Due to failure of monsoon in *kharif*, 1987 almost the entire state of Haryana came under the grip of severe drought affecting adversely the entire cropped area. The rainfall was so deficient that sowing of *kharif* crops could not take place in many areas. The damage to crops was estimated at Rs. 702 crore. The GOI was approached through a comprehensive financial memorandum for seeking financial assistance. Against this demand, an amount of Rs. 37.225 crore was sanctioned by the GOI as shown in Table 6.

1.2 There was further worsening of drought situation in the State, as there was very scanty rainfall at the time of *rabi* sowing. As such *rabi* crops could not be sown in the targeted area and a loss of about Rs. 400 crore worth of in agriculture production was anticipated. In view of the worsening situation it was felt that the assistance already released by the GOI would not be sufficient to provide relief to the affected people to the desired extent. The State Government submitted a supplementary memorandum but the GOI did not sanction any additional amount on the ground that since margin money of Rs. 4.50 crore would be available from April, 1988, the expenditure be met out of the available margin money for 1988-89.

Table 6: Departmentwise Allocation of Central Assistance Sanctioned by the GOI for Drought Relief, 1987

S. No	Department	Scheme	Amount (Rs. in crore)
1.	Agriculture	(i) Agriculture Input Subsidy.	4.000
		(ii) Incentive Scheme for Growing Fodder.	0.875
2.	Revenue/Animal Husbandry	Assistance for Fodder.	4.200
3.	Animal Husbandry	Veterinary Care	3.800
4.	Health	Health Care	0.500
5.	Social Welfare	Supplementary Nutrition.	2.000
6.	Public Health	(i) Drinking Water Supply	5.150
		(ii) Purchase of Rigs.	0.700
7.	Development	Employment Generation.	10.000
8.	Irrigation	(i) Employment Generation.	2.000
		(ii) Irrigation Projects	1.000
9.	Public works Department (Buildings and Roads) [(PWD (B & R)]	Employment Generation	1.000
10.	Haryana State Electricity Board (HSEB)	Employment Generation	2.000
	Total		37.225

Organisational Response

2.1 For providing relief to the people in the drought affected area, the State Government set up a Cabinet Sub-Committee on drought under the Chairmanship of the Deputy Chief Minister with Irrigation and Power Minister, Development Minister, Agriculture Minister, and Revenue Minister as members and Financial Commissioner (Revenue) as its member-Secretary.

2.2 A Committee of Secretaries was also set up under the Chairmanship of Chief Secretary to review the drought situation in the State and for taking corrective measures. District Level Disaster Advisory Committees were set up under the Chairmanships of Deputy Commissioners to oversee the progress of drought relief measures.

Employment Generation

3.1 For providing gainful employment to the landless and agricultural labourers and the vulnerable sections of the society in the drought-hit area, the GOI sanctioned an amount of Rs. 15 crore. Against this amount, 63 lakh manday were generated upto 31st March, 1988.

3.2 The State Government decided that the following works would be taken up on priority basis:— (i) Earth work and brick paving of small patches of links between village link roads and village *abadi,* (ii) Digging and brick lining of water channels connecting the village ponds with canals, (iii) Paving of village lanes, (iv) Other works of public utility like construction of veterinary, stockman centres, *panchayat ghars,* repair/addition to village school buildings, etc.

Drinking Water

4.2 Out of 6,745 villages of Haryana, 5,686 villages are problem villages from the drinking water supply point of view. Although 4,532 villages have been supplied piped water, 68 villages have only 2.5 gallons water supply per head per day and 556 villages upto 5 gallons per head per day. Contingency plans for supplying drinking water were formulated both for rural and urban areas. Water tankers were used for supplying drinking water wherever necessary. 80 new sintex tanks were purchased for transporting drinking water to the scarcity area.

4.2 The GOI sanctioned a sum of Rs. 5.15 crore for drinking water supply in rural and urban areas and Rs. 70 lakh for purchase of rigs. Further an amount of Rs. 50 lakh was sanctioned for this

purpose in 1988-89. The Public Health Department proposed to utilise this amount as shown in Table7.

Table 7: Proposed Utilisation of Funds by Public Health Department for Drinking Water Supply in Haryana, 1987-88.

S. No	Scheme	Amount (Rs. in lakh)
	(a) **Rural**	
1.	Sinking of 75 tubewells	150
2.	Additional Storage Arrangements in Ambala, Hissar, Bhiwani, Rohtak and Sirsa districts.	230
	(b) **Urban**	
1.	Installation of 25 Additional Tubewells	50
2.	Additional Storage Capacity in Bhiwani, Rohtak, Sirsa, Karnal, Jind, Hissar and Mohindergarh districts.	55

In addition, an amount of Rs. 1.19 crore was sanctioned to Public Health Department/Deputy Commissioners for drinking water supply schemes.

Cattle Care

5.1 To make fodder available in the drought affected area, an amount of Rs. 59 lakh was sanctioned to the Deputy Commissioners (DCs)/Director of Animal Husbandry (DAH) as revolving fund for the purchase and distribution of fodder by the State Government. In addition the GOI sanctioned an amount of Rs. 4.20 crore as fodder subsidy. Besides this, an amount of Rs. 40 lakh was sanctioned out of State budget. The entire amount was allocated to the Deputy Commissioners/Animal Husbandry Department for fodder subsidy. The fodder was first supplied to the cattle owners at the rate of Rs. 65 per quintal by providing cash subsidy upto Rs. 25 per quintal besides meeting the total transport charges.

5.2 Subsequently it was found that due to continued dry spell, the purchasing power of the people had declined and they were not in a position to purchase fodder at the rate of Rs. 65 per quintal. The State Government, therefore, decided to increase the cash subsidy upto Rs. 40 per quintal and supplied the fodder at the rate of Rs. 50 per quintal, besides meeting the transport charges in full. Fodder was supplied on these subsidised rates to the *gaushalas* also both in rural and urban areas. There was an influx of cattle from Rajasthan and it was decided to supply free fodder to the stray and such migrant cattle and bulls maintained by the *panchayats*.

5.3 An amount of Rs. 25.50 lakh was placed at the disposal of DCs to meet the expenditure for providing free fodder. A quantity of 9.39 lakh quintal (11,741 trucks) of fodder was distributed upto 31st March, 1988. A cattle owner was allowed to purchase upto 2 quintals of fodder per cattle at subsidised rate subject to a limit of 4 quintals per month and 20 quintals for the whole drought period.

5.4 To provide drinking water for cattle the Irrigation Department issued instructions to the field officers to fill the ponds with canal water. The State Government sanctioned an amount of Rs. 32.50 lakh to the Irrigation Department and DCs., for meeting the operational charges for filling up the ponds. About 6,000 ponds were filled with drinking water for cattle in drought affected area upto 31st March, 1988. During 1987-88 an amount of Rs. 10.60 lakh was sanctioned for the supply of free fodder for stray and migrant cattle. Further, an amount of Rs. 20 lakh was sanctioned for providing fodder at subsidised rate.

5.5 Due to non-availability of clean drinking water and scarcity of fodder the cattle health was also affected. The shortage of mineral in-take and imbalance in feeding led to various diseases in cattle.

The entire population of 80 lakh cattle was affected and the cattle needed supplementary feeding. The GOI sanctioned an amount of Rs. 3.80 crore for veterinary care and the Animal Husbandry Department provided prophylactic vaccination against various contagious and non-contagious diseases to 110.29 lakh animals. 12.13 lakh animals were treated and 17.81 lakh animals were given deworming treatment. 3,660 Special Camps were organised for giving veterinary care to the needy cattle.

Contingency Crop Planning

6.1 The agricultural production was badly affected due to complete failure of rains during *kharif*, 1987 and continued dry conditions. The paddy and *bajra* crops which are the main crops of the State, could not be sown in targeted area. The estimated loss in agricultural production was worth Rs. 702 crore. An assistance of Rs. 55.59 crore was asked for from the GOI to provide subsidy on seed and fertilizers and for plant protection, minor irrigation and soil conservation. Against this demand the GOI released a sum of Rs. 4.87 crore which was fully utilized by giving 25 percent subsidy on seeds and fertilizers and 50 percent subsidy on pesticides. Mini fodder seed kits were also distributed to farmers. In addition to the amount of Rs. 4.87 crore sanctioned by the GOI, a sum of Rs. 3 crore was sanctioned by the State Government for meeting expenditure on subsidy, seeds and fertilizers.

