People of Madhya Pradesh are used to drought and scarcity conditions. Severe drought conditions have prevailed, almost regularly, in the last five years. Except in 1968-69, 1971-72 and 1973-74 drought conditions prevailed in the State in one or the other region during last 20 years. In the last four years, the State faced several natural calamities, as shown in the Table 18.

1.2 Though the drought of 1987-88 was the severest of the century, however, Madhya Pradesh has a bad year in 1986-87 as well. As many as 40 districts were affected by drought in 1986-87 as shown in

Table 18: Districts Affected by Natural Calamities in Madhya Pradesh, 1984-85 to 1987-88.

S.No.	Year	Affected Districts		
		Drought	Floods	Hailstorms etc.
1.	1984-85	23	16	—
2.	1985-86	12	—	45
3.	1986-87	40	34	38
4.	1987-88	45	—	19

Table 18 The State Government spent Rs. 77.59 crore to give relief to the affected people. 142 tehsils out of 307 were affected. Crops were damaged in an area of 52.86 lakh hectare. 15.44 lakh, small and marginal farmers were affected. The crop loss was estimated at Rs. 300.55 crore.

1.3 The monsoon was very weak in 1987-88 in Madhya Pradesh. Scanty and scattered rains, coupled with long dry spells, resulted in serious drought in almost the whole of State in 1987-88. The rainfall from 1st June to 30th September, 1987, in 45 districts of the State was classified as follows:—

(i) Excess Rainfall: (+) 20 percent or more (1) Damoh and (2) Vidisha

(ii) Normal rainfall: (+) 19 percent to (−)19 per cent.

(1) Surguja (2) Rewa (3) Shahdol (4) Satna (5) Sidhi (6) Jabalpur (7) Mandla (8) Narsinghpur (9) Sagar (10) Panna (11) Tikamgarh (12) Chhaterpur (13) Rajgarh (14) Guna (15) Mandsaur (16) Ratlam (17) Ujjain (18) Shajapur (19) Indore (20) Dhar

(iii) Deficient Rainfall: (−) 20 per cent to (−) 59 per cent.

(1) Raipur (2) Durg (3) Rajnandgaon (4) Bilaspur (5) Raigarh (6) Bastar (7) Seoni (8) Chhindwara (9) Balaghat (10) Bhopal (11) Raisen (12) Sehore (13) Betul (14) Hoshangabad (15) Gwalior (16) Shivpuri (17) Datia (18) Bhind (19) Morena (20) Dewas (21) Khandwa (22) Khargone, (23) Jhabhua.

(iv) Scanty rainfall: (−) 60 per cent to (−) 90 per cent. Nil

1.4 The classification reveals that 22 districts had normal rainfall while the remaining 23 districts had deficient rainfall. But looking at the pattern of rainfall that year, several villages of normal districts also suffered.

1.5 There was wide spread rainfall in the last week of August and first week of September, 1987. This rainfall lessened the fodder problem, but unsown area and area where crops were already damaged, were beyond redemption. The drinking water problem also remained acute. There was rainfall between 16th and 19th, october 1987. This rainfall was useful in sowing *rabi* crops. The districtwise rainfall in Madhya Pradesh from 1st June to 28th October, 1987 may be seen in Table 19.

Organisational response

2. The State Government constantly reviewed the situation, and the following steps were taken:—

(i) The State Cabinet, right from the end of June, 1987 reviewed the situation more than once;

(ii) A first note of alert was sent to the Govt. of India on 28th July, 1987 which was preceded by a telex message;

(iii) A note was given to the Prime Minister on 5th August, 1987 wherein on the basis of preliminary survey, a request for central assistance for Rs. 218.30 crore, was made.

(iv) Sub-Committees of the Cabinet was formed; one for the general drought situation, the second for fodder and cattle, and the third for drinking water.The Chief Minister headed the Sub-Committee of the Cabinet, dealing with the drought situation.

(v) An emergency meeting of Divisional Commissioners was called in the beginning of August, and very detailed instructions were given to them;

(vi) For the critical drinking water situation in Bhopal, Chief Minister met people's representatives and senior officers, and evolved a strategy;

(vii) Chief Minister also met the leaders of the opposition parties and took them into confidence.

