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GOVERNMENT OF KERALA

MANPOWER STUDY SERIES

No. 47

**A REPORT ON
THE STOCK OF
TECHNICAL MANPOWER
IN KERALA**

**MANPOWER DIVISION
DEPARTMENT OF ECONOMICS
AND STATISTICS, KERALA
APRIL, 1984**

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P R E F A C E

Assessment of stock of technical manpower is an important exercise in manpower planning process. This report prepared by Sri. P.C. Jain, Research Officer of Manpower, Division of the Department/^{is} based on data collected from various sources. The estimates are in accordance with the guidelines of planning Commission on 'methodology for estimation of stock, availability and requirement of manpower'. It is hoped that findings of this report would be of some use to planners and administrators.

K. N. N. V. A. R. N. A.

DIRECTOR OF ECONOMICS AND STATISTICS.

Trivandrum,

25.4.1954.

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STOCK OF TECHNICAL MANPOWER IN THE STATE

1. Introduction:-

Manpower planning is the analysis of current and future manpower requirements and resources as a basis for planning and for taking necessary action to ensure that such needs are kept in proper balance.* Manpower imbalances occur due to gaps between the demand of the economy in terms of jobs on the one hand and structural composition and skills of the labour force on the other. Kerala experiences imbalances even in technical manpower. To avoid these imbalances adjustment of manpower resources at different levels viz. local, regional and state levels would be necessary. The following analysis of the stock of technical manpower intends to throw some light on the magnitude of imbalances in this sector of manpower in Kerala.

2. Methodology:-

The stock of Agricultural graduates and post graduates, Medical degree holders and Engineering degrees & diploma holders for the period 71-72 to 80-85 is estimated on the basis of stock of these manpower category in the state as on April 1971, intimated by the planning Commission. (1) Stock of veterinary graduates and post-graduates, worked out for the period is based on the stock (2) for 1974-75, estimated by the department of Economics & Statistics

* Dr. B.L. Agarwal - "High level manpower planning - a micro approach."

(1) Technical Manpower Bulletin of the division for scientific and technical personnel, CCI, April - 1973.

(2) Utilization of veterinary personnel in Kerala - 1974-75, Manpower Studies, Vol. 1 (Page 58)

Stock of Engineering Certificate holders in 74-75 is calculated on the basis of data on their unemployment furnished in a study conducted by the Department of Economics & Statistics (3). As regards paramedical category, number of general nurses and A.N.S in 1973-74 and that of pharmacists in 1975-76 entered in the Register of Kerala Government Nurses and Medical Council respectively formed the basis for estimates of stock of these manpower group for 1973-74 to 1984-85. In determining the composition of the stock of technical personnel viz. Agricultural Veterinary, Engineering, Medical and paramedical, 66.3% (4) of the registrants with employment exchanges in the related fields have been categorised as unemployed in the total stock of personnel.

3. Agricultural personnel

(1) Graduates:-

Table No. 1 gives the estimates of stock of Agricultural graduates for the period 1971-72 to 84-85 and the estimates for 84-85 stood at 2246 with 154 as the index of growth in total stock.

(3) Report on the study on the employment of craftsmen in different trades in Kerala - Manpower Studies Vol. III (Page 55.)

(4) Report on Survey to ascertain the proportion of employed persons of the L.R. of Employment Exchanges. D.S.T.E - 1972.

/contd. . .6/

Table No. 1. Stock of Agricultural graduates:-

Year	Stock in the beginning	Addition during the year*	Total (Col.2+3)	Attrition loss (1% of Col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1971-72	1420	52	1472	15	1457	100
1972-73	1457	33	1490	15	1474	101
1973-74	1474	53	1527	15	1512	104
1974-75	1512	56	1568	16	1552	107
1975-76	1552	47	1599	16	1583	109
1976-77	1583	97	1680	17	1663	114
1977-78	1663	93	1756	18	1738	119
1978-79	1738	104	1842	18	1824	125
1979-80	1824	113	1937	19	1918	132
1980-81	1918	86	2004	20	1984	136
1981-82	1984	88	2072	21	2051	141
1982-83	2051	87	2138	21	2117	145
1983-84	2117	87	2204	22	2182	150
1984-85	2182	87*	2269	23	2246	154

* Anticipated

/contd. . . 7/

(ii) Post-graduates.