6.2 The failure of winter rains further affected the *rabi* sowing and in the initial stages it was estimated that the loss in agriculture produciton will be worth more than Rs. 400 crore which was estimated to be Rs. 374 crore on the basis of harvesting results. A supplementary memorandum seeking an additional assistance of Rs. 317 crore out of which Rs. 34.52 crore was for agriculture sector was submitted to the GOI, but no assistance was sanctioned. The GOI, however, sanctioned a sum of Rs. 4.50 lakh for supplying 6,000 minikits of vegetables. This amount was also utilized.

Public Distribution System (PDS)

7. To curb the rise in prices of essential commodities various measures were taken. Instructions were issued to all the D.Cs./District Food and Civil Supplies officers (DFCSOs) to conduct raids/ inspections, enforce stock limits, monitor availability and supply position of vegetable ghee/oil, etc. There was no scarcity of levy sugar. However, Consumer Federation was directed to push up lifting of imported free sale sugar to arrange its maximum distribution in the State. Availability and supply of wheat, rice, cloth and salt was satisfactory. There was no shortage of diesel in the State. The Fair Price Shops (FPSs) were instructed to keep in stock atleast two bags of wheat, one bag of rice, one bag of imported sugar and five tins of imported edible oil for distribution. The card holders were supplied 80 kilogram wheat/atta every month. A constant vigil was kept to keep prices under check.

Public Health

8. In order to prevent the spread of diseases special cells were created at State headquarters and in field. Wells were chlorinigated regularly to provide safe drinking water. Chlorine tablets were distributed for placing them in water pitchers, Anti-fly measures were also taken. An amount of Rs. 5 lakh was released for the purchase of medicines for combating the diseases and Rs. 50 lakh was also sanctioned out of the GOI assistance. During 1988-89, an amount of Rs. 5 lakh was sanctioned for public health measures.

Social Security

9. An amount of Rs. 2 crore was allocated for supplementary nutrition to children and nursing/ expectant mothers in the blocks not covered by the ICDS programme. The scheme in ICDS programme was implemented by Social Welfare Department and in 39 non-ICDS blocks by the Development and Panchayats Department.

Himachal Pradesh faced drought on an unprecedented scale during 1987. A damage worth Rs.281.58 crore was evaluated against which the State Government demanded Rs.273.53 crore from the GOI as financial assistance. The GOI assistance of Rs.18.11 crore was received during the month of November, 1987. The State Government, even without waiting for the Central assistance, rose to the occasion immediately and took a variety of relief measures.

Organisational Response

2.1 At the State level, the overall situation arising out of a natural calamity is taken stock of (including monetary requirement); policy decisions are taken and guidelines issued to the Divisional Commissioners/Deputy Commissioners(DCs). The follow-up action on the decisions taken at the State level as well as mointoring of follow up action are done by the Financial Commissioner(Revenue) who is the Relief Commissioner . The Divisional Commissioners co-ordinate the relief work in their respective divisions through the DCs of their divisions. The DCs are the authorities who are responsible to initiate and conduct relief work in their districts for which standing guidelines already stand issued in the form of the *Himachal Pradesh Emergency Relief Manual.* Co-ordination of work of different Departments as well as participation of people's representatives in relief work is ensured through the District Relief Committees and District Heads of concerned Departments.

2.2 At the village level, *Patwari* is the Government representative who is required to inform about the occurrence of a natural disaster in his jurisdiction. He sends information to the *tehsil* and concerned *Tehsildar* immediately informs the Sub-Divisional Officer [Civil) (SDO(C)] at the sub-divisional level and the DCs at the district level. On receipt of information, the DCs immediately handle the situation and conduct the relief operations. The public representatives also inform the State Government about the natural disasters in their respective area. Besides, petitions/complaints and representations are received at the sub-divisional level, the district headquarters and the State level. These representations are attended on priority and immediate relief is provided to the disaster affected persons..

2.3 Ten districts out of a total of 12 districts in Himachal Pradesh are connected with teleprinters and telex messages are received at the headquarters within no time. Besides, district headquarters are also connected by police wireless. Thus, information about the occurrence of a natural calamity in a particular area is received immediately at all the levels.

Employment Generation

3. With a view to provide gainful employment to the affected people, a sum of Rs.10.8 crore was released under the employment generation programmes. Under the employment generation programmes, the allocation was made to the various districts while keeping the factors like human population affected, crops loss, average of these two, etc. in view.

Water Supply and Irrigation

4.1 The main source of water supply and irrigation are springs, *khads*, rivers and ground water. Springs form important source of water supply at higher elevation and along valley slopes are extensively used for drinking water supply and irrigation. Innumerable contour channels called *khuls* were constructed for diverting the water of springs for meeting local irrigation needs.

4.2 Ground water is available in the valleys. The major valleys are Balh valley in Mandi district, Nurpur valley and Indora tract in Kangra district, the valley in Una district and Nalagarh valley in Solan district and Paonta valley in Sirmaur district. The depth of water level varies greately from a few metres below ground level to as much as 100 metre below ground level. Due to severe drought conditions prevailing in the State, the discharges of springs and *khads* had considerably reduced while in case of tubewells water level had gone down.

Essential Commodities

5.1 Due to drought, the sharpest rise was faced in the price of edible oils. It was mitigated to a greater extent by increasing allocation of imported edible oils to the State by the GOI. The essential commodities such as wheat, wheat atta, rice and *dals* were supplied on subsidy for four months as under:-

(a) Wheat and wheat *atta:* A quantity of 12 kilogram per adult and 6 kilogram per child per month at the subsidised rate of Rs. 1.55 per kilogram for wheat and Rs. 1.75 per kilogram for wheat *atta* in non-tribal area and Rs. 1.25 per kilogram for wheat and Rs. 1.50 per kilogram for wheat *atta* in tribal area.
(b) *Rice*: A quantity of one kilogram per head per month at a subsidised rate of Rs. 2.50 per kilogram.

(c) *Dals:* A quantity of 2.5 kilogram (one kilogram of *chana dal* and 1.5 kilogram of *mash dal*) per ration card per month at the subsidised rates of Rs. 4.00 per kilogram for *chana dal* and Rs. 4.50 per kilogram for *mash dal.*

The supplies of subsidised pulses were further increased to three-and-half kilogram for families with seven or more members.

5.2 Drought conditions usually result in an attempt on the part of the traders to inordinately increase the prices. The State Government had taken effective measures to see that all essential commodities continue to be available at reasonable prices. The DCs were given necessary instructions to open more fair price shops (FPSs), wherever these were required. Instructions were also issued to ensure that the provisions of the Essential Commodities Act were strictly enforced. They were also asked to take action under Price Control Order and to keep watch on the stocks under *Himachal Pradesh*

Trade Articles (Licensing and Control) Order, 1981, Himachal Pradesh Price, Marketing and Display Order, 1977 and Himachal Pradesh Hoarding and Profiteering Order, 1977.

5.3 There is network of retail points as well as whole sale godowns in the State where food and clothes are always available under the public distribution system (PDS). Regarding medicines, the State Government did not feel handicapped since there is an inbuilt system to make medicines available to the victims of natural calamities. The stocks of medicines/disinfectants are immediately supplemented/replaced by allocation of special funds by the State Government for the purpose.

5.4 Relief must percolate down to the grass roots level. Hence, it was considered best to provide relief in kind instead of cash. Perhaps, Himachal Pradesh is the only State where the essential commodities were provided on highly subsidised rates to the affected people.

Contingency Crop Planning

6. Where the crops had survived to some extent, in spite of severe drought, farmers were advised to top dress the crops with nitrogenous fertilisers. For vacant fields, the farmers in lower and medium hills were advised to sow *toria* till middle of September, 1987. Fifteen quintals of *toria* seeds were distributed for the purpose. In medium and high hill areas, the farmers were advised to sow *arkal* peas. 2,821.75 quintals of pea seeds were distributed. 39,830.70 quintals of wheat seeds were supplied to the farmers during *rabi* 1987-88, other seeds required for *rabi* 1987-88 were also evaluated and arranged for timely supply. 62,228 quintals of improved high yielding variety seeds were supplied during the year 1987-88 in *kharif* 1987 and *rabi* 1987-88. Eight new micro watersheds were constructed during 1987-88 against the target of ten micro watersheds. 2,100 hectare of land was brought under land development during 1987-88 against the target of 2,100 hectare. 80 seed-cum-fertiliser drills and 21,966 other improved agricultural implements were distributed against the target of 300 and 16,000 respectively in 1987-88. As much as 76,628 hectare of land was covered outside the selected watersheds with dry farming practices.