(viii) Chief Minister held divisional level meetings, where remedial measures were discussed at length with members of Parliament, members of the *Vidhan Sabha,* President of *Zila Panchayat,* Commissioners, Collectors, field officers and concerned Secretaries to the Government;

(ix) To ensure people's participation district Drought Vigilance Committees, under the chairmanship of the concerned member of Parliament was formed in all districts. This committee included MLAs, Chairman of *Zila* and *Janapada Panchayats* and representatives of political parties. District Relief Works Coordination Committees were also formed with elected people's representatives. The DC was the Secretary of both the Committees; and

(x) A Committee of senior Secretaries was constituted under the Chairmanship of Chief Secretary to advise the Cabinet Sub-Committies.

Table 19: Rainfall in Madhya Pradesh, 1st June to 28th October, 1987

(in mm)

S. No.	District	Actual Rainfall	Normal Rainfall	Difference in Rainfall	Percentage Variation
1.	Balaghat	771	1645	−874	−53
2	Baster	938	1304	−366	−28
3.	Betul	553	999	−446	−45
4.	Bhind	310	703	−393	−56
5.	Bhopal	919	1187	−268	−23
6.	Bilaspur	1013	1299	−286	−22
7.	Chhatarpur	1072	979	+93	+09
8.	Chindwara	703	986	−283	−29
9	Damoh	1758	1088	+670	+62
10.	Datia	474	778	−304	−39
11.	Dewas	686	1063	−377	−35
12.	Dhar	724	809	−85	−11
13.	Durg	772	1168	−396	−34
14.	Guna	931	1074	−143	−13
15.	Gwalior	424	827	−403	−49
16.	Hoshangabad	1063	1576	−513	−33
17.	Indore	796	918	−122	−13
18.	Jabalpur	1141	1202	−81	−05
19.	Jhabua	528	749	−221	−30
20.	Khandwa	482	808	−326	−40
21.	Khargone	421	775	−354	−46
22.	Mandla	1147	1301	−154	−12
23.	Mandsour	696	748	−52	−07
24.	Morena	508	727	−219	−30
25.	Narasinghpur	845	994	−149	−15
26.	Panna	1146	1186	−40	−03
27.	Raigarh	983	1409	−426	−30
28.	Raipur	812	1258	−446	−35
29.	Raisen	820	1142	−322	−28
30.	Rajgarh	1088	868	+220	+25
31.	Rajnandgaon	726	1209	−483	−40
32.	Ratlam	708	949	−241	−25
33.	Rewa	973	872	+101	+12
34.	Sagar	1099	1150	−51	−04
35.	Sajapur	847	799	+48	+06
36.	Satna	918	989	−71	−04
37.	Sehore	870	990	−120	−12
38.	Seoni	797	1257	−460	−37
39.	Shahdol	1290	1181	+109	+09
40.	Shivpuri	634	836	−202	−24
41.	Sidhi	1013	970	+43	+04
42.	Surguja	1221	1311	−90	−07
43.	Tikamgarh	1104	946	+158	+17
44.	Ujjain	852	851	+01	Normal
45.	Vidisha	1221	961	+260	+27

Resource Mobilisation

3.1 A detailed memorandum was submitted to the GOI on 22nd August 1987. This memorandum indicated that 11.02 lakh hectare of *kharif* area remained unsown, due to scanty rains. While the State Government faced drought in all the 45 districts, 33 were worst affected. Damage to crops occurred in 138 out of 296 *tehsils*. Out of 75,415 villages, 24,291 were affected. Out of total rural population of 416 lakh, 129.86 lakh were hit, including 19.43 lakh *harijans* and 36.06 lakh tribal people. *kharif* area left unsown was 11.02 lakh hectare. The area of *kharif* crops already damaged over 50 per cent was 36.06 lakh hectare and the damage was valued at Rs. 394.58 crore. The number of affected cultivators was 25.61 lakh, including 11.50 lakh small and marginal farmers. In this memorandum the State Governemnt requested for assistance of Rs. 579.34 crore (Rs 365.24 crore for 1987-88 and Rs. 214.10 crore for 1988-89) as Central financial assistance.