Stock of Agricultural post-graduates is estimated at 722 in 1984-85 and the index of growth in stock stood at 220. The details of estimation is furnished in Table No. 2.

Table No. 2. Stock of Agricultural Post-graduates

Year	Stock in the beginning	Addition during the year	Total Col. (3+3)	Attrition loss (1; of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1971-72	310	21	331	3	328	100
1972-73	323	20	343	3	345	105
1973-74	345	21	366	4	362	110
1974-75	362	-	362	4	358	109
1975-76	358	19	377	4	373	114
1976-77						
1977-78	375	27	402	4	398	121
1978-79	398	40	438	4	434	132
1979-80	434	47	481	5	476	145
1980-81	476	55	531	5	526	160
1981-82	526	78	604	6	598	182
1982-83	598	48	646	6	640	195
1983-84	640	48**	688	7	681	208
1984-85	681	48*	729	7	722	220

* Anticipated

(iii) Composition

The stock of agricultural personnel in the state in 84-85 i.e. by the end of sixth five year plan period, works out to be 2968 comprising of 2838(95.5%) employed and 130(4.4%) unemployed as given in table number 3 below. The index of employment of agricultural personnel which is 167 in 84-85 shows comparatively slow growth of employment where as the unemployment index which stand at 155 indicates mounting unemployment for this manpower group in future.

Table No. 3. Composition of the stock of agricultural personnel*

Year	<u>Employed</u>		<u>Unemployed</u>		<u>Total stock</u>	
	number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1971-72	1701	100	84	100	1785	100
1973-74	1822	107	62	74	1874	105
1978-79	2220	131	38	45	2258	125
1984-85	2838	157	130 **	155	2968	155

* Graduates & Post graduates

** Anticipated

/contd. .9/

4. Veterinary personnel:-

(i) Graduates:-

Stock of veterinary graduates estimated for 74-75 to 84-85 is furnished table No. 4. Their stock in 84-85 stand at 1009 which shows an increase of 53% compared to 1974-75.

Table No. 4. Stock of Veterinary graduates

Year	Stock in the beginning of the year	Additions during the year	Total (Col.2+3)	Attrition loss (1% of Col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1974-75	631	36	667	7	660	100
1975-76	660	55	715	7	708	107
1976-77	708	65	773	8	765	116
1977-78	765	27	792	8	784	119
1978-79	784	48	832	8	824	125
1979-80	824	47	871	9	862	131
1980-81	862	50	912	9	903	137
1981-82	903	9	912	9	903	137
1982-83	903	45	948	9	939	142
1983-84	939	45*	984	10	974	148
1984-85	974	45*	1019	10	1009	153

* Anticipated

(ii) Post graduates:-

As furnished in table no. 5 below the stock of veterinary post graduates in the state is estimated to be 171 by the end of the 6th plan and the index of growth is 211 indicating more than double the strength compared to 74-75 situation.

Table no. 5. Stock of veterinary post-graduates

Year	Stock in the beginning of the year	Additions during the year	Total (col. 2+3)	Attrition loss (1% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1974-75	82	-	82	1	81	100
1975-76	81	7	88	1	87	107
1976-77	87	9	96	1	95	117
1977-78	95	11	106	1	105	130
1978-79	105	9	114	1	113	140
1979-80	113	6	119	1	118	146
1980-81	118	15	133	1	132	163
1981-82	132	22	154	2	152	188
1982-83	152	9	161	2	159	196
1983-84	159	9*	168	2	164	202
1984-85	164	9*	173	2	171	211

* Anticipated.

/contd. . . 11/

(iii) Composition:-

Table no. 6 given below shows that the stock of veterinary personnel in the state by the end of 5th plan would be 1180, of which 1170 (99.2%) would be employed. The index of unemployment which increased to 133 by the end of 5th plan (78-79) shows a declining trend indicating increasing employment opportunities for veterinary personnel during the 5th plan period.

Table No. 5. Composition of the stock of veterinary personnel*

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1974-75	714	100	27	100	741	100
1978-79	901	126	36	133	937	126
1984-85	1170	164	10**	37	1180	159

* Graduates and post-graduates. ** Anticipated.