Long-term Measures

7.1 Natural calamities cannot be predicted. Whenever such calamities occur, steps are always taken to combat such calamities. Uptill now, the experience has been that changing weather conditions leading to 'drought' etc. have become frequent. Therefore, what is best needed is to adopt long-term measures to help combat the situation arising out of repeated drought, etc. Long-term measures to check the drought phenomena permanently require large funds. The funds available with the State Government are meagre as compared to total requirement. The State Government is fully alive to the need and significance of taking long term measures. It is with this end in view that the State Government issued necessary instructions to the DCs to revise their shelf of projects and assign highest priority to the water conservation and water harvesting schemes. Secondly, to achieve these objectives, creation of assured irrigation facilities has also been considered to be of prime importance. The State Government has also been according high priority to this sector in its recent plans.

7.2 Other measures include dryland farming, water harvesting storage structures and soil and water conservation on agricultural land. The relief works undertaken in Himachal Pradesh also aimed at water harvesting structures which apart from creating employment generation also resulted in combating drought as a long-term measure

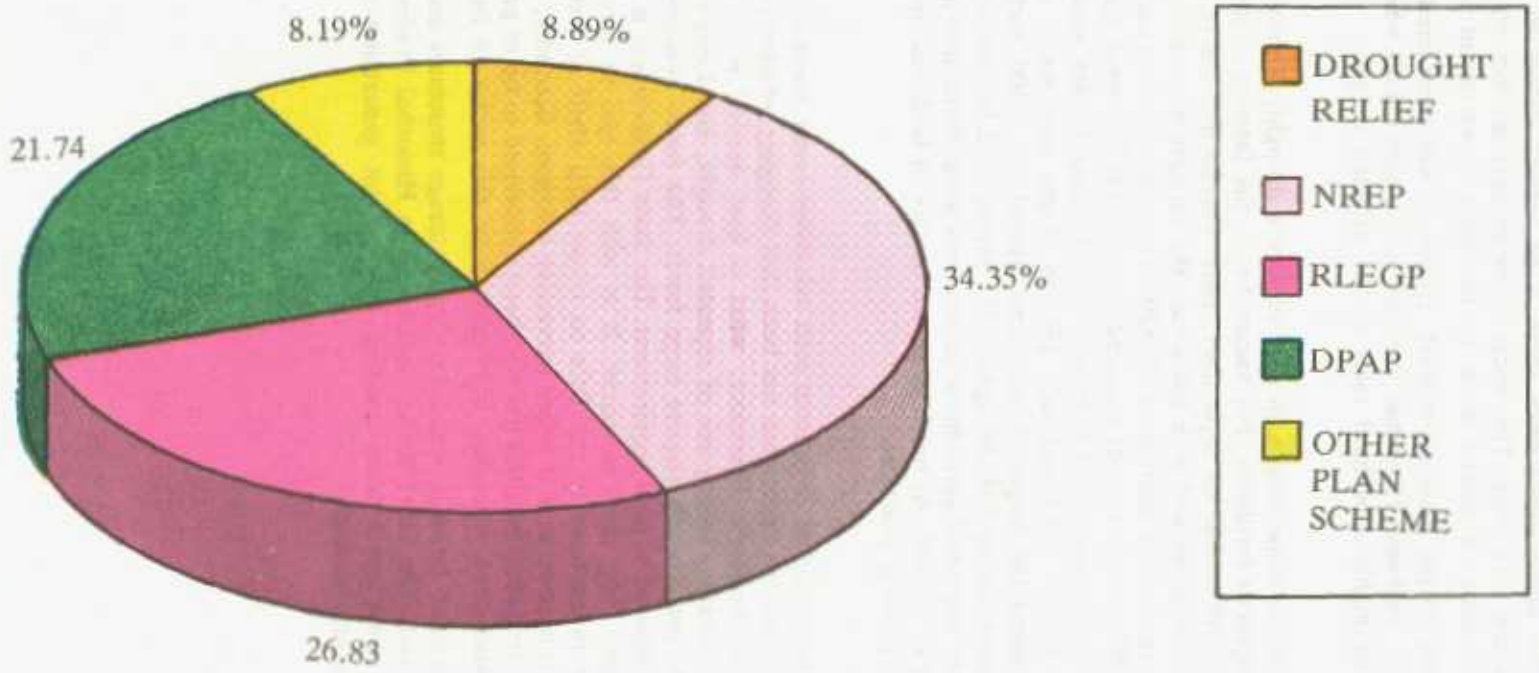

Figure 6: Percentage Daily Labour Employed under Employment Oriented Works in Karnataka 1987-88.

For the fifth successive year Karnataka experienced serious drought due to the erratic behaviour of the South-west monsoon. The rainfall received in the State was below normal continuously from March 1987 onwards except in June, August and September. After a dry spell during the first three weeks in June, there was widespread rainfall only in the last week, followed by another continuous dry spell for almost the entire month of July. In August, 1987, there were widespread rains in the first fortnight, while in September, 1987, there were widespread rains during the second fortnight. Further, the spatial distribution of rainfall was quite abnormal throughout this season. In total, the rainfall received in all parts of the State, especially in the coastal and *malnad* districts which are traditionally heavy rainfall areas, has been less as compared to not only normal years but even to the previous year which itself was drought year.

1.2 The rainfall in general was insufficient for taking up agricultural operations as contemplated. As a result, the normal agricultural operations were delayed considerably. In April, 1987, there was no rainfall in 99 *taluks* and it was insufficient in 68 *taluks* out of 175 in the State. In May, 1987, the rainfall was insufficient in about 100 *taluks*. As such agricultural operations like preparatory tillage, sowing and transplanting operations could not be taken up satisfactorily upto middle of June.

1.3 The widespread rains received in the last week of June helped in taking up agricultural operations in full swing but again in July there was insufficient rainfall in 160 *taluks* out of 175. Failure of monsoon in many parts of the State inclusive of *malnad* parts affected agricultural operations badly. Due to prevalance of long dry spells in many parts of the State early sown *kharif* crops of *jowar,* sesame, greengram, blackgram and groundnut were affected including to some extent the crops of cowpea, redgram, sunflower, cotton and tobacco. Also, sowing and transplanting operations were held up in some parts, the area covered was 63 per cent of the normal in the State upto end of July. The coverage of area was poor particularly in Bangalore, Kolar, Tumkur, Mandya and Kodagu districts due to scanty rainfall. The coverage in Mysore, Hassan, Chickmagalur, Chitradurga and Shimoga was also below normal.

1.4 On account of widespread rains in August agricultural operations were again taken up in full swing and crops which were withering due to dry spell in July were able to recoup But due to scanty rains from the last week of August upto middle of September the crops again started to wither except in Bidar and parts of Gulbarga districts. Sowing and transplanting operations were once again held up in some parts and dryland crops were adversely affected in some parts of the State.

1.5 Due to widespread rains from the second fortnight of September the remaining agricultural operations were completed and the crops which had started to wither were able to recoup. But the scope for the recovery of the crop from deterioration which were adversely affected previously was little. However, more rains were needed for the vegetative growth as well as for improving the crop condition. The area sown during *kharif* was about 98 per cent of the normal.

1.6 *Rabi* season commences from middle of September and ends by December. The timely sowing operations of *rabi* crops depend much upon south-west monsoon while the crop growth depends on north-east monsoon. *Rabi* sowings predominantly take place in northern parts of the State. The rainfall was excess/normal in major parts of the State starting from September, 1987 up to middle of December 1987.

1.7 The timely and sufficient widespread rainfall in September helped in taking up timely sowing/ transplanting operations of *rabi* crops as well as to complete the sowing of late *kharif* crops. So far the sowing and transplanting operations had almost come to an end in major parts ot the State. Also, preparatory tillage and summer sowing had commenced and they were in progress in some parts of the State.

1.8 The crop condition was satisfactory except the crops affected by excess rainfall and prevalence of cloudy atmosphere like crops of sunflower, gram, *jowar,* cotton, *tur,* groundnut, etc., were affected.

1.9 Due to insufficient rains in a large number of areas in Karnataka, the State Government made periodical assessments of scarcity conditions. The situation at the end of each month is shown in Table 8.