3.2 A central study team led by Shri B.N. Dhondyal, Additional Secretary, Planning Commission, GOI visited 18 districts of the State. On the last day, on the 24th September, 1987 the Central team called on the Chief Minister and met senior Officers of the State and discussed the situation in detail. The GOI indicated a ceiling of expenditure of Rs. 82.88 crore for various drought relief works undertaken by the State Government by a telegram on 14th October, 1987. Of this amount Rs. 48 88 crore was earmarked for 1987-88 and Rs. 34.00 crore for 1988-89 (April to June 1988). Thus during that year the financial assistance received by the state totalled Rs. 72.55 crore. In addition to this the State also received 1.50 lakh tonne of wheat. The labour cost of this wheat was equivalent to Rs. 23.25 crore. Thus the total of cash and kind assistance received from the GOI amounted to Rs. 95.80 crore.

Employment Generation

4.1 When the end of June situation was not good, drought relief works were extended upto 15th July, 1987. From the middle of July till the end of the month, drought relief works were allowed to be continued in the seven worst affected districts. At the end of July orders were issued to start drought relief works again to ensure that the people did not suffer. The emphasis of the State Government was on utilisation of available plan and non-plan funds, including those under NREP and RLEGP, and supplement these employment generating efforts, through the drought relief budget.

4.2 In 1987-88 relief was provided right from August, 1987 due to failure of the monsoon. During 1987-88, the State Government created 11.43 crore manday of additional employment and in the period April to June, 1988, 4.25 crore manday of employment were created.

4.3 The State Government issued instructions to DCs to ensure creation of permanent assets in drought relief works. Top priority was given to works of water conservation. The priorities in terms of percentage were generally to be as follows; (i) Irrigation and water conservation (55); (ii) Forest (20); (iii) Agriculture (10); (iv) Road construction (15).
(Figures in parentheses denote the percentages)

Drinking Water

5.1 The effect of drought of 1986-87 and 1987-88 on water sources, both surface and underground was extremely adverse. It resulted in fast rate of depletion of ground water table, which was already low at the end of 1987 summer. The pace of depletion was accelerated further due to overdrawal of reserves in the sources, due to increased demand for irrigation and the surface sources, such as *nallahs* and rivers lost their potential of recharging under ground sources, due to meagre run off from their catchments and trubutaries and that too for very limited duration.

5.2 There was very little post-monsoon flow in these sources, many of which were the sources for water supply for major towns. Some reservoirs, did not fill upto even their half capacities, affecting adversely the water supplies to the cities such as Bhopal, Gwalior, Seoni, Kukshi, Dewas, Panna, Rajnandgaon, Ujjain and Mandsour. State Government immediately directed all the DCs to prepare action plans for their respective districts for combating scarcity conditions in consultation with District Co-ordination Committee which, *inter alia*, included MLAs, MPs and others. Based on the assessment received from DCs following strategies were adopted:—

(i) Water conservation and measures reserving water for drinking purposes in irrigation reservoirs;

(ii) Creation of new sources by mobilisation of all available agencies in a coordinated manner;

(iii) Proper management of men, material, equipment and money;

(iv) Transportation in area where it was not possible to supply water by creating new sources and systems; and

(v) Efficient operation and maintenance or existing systems.

5.3 The DCs were directed to put temporary *bunds*, across the small rivers and *nallahs* to arrest all available flows. City supplies were limited to one time supply only so that available storage could be utilised till next rainy season. All Local Bodies for example Corporation and Municipal Committees were directed to dig, deepen, clean and disinfect open wells to supplement the existing supplies. Deep tubewells were created in the town in worst hit area. The sources created were exploited fully depending upon capacity available. Out of the 2873 successful sources created, hand pumps were installed on 2423, and power pumps were installed over 375, tubewells. Water supply pumping and distrubution lines were extended by laying 103 kilometre of pipe length where the above methods failed. Transportation was resorted to by organising water tanker distribution system.