5. Engineering personnel:-

(1) Engineering degree holders:-

Stock of engineering graduates is estimated in Table no. 7. The estimates for 1984-85 shows that their total number would be 17713 by the end of 5th plan and, the index of growth, being 183.

Table no. 7. Stock of Engineering Degree holders.

Year	Stock in the beginning of the year	Additions during the year	Total (col.2+3)	Attrition (1.5% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1971-72	9370	552	9922	147	9675	100
1972-73	9675	527	10202	153	10049	104
1973-74	10049	544	10593	159	10434	108
1974-75	10434	414	10848	163	10685	110
1975-76	10685	779	11464	172	11292	117
1976-77	11292	670	11962	179	11783	122
1977-78	11783	843	12626	189	12437	129
1978-79	12437	917	13354	200	13154	136
1979-80	13154	833	13987	210	13777	142
1980-81	13777	859*	14636	220	14416	149
1981-82	14416	934	15350	230	15120	156
1982-83	15120	968	16088	241	15847	164
1983-84	15847	1101	16948	254	16694	173
1984-85	16694	1289	17983	270	17713	183

* Out-turn estimated for 80-81 to 84-85.

Based on In-depth study on student wastage in Engineering colleges & Polytechnics, Kerala.

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(ii) Engineering Diploma holders:-

The stock of Engineering diploma holders at the end of 84-85 as estimated, in Table No. 8 below, stands at 24860. The growth index is 164 indicating 64 per cent increase in the stock over 1971-72.

Table no. 8 Stock of Engineering diploma holders

Year	Stock in the beginning of the year	Additions during the year	Total (col.2+3)	Attrition loss (1.5% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1971-72	14660	772	15432	231	15201	100
1972-73	15201	579	15780	237	15543	103
1973-74	15543	503	16046	241	15804	104
1974-75	15804	495	16299	244	16055	105
1975-76	15995	667	17062	253	16806	111
1976-77	16806	965	17771	267	17504	115
1977-78	17504	1339	18893	283	18610	122
1978-79	18610	1377	19987	300	19687	130
1979-80	19687	1047*	20734	311	20423	134
1980-81	20423	1133	21556	323	21233	140
1981-82	21233	1207	22440	337	22103	145
1982-83	22103	1251	23354	350	23004	151
1983-84	23004	1264	24268	354	23904	157
1984-85	23904	1335	25239	379	24860	164

* Out turn estimated for 79-80 to 84-85.
 ** Technical Education Department.

(iii) Engineering Certificate holders:-

Table no. 9 shows that stock of engineering certificate holders in 84-85 would be 38940 marking about two times growth as indicated by the growth index which is 273 in 84-85.

Table no. 9 Stock of Engineering Certificate holders

Year	Stock in the beginning of the year	Additions during the year	Total (col.2+3)	Attrition loss (1.5% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1974-75	33251	3546**	36797	552	36245	100
1975-76	36245	3361	39606	594	39012	108
1976-77	39012	4411	43423	651	42772	118
1977-78	42772	3340	46112	692	45420	125
1978-79	45420	3461	48881	732	48148	133
1979-80	48148	7356	55504	832	54671	151
1980-81	54671	1085*	65526	983	64542	178
1981-82	64542	9917	74441	1117	73324	202
1982-83	73324	9917*	83241	1249	81992	226
1983-84	81992	9917	91909	1379	90530	250
1984-85	90530	9917	100447	1507	98940	273

* Anticipated out turn for 82-83 to 84-85
 ** Source Employment & Training Department.

(iv) Composition of Engineering degree holders:-

The stock of engineering graduates is given in table no. 10 below. As is evident from table no. 10 below, stock of graduates in 1984-85 would consist of 94.2% employed and 5.8% unemployed ones.

Table no. 10. Composition of the stock of Engineering graduates.

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
	2	3	4	5	6	7
1971-72	8360	100	1315	100	9675	100
1973-74	9487	113	947	72	10434	108
1978-79	10242	123	911	69	11154	116
1984-85	15626	187	1027*	78	17213	183

* Anticipated.

(v) Composition of Engineering diploma holders:-

The estimated stock of engineering diploma holders as given in Table no. 11, consists of 75.8% employed and 24.2% unemployed diploma holders. The extent of unemployment among Engineering diploma holders is seen more and the index of unemployment which stand at 221 by the end of 1984-85 indicates the severity of the problem.