1.10 At the end of March, 1988, 4.36 lakh small farmers, 5.75 lakh marginal farmers and 10.24 lakh agricultural labourers were affected out of a total population of 10.99 lakh small farmers, 14.89 lakh marginal farmers and 36.42 lakh agricultural labourers in the State. As many as 10.10 lakh labourers were to be provided employment. The district-wise details of the small farmers, marginal farmers and

Table 8 : Monthwise Assessment of Scarcity Conditions in Karnataka, 1987.

S.No.	Month	Number of Districts	Number of *Taluks*	Number of Villages				Small and Marginal Farmers Affected (in lakh)	Agricultural Labourers Affected (in lakh)	Cattle Affected (in lakh)
				Most Acutely Affected	Acutely Affected	Not so Acutely Affected	Total			
1.	July	18	127	4586	5801	5672	16089	15.57	14.62	74.40
2.	August	18	135	4605	9654	5496	19755	14.02	27.90	71 73
3.	September	18	125	2512	6948	5325	14845	12 06	12.59	67.58
4.	October	18	116	1271	4726	4664	11211	8.62	10.21	47.26
5.	November	18	106	1067	3294	6698	11059	8.32	9.54	50.39
6.	December	18	103	938	2875	5439	9252	8.30	9.41	50.71

Table 9 : Districtwise Estimated Loss in Agricultural Production in Karnataka, 1987-88

S. No.	District	Total cultivable land (lakh hectares)	Total production (lakh tonne)	Unsown Area (lakh hectares)	Affected cropped Area (lakh hectares)	Total Affected area (lakh hectares)	Percentage of Area Affected	Estimated loss of production (lakh tonne)	Percentage of loss in production	Value of loss in production (Rs. in lakh)
1.	Bangalore (Rural)	2.56	366.20	0.21	—	0.21	78.00	31.34	81.80	646.00
2.	Bangalore (Urban)	0.93	271.01	—	—	—	—	—	—	—
3.	Belgaum	2.90	257 28	—	—	—	—	—	—	—
4.	Bellary	3.61	239.82	—	0.41	0.41	13.00	18 90	78 00	—
5.	Bidar	4.08	231.00	—	—	—	—	—	—	—
6.	Bijapur	5.57	659.49	0 39	1.19	1.57	28.30	2.32	35.00	14247.18
7.	Chickmagalur	1.77	251.27	0.24	0 60	0.85	48.00	1.03	41.00	2220.40
8.	Chitradurga	4.89	574.59	0.20	2.05	2.25	46.00	142.86	25.00	3995.00
9.	Dakshina Kannada	1.00	301.75	0.03	0.27	0.30	30.00	0.15	31 20	322 06
10.	Dharwad	7.30	814.90	0.22	6.35	6 58	93.00	477.00	58.00	142.59
11.	Gulbarga	6.00	382.14	0 09	—	0.09	1.50	—	—	—
12.	Hassan	2.75	310.21	0 90	1.14	2.03	74.00	2.14	74.00	5575.10
13.	Kodagu	0.49	105.81	0.09	0 04	0.14	28.00	0.30	28.80	45.63
14.	Kolar	8.90	647.00.	—	—	—	—	—	—	—
15.	Mandya	2.41	646.36	—	—	—	—	—	—	—
16.	Mysore	4.89	664 05	—	—	—	—	—	—	—
17.	Raichur	5.50	562.99	—	1.27	1 27	23.10	0.28	5.00	865.71
18	Shimoga	3.07	618.20	—	—	—	—	—	—	—
19.	Tumkur	4.13	402.70	—	—	—	—	—	—	—
20.	Uttar Kannada	0.96	—	—	0.35	0.35	—	—	—	—
	Total	73.69	8306.77	2.37	13.67	16.05	21.78	676.32	8.15	28059.67

Note: As on 31st March, 1988.

agricultural labourers affected during 1987-88, as at the end of March, 1988 may be seen in Annexure-XII.

1.11 As a result of drought of 1987 as on 31st March, 1988, an estimated 2.37 lakh hectare area was unsown whereas as much as 13.67 lakh hectare of cropped area was affected. As such, the total area of 16.05 lakh hectare which is 22 per cent of the total area which was affected. The estimated loss of 676 lakh tonne in production took place which was 8 per cent of the total production. The loss in monetary terms was valued at Rs. 281 crore. The districtwise estimated loss of agricultural production in Karnataka for 1987-88 may be seen in Table 9.

Employment Generation

2.1 The average daily labour employed in employment oriented works during 1987-88 was 5.7 lakh under National Rural Employment Programme (NREP),4.45 lakh under Rural Landless Employment Guarantee Programme (RLEGP), 3.61 lakh under Drought Prone Area Programme (DPAP), 1.36 lakh under other Plan schemes. Whereas the average daily labour employed in employment oriented works under drought relief was 1.47 lakh, the average daily labour employed under all these schemes was as high as 16.60 lakh for all the districts. The district-wise details may be seen in Table 10. The percentage distribution may be seen in Figure 6.

2.2 As a result of implementation of employment oriented works in Karnataka, 213 lakh manday were generated under NREP, 125 lakh under RLEGP, 49 lakh under DPAP, 141 lakh under other Plan schemes, 71 lakh under drought relief works. A total of 599 lakh manday were generated in all employment oriented works during 1987-88 (upto 31st March, 1988). The district-wise details of manday generated in Karnataka may be seen in Table 11. The percentage distribution of the manday generated under employment oriented works in Karnataka during 1987-88 may be seen in Figure 7.

2.3 As many as 35,871 works under various employment-oriented programmes were completed in Karnataka in 1987-88 (upto 31st March, 1988), out of which 16,320 were under NREP; 9,690 under

Table 10 : District-wise Average Daily Labour Employed in Employment-Oriented Works in Karnataka, 1987-88.

S No	District	Drought Relief	NREP	RLEGP	DPAP	Other Plan Scheme	Total
1.	Bangalore (Rural)	20000	139636	17072	1756	—	178484
2.	Bangalore (U)	529	1371	1627	—	—	3527
3	Belgaum	1017	16032	7914	7190	3503	35656
4.	Bellary	13400	85000	167600	156000	—	422000
5	Bidar	—	1641	963	814	2994	6412
6	Bijapur	5729	47801	24611	32820	11943	122904
7.	Chickmagalur	18061	2595	1546	817	1839	24858
8.	Chitradurga	862	16079	10987	5580	15588	49096
9.	Dakshina kannada	—	—	—	—	—	—
10.	Dharwad	7526	4341	2121	125360	1517	140865
11.	Gulbarga	1078	30839	22343	3170	73088	130518
12.	Hassan	12560	151500	97850	16475	—	278385
13.	Kodagu	8002	2512	1566	—	4110	16190
14	Kolar	1000	—	—	—	—	1000
15.	Mandya	2097	2621	3831	224	3200	11973
16.	Mysore	49970	24840	55300	—	12476	142586
17	Raichur	—	23909	19039	7076	—	50024
18.	Shimoga	2000	2022	1425	—	605	6052
19.	Tumkur	2515	16884	8566	3655	3657	35277
20.	Uttar Kannada	1055	576	1014	—	1441	4086
	Total	147401	570199	445375	360937	135961	1659873

Note: Upto 31st March, 1988.

RLEGP; 1,750 under DPAP; 3,343 under other Plan Schemes. The district-wise number of works completed under Employment-oriented Programmes in Karnataka in 1987-88 may be seen in Table 12.

2.4 Creation of physical assets is an important yardstick of the effectiveness of the Drought Relief Programme. In Karnataka, the physical assets created under Drought Relief and other employment-oriented programmes during 1987-88 included formulation of 945 kilometre new roads, 731 kilometre approach roads, improvement of 2,270 kilometre existing roads, construction of 45 new tanks, desilting of 1,365 old tanks, digging of 212 irrigation channels, and soil conservation works in 43,621 hectares of land, 16,254 hectares of plantation under afforestation. In addition, 1312 school buildings and 6992 other buildings were constructed. Also, 2,455 bore wells were dug in rural areas and 997 bore wells were dug in urban areas in Karnataka. The district wise creation of physical assets under drought relief and other employment-oriented programmes in 1987-88 may be seen in Table 13.

2.5 A sum of Rs. 107 crore was spent under various employment-oriented programmes in 1987-88 in Karnataka. Out of this, Rs. 64 crore was spent on NREP (Drought Relief), Rs. 36 crore on NREP (Regular), Rs. 22 crore on RLEGP, Rs. 10 crore on DPAP and Rs. 33 crore for other Departments. The district-wise expenditure incurred under various employment-oriented programmes in 1987-88 in Karnataka may be seen in Annexure-XIII.