5.4 Water conservation bill was enacted to empower the DCs to put effective control over usage and diversion of available sources for drinking purposes. In Kukshi, the main source suddenly dried creating crisis situation. Immediately two high yielding deep tubewells were drilled in the dry summer season and water supply system restored and re-established. In Pandhruna, it was even worse. The original tubewell sources dried at the beginning of March 1988, and new tubewells had to be sunk even at considerable distance from the city. 16 tankers were deployed for transportation round the clock. In Parasia city also, similar situation developed and water was transported by tankers.

5.5 In rural area 155 departmental and 1,440 rigs of private contractors were mobilised. The material and the logistics programming was very important to feed the fleet of fast rigs. This was organised by placing orders on rate contract. The orders were staggered on the basis of the firm's competence in supplying in the rigid time limit. Those who failed to supply the materials in time were refused further orders and the pending orders were cancelled. Thus the rates, the quality and the limit envisaged were ensured. Organised transportation of water to areas where, it was not possible to create new sources or the previous efforts to create sources had failed resulted in quick relief. This responsibility was entrusted to the DCs., who were the best judges of the situation in their districts. For facilitating their efforts, all tankers available with Government Departments and other local sources were mobilised and placed at their disposal. If these too fell short of requirements they were authorised to hire any means of transport and use them in remote areas with cisterns. Arrangements of transportation was resorted to in 311 villages.

5.6 The maintenance system of water works in urban and rural areas and hand pumps in rural areas was geared up and kept under constant vigilance to avoid frequent breakdowns. The total of 1,71,471 hand pumps were maintained properly throughout summer which ensured continuous supply of safe drinking water to 65,000 villages. Also hand pumps mechanics were always kept on red alert to take up repairs. Communication was organised to get quick information of out-of-order pumps from villages. Voluntary agencies were utilised for repairs in their routine inspections. No shortage of spares was allowed to come in the way of maintaining the water supply system.

Cattle Care

6.1 Due to scanty rainfall upto first fortnight of August 1987, there was possibility of serious fodder scarcity in the state. During July-August 1987, acute shortage of fodder was experienced in western districts of Madhya Pradesh like Mandsour, Ratlam, Shajapur, Jhabua, Indore, Rajgarh and Betul. Therefore, fodder was procured from surplus districts like Vidisha and Bhopal and supplied to affected area. Looking to possible fodder scarcity, a contigency plan was prepared for 13 districts in which fodder scarcity was expected. However, due to satisfactory rains during the second fortnight of August and also in September and October, the fodder situation improved. Further the winter rains also improved the *rabi* crops which made *bhusa* available in good quantity. As such no scarcity of fodder was experienced in any areas of the state till June 1988.

6.2 Due to scarcity condition of varying degree since last 3 years, the resistance of the cattle had been reduced. Hence they were prone to various diseases. Therefore mass vaccination against