Table no. 11. Composition of Engineering diploma holders.

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1971-72	12483	100	2713	100	15201	100
1973-74	13446	108	2358	87	15804	104
1978-79	16091	129	3596	132	19687	130
1984-85	13841	151	6019*	221	24830	164

* Anticipated

/contd. . . 14/-

(vi) Composition of Engineering Certificate holders

As is revealed in Table no. 12 unemployment seems to be more in respect of Engineering certificate holders. The estimates for 84-85 indicates that 25.3% would remain unemployed.

Table no. 12. Composition of Engineering Certificate holders

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1974-75	23111	100	13134	100	36245	100
1978-79	30945	134	17203	131	48148	133
1984-85	73907	320	25033	191	98940	273

6. Medical personnel:-

(1) Medical Graduates

Stock of medical graduates at the end of 84-85 is estimated to be 9604 showing a growth of about 84% within a period of 4 years. The details of estimation are as hereunder.

Table no. 13. Stock of medical Graduates

Year	Stock in the beginning of the year	Additions during the year	Total (col. 2+3)	Attrition loss (2% of col. 4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1971-72	4890	426	5316	106	5210	100
1972-73	5210	488	5698	114	5584	107
1973-74	5534	486	6070	121	5949	114
1974-75	5949	483	6432	129	6303	121
1975-76	6303	464	6767	135	6632	127
1976-77	6632	546	7178	144	7034	135
1977-78	7034	466	7500	150	7350	141
1978-79	7350	572	7922	158	7764	149
1979-80	7764	427	8191	164	8027	154
1980-81	8027	474	8501	170	8331	160
1981-82	8331	595	8926	179	8747	168
1982-83	8747	454	9201	184	9017	173
1983-84	9017	473*	9490	190	9300	179
1984-85	9300	500*	9800	196	9604	184

* Estimated

(ii) Paramedical Nurses:-

Table no.14 shows that stock of general Nurses will be 11002 in 1984-85. The index of growth stands at 192 indicating about double the strength of the category in 1984-85.

Table no. 14. Stock of General Nurses.

Year	Stock in the beginning of the year	Additions during the year	Total (col. 2+3)	Attrition loss (2% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1973-74	5375*	464	5839	117	5722	100
1974-75	5722	308	6030	121	5909	103
1975-76	5909	413	6322	126	6196	108
1976-77	6196	594	6790	136	6654	116
1977-78	6654	444	7098	142	6956	122
1978-79	6956	471	7427	149	7278	127
1979-80	7278	900	8178	164	8014	140
1980-81	8014	60	8624	172	8452	148
1981-82	8452	843	9295	186	9109	159
1982-83	9109	843**	9952	199	9753	170
1983-84	9753	843	10596	212	10384	181
1984-85	10384	843	11227	225	11002	192

* As per Register of Kerala Government Nurses & Midwives Council

** Anticipated (82-83 to 84 - 85) Manpower studies Vol. 1 (Page 268).

(iii) Paramedical staff - As table 15 records ANMS by the end of 1985 registering an increase of position in 1973-74.

Table no. 15 STOCK OF ANMS

Year	Stock in the beginning of the year	Additions during the year	Total (col.2+3)	Attrition loss (2% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1973-74	5165*	97	5262	105	5175	100
1974-75	5175	136	5293	106	5187	100
1975-76	5187	143	5330	107	5223	101
1976-77	5223	150	5373	107	5266	102
1977-78	5266	158	5424	108	5316	103
1978-79	5316	158	5474	109	5365	104
1979-80	5365	158	5523	110	5413	105
1980-81	5413	155	5568	111	5457	105
1981-82	5457	128	5585	112	5473	106
1982-83	5473	158	5631	113	5518	107
1983-84	5518	158**	5676	114	5562	107
1984-85	5562	158**	5720	114	5606	108

* As per Register of Kerala Govt. Nurses & Midwives Council.

** Anticipated.

(iv) Paramedical (Pharmacists):-

Stock of pharmacists in 1984-85 is estimated/7097. The table given below shows a comparatively low growth rate in the number of pharmacists.