Water Supply

3.1 Under Drought Relief Works in Karnataka in 1987-88, a sum of Rs. 5 crore was released for drinking water supply for rural areas, out of which a sum of Rs. 4.86 crore was spent. As many as 603 Minor Water Supply Schemes were completed, 318 Piped Water Supply Schemes were undertaken, 37 Piped Water Supply Schemes were revived, and 213 open wells were dug. The district-wise details of

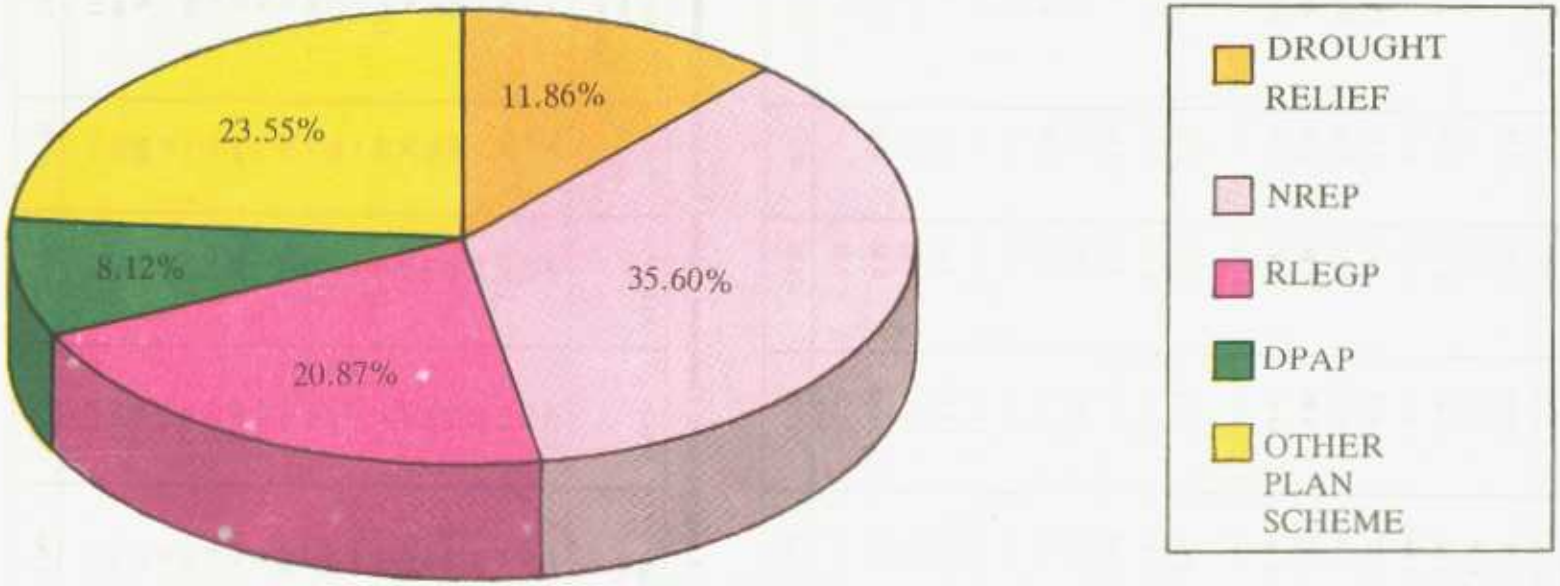

Figure 7: Percentage Distribution of Mandays Gererated under Various Employment-Oriented Works in Karnataka, 1987-88.

Table 11 : District-wise Mandays Generated under Employment-Oriented Works in Karnataka, 1987-88

(Lakh Manday)

S No.	District	Drought Relief	NREP	RLEGP	DPAP	Other Plan Schemes	Total
1.	Bangalore (Rural)	11 59	34.99	4 26	0 44	—	51.28
2.	Bangalore (Urban)	0 38	2.18	1.29	—	—	3.85
3	Belgaum	1 04	15.45	8.83	2.90	2.21	30.43
4.	Bellary	1.88	9.35	9 07	2.60	—	22.90
5	Bidar	0.77	4.79	2 82	2.42	13.57	24 37
6.	Bijapur	1.99	10.17	6 57	5 92	27.81	52 46
7.	Chickmagalur	1 92	6.49	3.86	1.22	4.60	18.09
8.	Chitradurga	1.64	10.65	5.82	2.80	10 23	31.14
9.	Dakshina Kannada	—	—	—	—	—	—
10.	Dharwad	6.19	17.24	10.01	7.29	3.24	43.97
11.	Gulbarga	7 80	20.42	12 10	6.47	33.41	80 20
12.	Hassan	4 49	6.06	3 91	0.66	—	15 12
13.	Kodagu	1.51	0.87	0 65	—	1.28	4 31
14.	Kolar	5.50	15.01	9 97	3.76	4.33	38 57
15.	Mandya	0.81	7.35	9 83	0.45	6 65	25 09
16.	Mysore	12.78	13.44	13.83	—	7 21	47.26
17.	Raichur	1.76	13.17	5.89	2.55	—	23.37
18.	Shimoga	6.87	11.53	10.24	4.37	3 17	36.18
19.	Tumkur	1.25	11.89	4.46	4.80	20 87	43.27
20.	Uttar Kannada	0.91	2.23	1.61	—	2 50	7.25
	Total	71.08	213.28	125 02	48.65	141.08	599 11

Note: Upto 31st March, 1988.

Table 12: Districtwise Number of Works Completed under Employment Oriented Programmes in Karnataka, 1987-88

S No.	District	Drought Relief	NREP	RLEGP	DPAP	Other Plan Schemes	Total
1	Bangalore (Rural)	231	2,536	636	20	—	3,423
2	Bangalore (Urban)	70	346	226	—	—	642
3.	Belgaum	49	651	1,103	56	28	1,887
4	Bellary	111	516	404	93	—	1,124
5	Bidar	53	125	463	30	155	826
6	Bijapur	63	787	811	327	341	2,329
7.	Chickmagalur	230	564	440	38	49	1,321
8.	Chitradurga	224	1,355	1,124	232	1,063	3,998
9	Dakshina Kannada	—	—	—	—	—	—
10	Dharwad	236	431	261	237	101	1,266
11.	Gulbarga	53	426	355	—	294	1,128
12	Hassan	381	644	465	18	32	1,540
13.	Kodagu	51	109	—	—	43	203
14.	Kolar	153	1,745	791	165	20	2,876
15.	Mandya	214	1,083	386	19	320	2,022
16.	Mysore	1,337	1,269	1,027	—	269	3,902
17.	Raichur	57	501	315	75	—	948
18.	Shimoga	977	1,556	568	338	46	3,485
19	Tumkur	146	1,148	150	100	464	2,008
20	Uttar Kannada	132	528	165	—	118	943
	Total	4,768	16,320	9,690	1,750	3,343	35,871

Note upto 31st March, 1988

Table 13: District-wise Physical Assets Created under Drought Relief and other Employment-Oriented Programmes in Karnataka, 1987-88

S. No	District	Formation of Roads		Improvement to existing roads (km)	Construction of new tanks (number)	Desilting of old tanks (number)	Digging of Irrigation Channels (number)	Soil conservation works (hectares) (hectares)	Plantation under Afforestation	Buildings Constructed (Number)		Bore Wells Dug (Number)	
		New Roads (km)	Approach Roads (km)							Schools	Other Buildings	Rural	Urban
1.	Bangalore (Rural)	154	125	51	2	656	47	2,891	—	206	309	183	44
2.	Bangalore (Urban)	9	—	52	—	19	—	130	286	26	294	56	22
3.	Belgaum	20	2	49	2	—	—	25	2,932	1	835	98	42
4.	Bellary	93	21	56	—	1	—	4,248	79	18	42	56	69
5.	Bidar	6	4	9	1	—	7	62	691	7	170	308	32
6.	Bijapur	6	32	27	—	2	—	3,912	48	120	737	320	79
7.	Chickmagalur	66	104	174	10	19	83	285	1,073	49	754	48	26
8.	Chitradurga	—	—	140	—	22	10	185	125	56	140	73	26
9.	Dakshina Kannada	—	—	—	—	—	—	—	—	—	—	87	22
10.	Dharwad	80	33	168	16	57	5	3,339	2,081	146	120	62	123
11.	Gulbarga	—	—	36	—	—	4	4,843	1,479	—	—	127	153
12.	Hassan	68	40	159	—	2	—	975	900	66	9	62	10
13.	Kodagu	35	14	49	—	20	—	—	918	—	33	68	12
14.	Kolar	10	55	306	—	—	56	—	—	156	391	50	77
15.	Mandya	11	5	93	—	—	—	5,571	1,477	147	514	135	30
16.	Mysore	125	200	464	—	375	—	4,934	622	60	53	261	68
17.	Raichur	80	27	183	2	1	—	—	832	72	507	10	33
18.	Shimoga	144	56	13	—	112	—	546	43	22	821	98	27
19	Tumkur	38	13	205	12	2	—	11,543	1,983	110	799	143	35
20.	Uttar Kannada	—	—	36	—	77	—	132	685	50	464	71	37
	Total	945	731	2,270	45	1,365	212	43,621	16,254	1,312	6,992	2,455	997

Note. 1987-88: from 1st April, 1987 to 31st March, 1988

Rural Water Supply Schemes undertaken under Drought Relief in Karnataka in 1987-88 may be seen in Annexure-XIV.