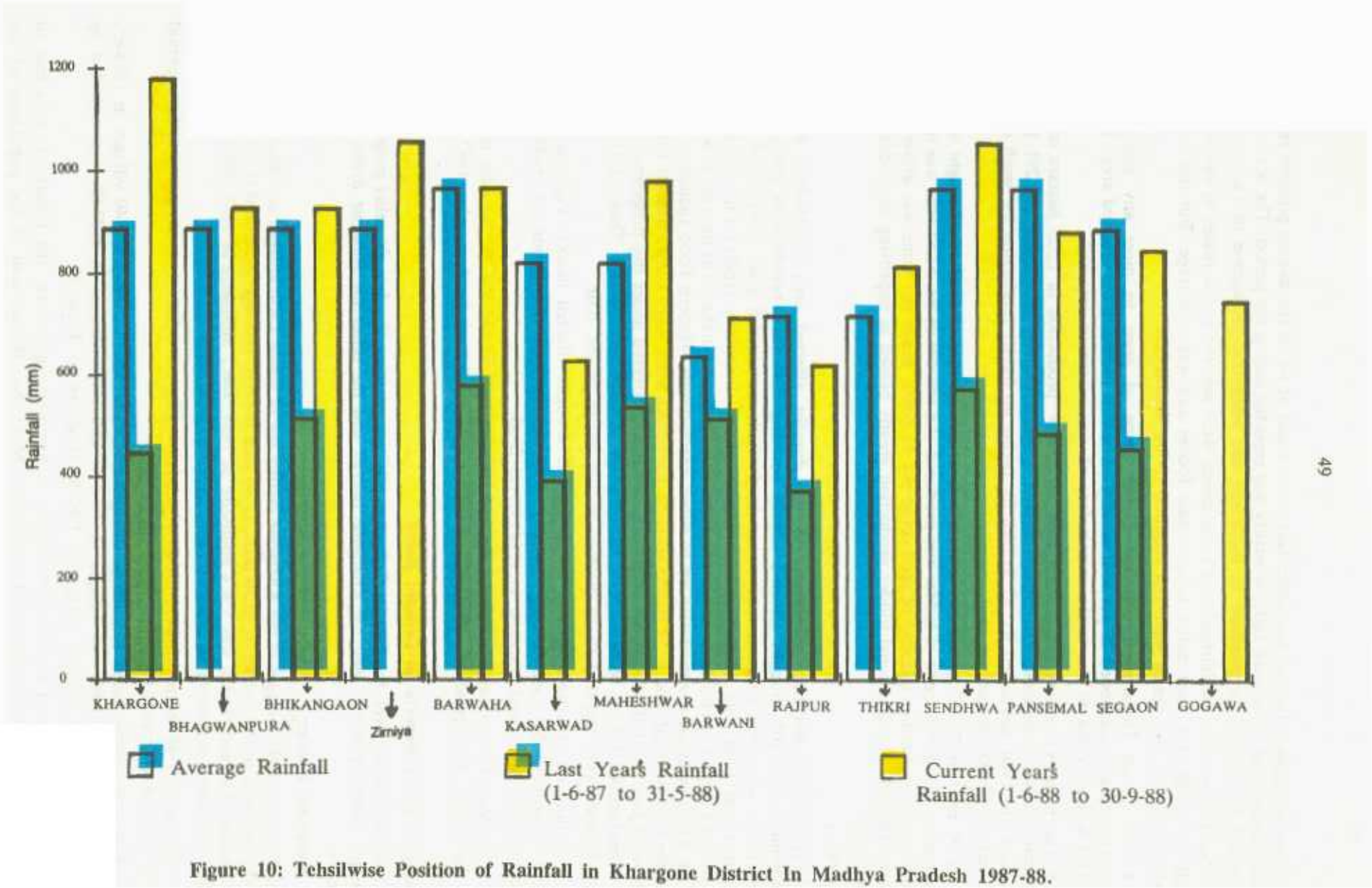

Figure 10: Tehsilwise Position of Rainfall in Khargone District In Madhya Pradesh 1987-88.

common contagious diseases was under taken as a result of which the disease position remained well under control and no unusual cattle mortality was reported during the period. The State Government provided Rs.75 lakh for purchase of medicines and additional production of various vaccines.

6.3 Suitable sites for establishment of cattle camps were selected at 186 places in various districts to shift the cattle at a short notice to overcome fodder and water shortage. But due to satisfactory fodder position, the camps were not required to be established.

6.4 The Forest Department collected 17,145 tonne of grass to meet any fodder shortage. Government also sanctioned 25 per cent subsidy on sale of fodder in the affected area. The collected fodder was provided to the cattle owners free of cost wherever required.

6.5 The State Veterinary Department took up fodder production in 1,325 hectare of land under normal, *harijan* component and tribal sub-plan schemes thereby benefitting 25, 291 beneficiaries. Besides, the GOI sanctioned Rs. 87.50 lakh for taking up fodder production for small and marginal farmers in 25,000 hectare of land.

6.6 A total of 77,367 beneficiaries benefited, 10,869 hectare of land was brought under fodder cultivation and 40,675 tonne of fodder was produced. An amount of Rs. 57.57 lakh was spent. Due to scarcity of water entire quantity of seed could not be sown, hence the same was utilised during the *kharif* 1988-89. The additional fodder production greatly helped in improving the fodder position in the State.