Table 16. Stock of Pharmacists.

Year	Stock in the beginning of the year	Additions during the year	Total (col.2+3)	Attrition loss (2% of col.4)	Stock at the end of the year	Index
1	2	3	4	5	6	7
1975-76	6663*	166	6829	137	6692	100
1976-77	6692	185	6877	138	6739	101
1977-78	6739	196	6935	139	6796	102
1978-79	6796	198	6994	140	6854	102
1979-80	6854	176	7030	141	6889	103
1980-81	6889	183	7072	141	6931	104
1981-82	6931	185	7116	142	6974	104
1982-83	6974	185**	7159	143	7016	105
1983-84	7016	185	7201	144	7057	105
1984-85	7057	185	7242	145	7097	106

* Register of Medical Council (1976).

** Anticipated (82-83 to 84-85)

(v) Composition of medical personnel:-

Table no. 17 below reveals that in 1984-85 5.2% of the stock of Doctors would be unemployed. But as they are self employable, their registration with Employment Exchanges cannot be taken as a crucial indicator of unemployment among this category.

Table 17: Composition of medical personnel

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1971-72	4783	100	427	100	5210	100
1973-74	5475	114	474	111	5949	114
1978-79	7313	153	451	106	7764	149
1984-85	9103	190	501*	117	9604	184

* Anticipated.

(vi) Composition of General Nurses:-

The composition of General Nurses among the paramedical category shows that in 1984-85 12.6% of pharmacists would be unemployed and the index of unemployment which stand at 256 compared to 1973-74 shows the mounting unemployment for them over the period.

Table 18. Composition of General Nurses

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1973-74	5178	100	544	100	5722	100
1978-79	6533	126	745	137	7278	127
1984-85	9611	186	1391	256	11002	192

/contd. . . . 13/-

(vii) Composition of ANMS

The estimates of ANMS for 84-85 shows that, of the total stock stock of 5606 persons at the end of 1984-85, 8.9% would remain unemployed. The categorisation of employment unemployment is given below.

Table no. 19. Composition of ANMS

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1973-74	4492	100	683	100	5175	100
1978-79	4768	106	597	87	5365	104
1984-85	5108	114	498	73	5606	108

(viii) Composition of pharmacists:-

In the estimates of pharmacist, for 84-85 it is seen that about 23% would be unemployed among this paramedical category of manpower. The index of unemployment shows an increasing trend over the period of ten years.

Table no. 20. Composition of pharmacists

Year	Employed		Unemployed		Total stock	
	Number	Index	Number	Index	Number	Index
1	2	3	4	5	6	7
1975-76	5365	100	1327	100	6692	100
1978-79	5316	99	1538	116	6854	102
1984-85	5473	102	1624	122	7097	106

7. Summary:-

1. The extent of imbalances in the field of technical manpower have been analysed to get an idea of the magnitude of this problem in the state. Unemployment of technical manpower exists in the state, though at varying degrees in respect of different categories under reference.
2. About 4% of Agricultural personnel in the state would be unemployed by the end of 1984-85 and the problem shows a growing tendency in the 6th five year plan period.
3. Employment opportunities of veterinary personnel have been on the increase and less than 1% would remain unemployed.
4. By the close of the 6th five year plan, the stock of engineering degree holders would almost be double than that of the 71-72 position. About 6% of engineers would be unemployed in the state by 1984-85.
5. Engineering diploma holders may be about 65 percent more in number than that of the 71-72 stock, by the end of 6th plan and unemployment among them was found to be severe since 24% of the total stock remain unemployed. Besides, unemployment index have been on the increase indicating the rising problem of unemployment among this manpower group.
6. By the end of 6th five year plan Engineering certificate holders would be more than double in number than that of 74-75 position. About 25% would be unemployed and the problem of unemployment among them is on the increase.
7. Stock of Doctors would be almost doubled by the year 84-85 and about 5% would remain unemployed. But doctors are a self-employable community.
8. The paramedical category of manpower also faces the problem of unemployment inspite of increasing employment opportunities for them in outside countries.
9. In the context of significant level of unemployment (and its increasing trend) of technical manpower category in the state, steps are imminent either to control the annual additions to stock or to provide employment opportunities to this specialised group of manpower.

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