3.2 The Water supply in 71 out of 190 towns in Karnataka was affected in 1987-88. In the Urban Water Supply Schemes taken up under Drought Relief Programme in Karnataka, 997 bore wells were dug. A sum of Rs. 2.75 crore was released for digging of bore wells. Similarly, a sum of Rs. 40 lakh was released for transportation of water. The district-wise Urban Water Supply Schemes taken up under Drought Relief Programme in Karnataka in 1987-88 may be seen in Annexure-XV.

Public Distribution System (PDS)

4.1 As many as 278 Fair Price Shops (FPSs) were opened in Karnataka in 1987-88, bringing the total of Fair Price Shops in the State to 13,185. During 1987-88, 4.65 lakh tonne of foodgrains valued at Rs. 52.64 crore was distributed in Karnataka. The district-wise position of Fair Price Shops in 1986–88 and the quantity of foodgrains distributed and their value may be seen in Annexure-XVI.

5.1 A sum of Rs. 23.42 crore was released to various districts under different schemes under Drought Relief Programme in Karnataka in 1987-88. Out of this, Rs. 6.80 crore was released for employment generation, Rs. 5 crore for supply of drinking water in rural areas and Rs. 2.5 crore for supply of drinking water in urban areas, Rs. 4.40 crore for agricultural minikits, Rs. 2.25 crore for special nutrition, Rs. 25 lakh for health care and Rs. 13 lakh for water supply. In addition, a sum of Rs. 1.42 crore was released for transportation of drinking water in rural areas and Rs. 42 lakh was released for transportation of drinking water in urban areas. The district-wise amount released under Drought Relief Programme for various schemes in Karnataka in 1987-88 may be seen in Annexure XVII.

5.2 In addition, a sum of Rs. 17 crore was released for Major and Medium Irrigation Schemes and Rs. 8 crore for Minor Irrigation Schemes. Similarly a sum of Rs. 1.03 crore was released to Bangalore Water Supply and Severage Board, Rs. 33 lakh to Public Health Engineering Deptt., Rs. 20 lakh to Animal Husbandry and Veteranary Service Department and Rs. 13.50 lakh to Horticulture Department. These releases amounted to Rs. 23.42 crore in 1987-88. Thus, a total sum of Rs. 50 crore was released under Drought Relief Programme in Karnataka under various schemes.

5 KERALA

The failure of north-east monsoon in 1986 in Kerala led to severe drought conditions in the first half of 1987. The south-west monsoon which accounts for 65 per cent of the annual rainfall in the State petered out after a spell in 1987. Drought situation in Kerala had several noteworthy features The picture of lush greenary even in the midst of drought was quite deceptive. A closer look revealed drying up of rivers, streams and springs, drastic fall in the ground water level, and steep reduction in hydel and irrigation reservoirs.

1.2 An agriculture based on heavy rainfall (in the form of crops like coconut, pepper, cardamom, rubber, tea, etc.) and the industry based entirely on hydel power in an area with highest density of population was all the more adversely affected during the drought of 1987. In the industrial sector also there was a fall in production with resultant unemployment and loss in revenue. There was an unprecedented scarcity of drinking water in many parts of the State warranting Government intervention for tackling the situation on an emergent footing

1.3 Kerala receives 65 to 70 per cent of the total rainfall in a year during south-west monsoon (1st June to 30th September). The rainfall deficiency during the period from 1st June to 12th August 1987 in Kerala was as high as (−) 44 per cent of the normal as shown in Table 14. The percentage

Table 14: Districtwise Rainfall in Kerala, 1st June to 12th August 1987

S. No.	District	Rainfall		
		Actual (cm)	Normal (cm)	Percentage (Departure)
1	Alleppey	101	134	(−) 25
2.	Cannanore	128	217	(−) 41
3.	Ernakulam	118	168	(−) 30
4.	Idukki	93	183	(−) 49
5.	Kasargode	136	236	(−) 12
6.	Kottayam	99	149	(−) 34
7.	Kozhikode	119	212	(−) 44
8.	Malappuram	82	169	(−) 51
9.	Palghat	63	129	(−) 51
10.	Pathanamthitta	63	131	(−) 58
11	Quilon	64	101	(−) 38
12	Trichur	131	180	(−) 27
13.	Trivandrum	68	83	(−) 51
14.	Wayanad	71	238	(−) 70
	State Average			(−) 44

improved only slightly by 19th August 1987 when it came down to (−) 38 per cent as shown in Table 15. There was a record low water level in hydel and irrigation reservoirs. There was in fact an alarming down trend in rainfall from 1981 onwards and 1987 proved to be the worst as far as the State is concerned as shown in Table 16. The rainfall distribution over the State during the period from 1st June to 28th August preceding 1987 showed the rainfall deficiency to the extent experienced in 1987 occurred only in 1976 as shown in Figure 8. The districtwise percentage departure of rainfall from normal from 1983 to 1987 in Kerala may be seen in Table 17.

Table 15: Districtwise Rainfall in Kerala, 1st June to 19th August, 1987

S. No.	District	Rainfall		
		Actual (cm)	Normal (cm)	Percentage (Departure)
1.	Alleppey	117	141	(−) 17
2.	Cannanore	148	229	(−) 35
3.	Ernakulam	136	179	(−) 24
4	Idukki	108	197	(−) 45
5.	Kasargode	165	249	(−) 33
6	Kottayam	114	158	(−) 28
7.	Kozhikode	127	222	(−) 43
8.	Malappuram	89	178	(−) 50
9.	Palghat	71	137	(−) 48
10.	Pathanamthitta	72	143	(−) 50
11.	Quilon	78	110	(−) 29
12.	Trichur	146	190	(−) 23
13.	Trivandrum	55	87	(−) 37
14.	Wayanad	81	252	(−) 68
	State Average			(−) 38

Table 16: Percentage Departure of Rainfall from Normal in Kerala, 1981-87

S. No.	Year	Summer Rains	SW Monsoon	NE Monsoon
1	1981	(−) 30	(+) 22	(−) 15
2.	1982	(−) 17	(−) 18	(−) 43
3.	1983	(−) 76	(+) 2	(−) 33
4.	1984	(−) 9	(−) 13	(−) 30
5.	1985	(−) 9	(−) 17	(−) 23
6.	1986	(−) 51	(−) 22	(−) 18
7.	1987	(−) 54	(−) 38*	

Note: *Data upto 19th August, 1987.