Nutrition

7.1 The special nutrition programme in the drought affected area of Madhya Pradesh was implemented in 105 drought affected Blocks covering 3.48 lakh beneficiaries every day. Every beneficiary was given 60 gram ready-to-eat food which contained 8 gram protein and 200 calories. Ready-to-eat food was purchased from Modern Food Industries (India) Ltd., New Delhi and Karnataka Agro Corn Products Ltd.,Bangalore. This food was purchased at the rate of 42 *paise* for 60 gram which included transportation up to Block headquarters. Modern Food Industries (India) Ltd., supplied ready-to-eat food in 54 Blocks whereas Karnataka State Agro Corn Products Ltd., Bangalore provided food in 51 Blocks. A list of districts and blocks covered under this programme may be seen at Annexure-XVIIIEach block targeted for coverage of 4,300 beneficiaries. Thus a total of 4.52 lakh beneficiaries were targeted to be covered in 105 blocks of the state.

7.2 Feeding Centres were opened in all the 105 drought affected blocks. Vigilance Committees were constituted for each feeding centre to look into proper distribution of ready-to-eat food. Beneficiaries gave good response to ready-to-eat food.

7.3 The State Government sanctioned Rs. 234 lakh for 1987-88 and Rs. 222 lakh for the April 1988 to June 1988. An expenditure of Rs.304.65 lakh was incurred from 1st September 1987 to 30th June 1988.

Sample District Reports on Drought Relief

8.1 At the district level, the District Collectors (DCs) implement the drought relief programmes. Two sample district reports - one for Khargone district and the other for Bilaspur district - are given below:

I. Khargone District

8.2 There are 2,008 villages in the Khargone district out of which 1,836 villages are inhabited. Against the population of the district of 16.30 lakh, 13.90 lakh is rural. Average rainfall of the district is 831.5 milimetre. Average rainfall was 558.4 milimetre in 1984, 446.2 milimetre in 1985, 596.9 milimetre in 1986 and 486.9 milimetre in 1987.

8.3 During 1987-88 the *tehsilwise* position of rainfall in Khargone district as compared to later period may be seen in Figure 10.

8.4 Khargone district faced continuous drought since 1984-85. As many as 840 villages in 1984-85, 1,542 villages in 1985-86, 756 villages in 1986-87 and 1,737 villages in 1987-88 were affected by drought. Position of affected villages in 1987-88 is shown in Table 20

8.5 As the economy of the Khargone district is based on agriculture, the failure of crops due to insufficient rains affected the rural community. More than 90 per cent of the population of the

Table 20: *Tehsilwise* Drought Affected Villages in Khargone District, 1987-88

S. No.	*Tehsil*	Total number of Villages	Affected		Total
			25 paise *anawari* village	26 to 37 paise *anawari* village	
1.	Barwaha	319	107	200	307
2.	Barwani	146	28	118	146
3.	Bhagawanpura	95	12	67	79
4.	Bhikangaon	145	16	129	145
5.	Kasarawad	229	75	154	229
6.	Khargone	228	222	6	228
7.	Maheshwar	208	125	83	208
8.	Pansemal	131	—	—	—
9.	Rajpur	99	62	37	99
10.	Segaon	53	24	29	53
11.	Sendhwa	122	—	32	32
12.	Thikri	102	15	65	80
13.	Zirniya	131	9	122	131
	Total	2008	695	1042	1737

Khargone district was affected due to the drought of 1987-88. The *tehsilwise* details of the total population and the affected population are shown in Table 21.

8.6 During 1987-88, 6.19 lakh hectare was brought under *Kharif* crops. Due to inadequate and unfavourable distribution of rains, as much as 3,51,000 hectare was affected by drought. Out of 1.77 lakh farmers in the district of Khargone, 32,000 were marginal and over 35,000 were small farmers. Most of the farmers were affected by drought.

