Kerala" is also being published annually.

The statistical statements published by Reserve Bank of India contains State level information of almost all of the sector of our Co-operatives. It contains the general information of each type of society like number of members, number of branches, paid up share capital with contribution from various sources, Reserves, own fund, borrowings, deposits, working capital, liabilities, assets, profit or loss, administrative cost etc. In addition to the information cited certain matters relating to loans issued, loans outstanding, loans overdue etc., are also being published. The following State-wise information are available in detailed tables in the annual publication of Reserve Bank of India.

A. Credit Societies

(1) Kerala State Co-operative Bank

- (i) Number of offices, Membership and ownership of capital and Deposits.
- (ii) Liabilities and Assets.
- (iii) Operations.

less during the first half of this decade to 22 years now also contributed substantially. Female sterilisation has been on the increase, even at the risk of health the females take up the task of conforming to national requirements of small family norms. But the amount of compensation for all the miseries and physical injuries that they are given is very meagre and more or less equal to that given for vasectomy. By marrying late, the females contribute to reduction of birth rate by reducing the exposed period, they resort to continuing studies and look for jobs rather than getting married early and reproducing. Also they are against marrying unemployed persons and against the practice of dowry. There are also tendencies for increasing age at marriage.

Mortality rates are in general, lower for women than for men. The infant mortality rate also is much lower for female infants.

In the field of mortality reduction, all analysis is central around hospital beds, medicines, medical and paramedical staff. The analysis of the effect of household treatment, the care taken by the mother and the housewife is rarely done. The death rate in Kerala has come down from

16.1 in 1951-60 to 6 in 1980 and the infant death rate has come down from 150 to less than 50. General Mortality rates specific rates have declined drastically. The credit of this goes to the females to take care in ensuring environmental sanitation and personal hygiene.

Conclusion

To conclude, the inadequacy of statistics to study the socio-economic characteristics of the female population has been adequately brought out in the foregoing paragraphs. It may be pointed out here that the matter has already been taken up in the Lok Sabha many times and even now there is not enough statistics of employment in the public sector, private sector rural areas, unregistered enterprises etc. Even though data have been collected, the tabulation has not been done for males and females separately. It is high time that steps are taken to assess the position systematically and to take ameliorative measures.

Data gaps in these fields have to be filled-in at once, so that the lessons learnt from the Kerala experience can be model for other States in India and for other developing countries.

APPENDIX

**SEMINAR ON "DATA BASE OF THE KERALA ECONOMY" HELD ON 27th & 28th OF
JANUARY 1983 AT KANAKAKKUNNU PALACE, TRIVANDRUM**

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