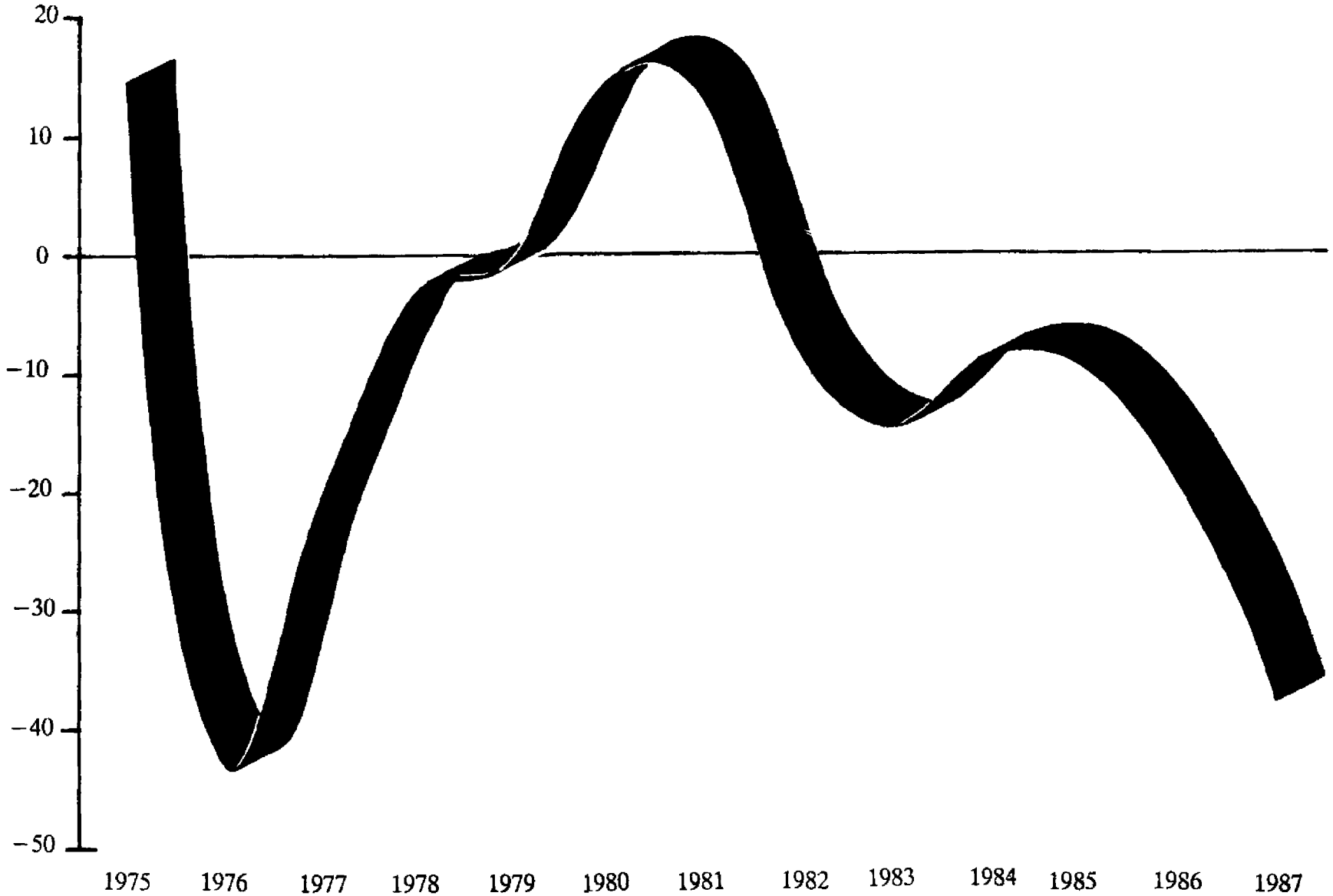

Figure 8: Percentage Departure of Rainfall from Normal in Kerala, 1975-1987

Table 17: Districtwise Percentage Departure of Rainfall in Kerala, 1983-87

S.No.	District	1983	1984	1985	1986	1987
1.	Alleppey	(+) 21	(−) 17	(−) 5	(−) 26	(−) 17
2	Cannanore	(−) 5	(−) 2	(+) 1	(−) 15	(−) 35
3	Ernakulam	(+) 16	(+) 9	(+) 1	(+) 19	(−) 24
4	Idukki	(−) 20	(−) 3	(+) 1	(+) 1	(−) 45
5.	Kasargode	—	(−) 3	(−) 14	(−) 8	(−) 33
6.	Kottayam	(−) 28	(−) 15	(−) 14	(−) 15	(−) 28
7.	Kozhikode	(+) 15	(−) 7	(−) 5	(−) 14	(−) 43
8	Malappuram	(+) 12	(+) 19	(−) 7	(−) 18	(−) 50
9	Palghat	(+) 17	(+) 4	(+) 2	(−) 8	(−) 48
10.	Pathanamthitta	—	(−) 24	(−) 21	(−) 35	(−) 50
11.	Quilon	(+) 29	(−) 18	(−) 5	(−) 21	(−) 29
12	Trichur	(+) 2	(−) 4	(−) 5	(−) 25	(−) 23
13.	Trivandrum	(−) 22	(−) 57	(−) 29	(−) 44	(−) 37
14.	Wayanad	(−) 16	(+) 9	(−) 38	(−) 31	(−) 68

Organisational Response

2.1 The State which is not normally drought prone, drought of 1987 posed a challenge to the State Government in tackling the unprecedented drought. A high level committee at ministerial level under the chairmanship of Chief Minister and another high level committee at official level under the chairmanship of Chief Secretary were set up to coordinate and guide the relief measures undertaken in the district.

2.2 District level drought relief committees under the chairmanship of District Collectors were formed with a view to assess, evaluate and monitor the relief measures in the district. Each district was also placed under the direct supervision of a Minister. The district level committees were empowered with financial powers for taking up relief works upto Rs 20 lakh.

2.3 The State Government presented four memoranda to the Government of India seeking an assistance of Rs. 853 crore to deal with the drought situation. The Government of India fixed a ceiling of Rs. 51.01 crore for the drought of 1987. The State Government spent an amount of Rs. 60.42 crore for drought relief measures.

Employment Generation

3 1 Due to the drought of 1987, there was massive unemployment in the traditional and mechanised sector, besides unemployment in the agricultural sector. While formulating the employment generation schemes, priority was given for those items which were of drought proofing nature. As the fish catch showed a decline owing to ecological imbalances, fishermen in the marine and inland sectors were deprived of their livelihood. Coir workers were also left without work as the ratting of husk was made difficult due to drought. The loss both in agriculture and traditional sectors was estimated at 71.8 million manday.

3.2 As part of employment generation programme, 519 minor irrigation works were taken up as a drought proofing measure in the State. By taking up these works, 20.80 lakh manday was generated. Similarly, by taking up works in 3719 wells and 117 tanks, 4.89 lakh manday was generated.

3.3 During the drought of 1987, as many as 1089 road works were taken up for maintenance and repairs as a result of which 21.35 lakh manday was generated. As a drought proofing measure, soil conservation works were also taken up in the State benefiting 2335 hectare of land, apart from generating 1.40 lakh manday. Earth-work of small storages was also taken up. This scheme was linked with minor irrigation schemes to create durable assets. As a result, 5.05 lakh manday was generated and 353 earth-works and small storages were taken.

3 4 In the traditional sector 70,000 coir workers benefited by employment generation measures taken up by the State Government. In the handloom sector, 2000 weavers benefited by the innovative scheme implemented by the State Government. The total number of manday generated in the coir and handloom sector was 14.99 lakh.

3.5 Employment generation works to provide food and cash to a large number of people had to be arranged during the drought of 1987. Under minor irrigation, village roads, coir and agriculture sector, the workers had to be assisted. The material component portion of the amount required was to be found out by the State Government for executing the employment generation works.