8.7 In order to alleviate the distress of the affected population, the district administration took a number of steps. Provision of employment, special nutrition, drinking water, public health measures and arrangement of fodder, were some of the measures undertaken in 1987-88. In order to provide employment to the affected population, relief works were initiated. Construction of roads, irrigation/

Table 21: *Tehsilwise* Population Affected in Khargone District, 1987-88

S.No.	*Tehsil*	Total Population (in lakh)	Affected Population
1.	Barwaha	1.99	192,774
2.	Barwani	1.67	166,656
3.	Bhagawanpura	0.79	63,325
4.	Bhikangaon	1.05	103,369
5.	Kasrawad	1.25	125,625
6.	Khargone	1.96	192,362
7.	Maheshwar	1.27	126,726
8.	Pansemal	1.39	—
9.	Rajpura	1.03	102,365
10.	Segaon	0.46	41,793
11.	Sendhwa	1.46	26,200
12.	Thikri	1.02	82,478
13.	Zirniya	0.94	87,721

Table 22: Relief Works Undertaken and Completed in Khargone District, 1987-88

S.No.	Department	Number of Works Undertaken	Estimated Cost (Rs. lakh)	Number of Works Completed.	Expenditure (Rs lakh)
1.	Public Works Department	330	818.519	61	122.869
2.	Irrigation	227	1223.651	160	639.314
3.	Agriculture	101	174.070	101	150.880
4.	Forest	337	129.886	302	155.940
	Total	995	2346.126	624	1069.003

nistar tanks, stop dams and soil conservation works were the priority works. Ten irrigation works, 62 *nistar* tanks and 178 stop dams were constructed. Work of renovation was completed in 11 irrigation tanks. The details of works undertaken by various Departments, the works completed and the cost estimates are shown in Table 22.

8.8 Labourers employed on relief works were provided with identity cards. In case a particular work was closed, the persons holding such identity cards were able to get employment on other projects. For proper distribution of wages to labourers, disbursing officers were appointed to have a watch on payment of wages. Medical check-ups were arranged at work sites and medicines were also provided.

8.9 The district was divided into zones and the Zonal Officers were appointed to inspect relief works and to sort out the problems noticed without any delay. The Zonal Officers who were appointed for inspecting works were also empowered to order for opening of new works, if required. Weekly reports received from Zonal Officers about the status of relief works enabled the district administration to execute relief programme smoothly.

8.10 *Kutcha* bunds were contructed on 662 *nallahs* at a cost of Rs. 2.67 lakh for storing water for drinking and *nistar* purposes. For drinking water purposes, programme of cleaning and deepening of wells was also undertaken.

8.11 There was a population of 11.96 lakh of animals in the district. The fodder availability for the animals was reduced due to drought. In order to meet the situation, the Forest Department of Khargone district stored 431.24 tonne of grass, distributed 75.13 tonne with cost and 356.11 tonne was distributed free of cost to the needy farmers.

8.12 Distribution of wheat to weaker sections was arranged by *janpads/panchayats*. 352.50 quintal of wheat was distributed by *panchayats* to the weaker sections. Nutrition programme and preventive health measures were also undertaken.

8.13 Crop Insurance Scheme was implemented in the district and the *tehsilwise* coverage of crops may be seen in Table 23. Collection of revenue amounting to Rs. 21.81 lakhs was suspended.

Table 23: Crops Covered Under Crop Insurance Scheme in Khargaone District, 1987-88.

S.No.	Tehsil	*Crops Covered*
1.	Barwani	*jowar*, maize and groundnut
2.	Barwaha	*jowar*, groundnut and *tur*
3.	Bhikangoan	*jowar* and *tur*
4.	Kasarawad	*jowar*, maize, groundnut and *tur*
5.	Kharge	*jowar*, maize, groundnut and *tur*
6.	Rajpura	*jowar*, maize and groundnut.
7.	Sendhwa	*jowar*, maize and groundnut.