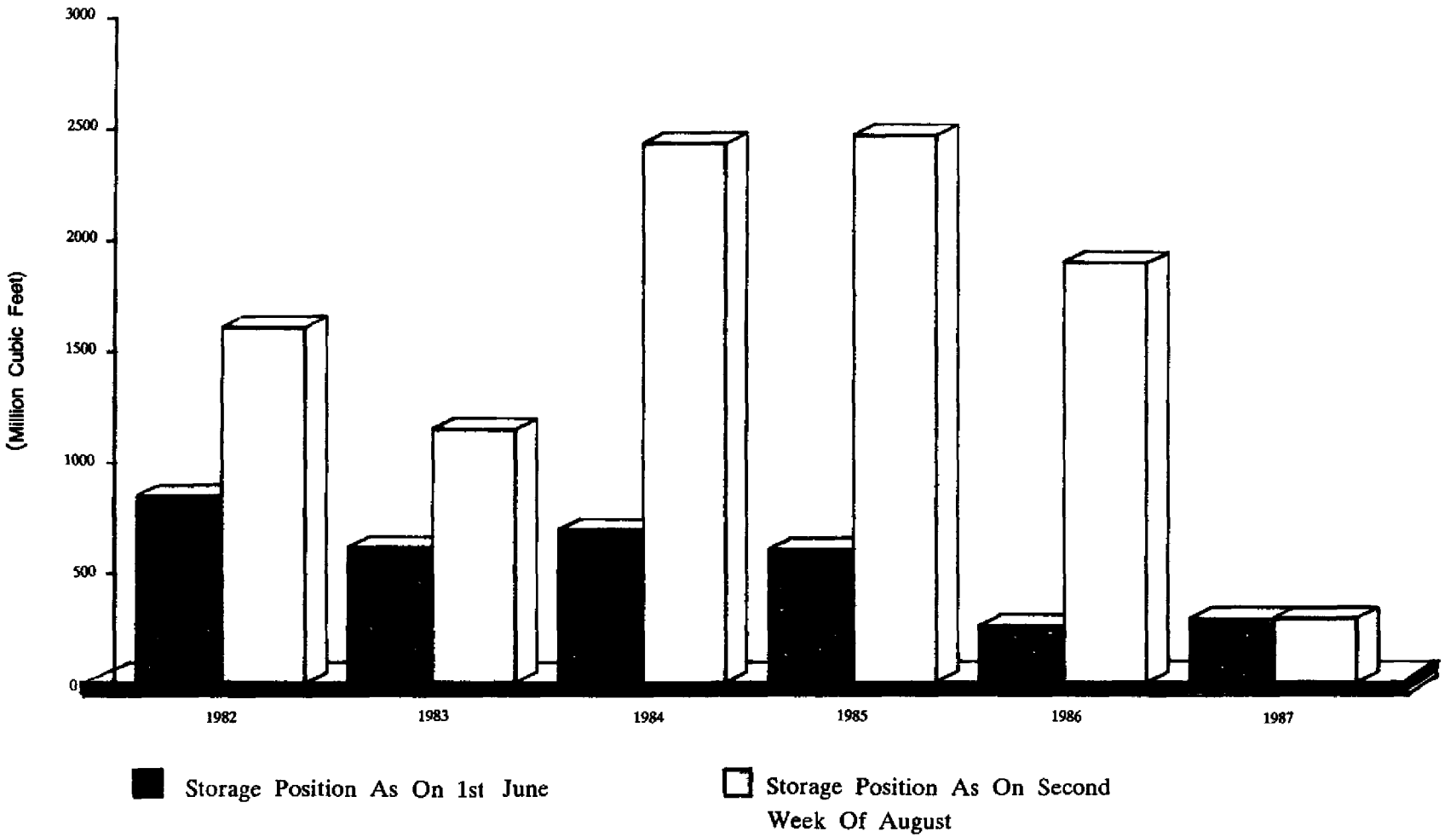

figure 9: Storage Position Of Hydel Reservoirs in June and August in Kerala 1982 to 1987

3.6 The Government of India approved ceiling for execution of irrigation projects linking with the allocation under employment generation for 50 per cent of the labour component portion. Since the allocation under the employment generation was fully required by the State Government for the employment generation works arranged, the scheme could not be implemented.

Water Supply

4.1 In Kerala water supply is a problem from the months of December to May even in a year of plentiful south-west and north-east monsoons. In 1987, the south-west monsoon failed leaving the State in the grip of severe water problem in the first half of 1987 More than 17,000 points were supplied with water through tanker lorries from April to early June 1987. Water was transported in *Valloms* (small boats) and boats in Alleppey and parts of Kottayam district. During the peak season 997 tankers, 235 *valloms* (small boats) and 23 boats were used for the transportation of drinking water. The average cost of drinking water supplied through transportation per day through a tanker was Rs. 900 While in many areas water was supplied directly from tankers, in other places water tankers were filled with water in the storage tanks (5000 to 10,000 litres capacity) constructed during drought. The State Government constructed 1778 ground level water tanks in places facing acute water shortage. Additionally the State Government also purchased 825 storage tanks. During the drought 2881 open draw wells were dug in many parts of the State. Construction of bore/tubewells was taken up in a massive way and 2528 bore/tubewells were constructed during the drought period. The State experienced difficulty in procuring sufficient number of rigs. Very few private rigs were available and the State Ground Water Department had only 20 rigs. Kerala had therefore to depend upon rig contractors of Tamil Nadu which was also facing the drought situation. As many as 3930 filter-point tubewells were also constructed during the drought period. The success rate in drilling was as high as 80 per cent. This was due to proper location finding by the hydrologists of Ground Water Department. As many as 836 bore/tubewells were repaired and 5885 open draw wells were deepened/repaired. The State Government also took up energisation of high yielding bore/tubewells numbering 192 during the drought period The State Government took up 1203 water supply scheme for improvement and 106 water supply schemes were energised/commissioned.

4.2 In the tribal pockets of Idukki, Pathanamthitta and Palghat districts in the Western *Ghat* the drinking water posed a peculiar problem. The small streams and river beds had dried up. There were perennial streams 4 to 5 kilometre away from the habitation which could be tapped. The State Government took up special scheme for tapping these surrounding streams by constructing small storage tanks near the springs and laying/using strong PVC pipes for carrying the water to tribal habitations. As many as 143 ground level water tanks and 50 storage reservoirs were constructed.

Power Supply

5.1 The sole dependence on hydel power cost the State dearly in spite of the strict power cut of 40 per cent on high tension and extra high tension consumers and load shedding for 7 hours The storage in the reservoirs in August 1987 was hardly sufficient for a month's power generation. The storage position of hydel reservoirs as on 1st June to 2nd week of August from 1982 to 1987 in Kerala may be seen in Figure 9.

Agriculture

6.1 Agriculture in Kerala is unique in several respects. The cropping pattern shows predominance of cash crops by cocoa, rubber, cashew, pepper, tea, coffee, cardamom, etc. The seasonal crops are paddy, banana, tapioca, ginger, vegetables, etc. The crop intensity is also high at 1.32. Contribution of primary sector to the State income at 1987 prices was 39 per cent. Primary sector provides raw materials for traditional industries like cashew processing, coir, oil milling, sugar, handicrafts, etc.

6.2 The high pressure of population has resulted in a small farm size About 95 per cent of the holdings and 66 per cent of the area fall within the category of holdings of less than two hectare Agriculture in Kerala owes much to the agro-climatic conditions dominated by the rainfall pattern and it is the rainfall distribution which is crucial to a number of cash crops. As the area under irrigation is only 11.87 per cent of the net area zone, the distribution of rainfall decides the fate of crops in unirrigated areas.

6.3 The perennial plantation crops having a gestation period ranging from 3 to 12 years require substantial investment. The impact of drought on cash crops spreads to a few years. For example, in

the case of coconut, the period between two stages of flower, primorpia and maturity of nuts is two years and nine months. The adverse effect of moisture stress during the critical phases is manifested for over three years.

6.4 The State Government supplied fertiliser mixture to coconut, pepper and arecanut cultivators. In the case of paddy cultivators fertiliser subsidy was given for 3,96,000 farmers. Eighty tonnes of groundnut oilseeds and 80 tonnes of pulses seeds were distributed to 80,000 and 18,000 farmers respectively. About five lakh kits containing fertilizer seeds were distributed to vegetable cultivators. Ten lakh cocoa seedlings were distributed to 15,000 farmers. Seedlings of clove and nutmeg were distributed to 10,000 farmers each. In the case of very small coffee planters affected by drought, fertilizer subsidy was given to 6,000 coffee planters covering an area of 8,000 hectare. Supply of vegetable minikits was also made for small and marginal farmers, along with pepper seedlings.

Animal Husbandry

7.1 The loss of paddy crop resulted in a very poor availability of straw. Fodder production was also badly affected. More than ⅓rd of the cattle population in the State was affected by drought of 1987. Vaccines, medicines and deworming drugs were purchased and supplied to prevent the cattle health getting affected by diseases. The State Government arranged for transportation of fodder. 1.5 lakh tonnes of fodder was transported from Tamil Nadu and from the surplus districts of Palghat.

Health and Nutrition

Health

8.1 Purchasing power of the rural poor deteriorated resulting in poor nutrition in-take to children below 6 years and expectant/lactating mothers. About 6 lakh children and expectant mothers were to be given supplementary feeding at least once a day.

8.2 Scarcity of drinking water and use of contaminated water in certain pockets led to outbreak of water-borne diseases in spite of preventive measures taken by the State Government. The State Government, therefore, arranged for inoculations, supply of medicines and vitamins. Disinfectants were supplied at the village level to disinfect the contaminated water.

Nutrition

8.3 About four lakh lactating and pregnant women and children were covered by supplementary feeding for a period of 50 to 100 days depending upon the severity of under-nutrition in the area.

Essential Commodities

9.1 The State Government supplied free essential commodities for a period ranging from 10 to 20 days. The population of 41.98 lakh was covered under free distribution of essential commodities programme.