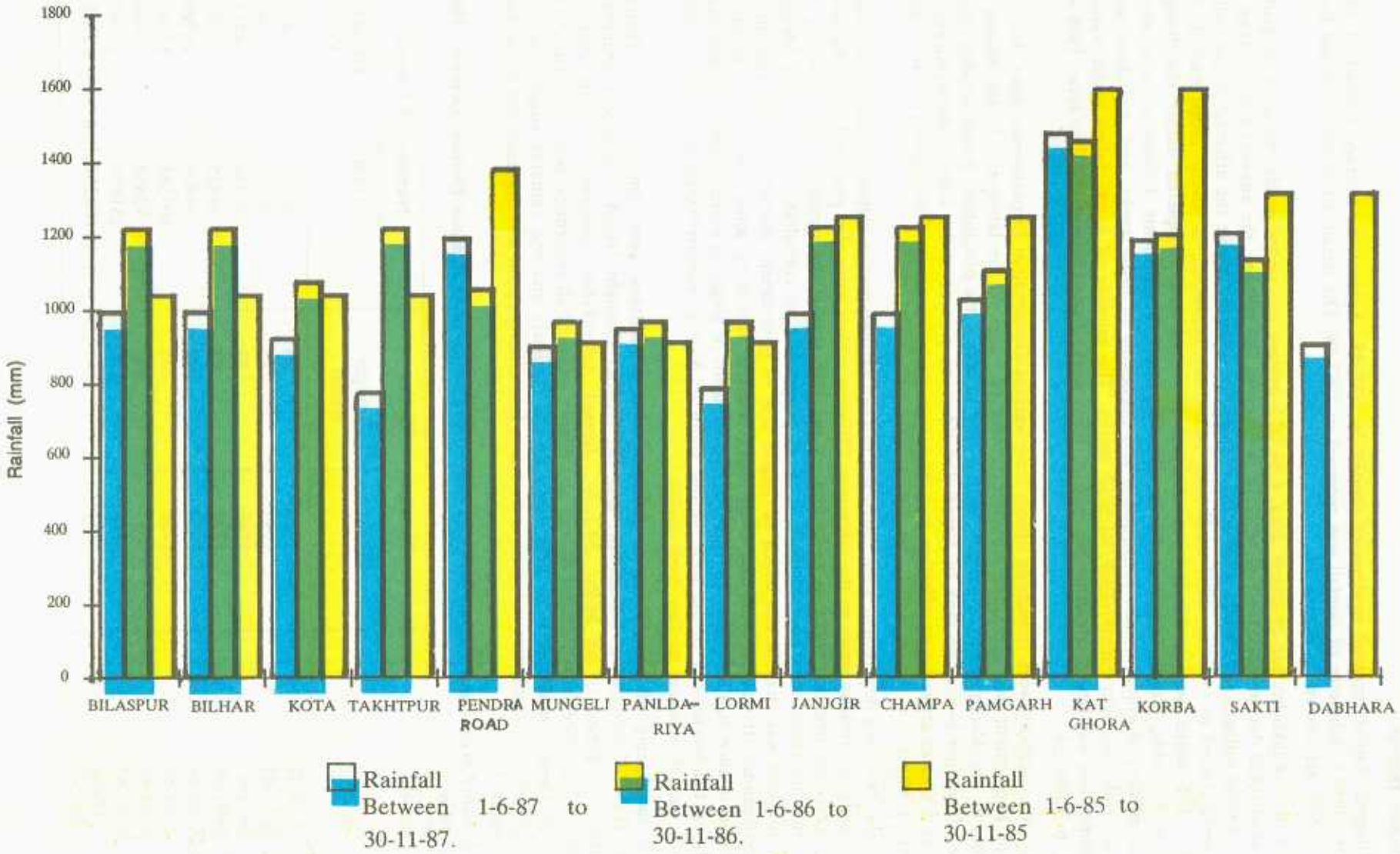

Figure 11: Tehsilwise Position of Rainfall in Bilaspur District of Madhya Pradesh 1987-88.

II. Bilaspur District

8.14 Bilaspur district received inadequate rainfall in 1987-88. Against the average rainfall of 1248 milimetre 1019.4 milimetre of rainfall was received in 1987-88. The details of rainfall received from 1985 to 1987 are shown in Figure 11.

8.15 out of 7.54 lakh hectare of *kharif* area, 6.64 lakh hectare was under paddy. Most of the paddy area was affected due to inadequate rainfall. In as many as 783 villages, the *anawari* was less than 37 *paise* and these villages were badly affected by drought. In order to relieve the affected people, relief works were started in October, 1987 itself even before the harvesting of *kharif* crops started. 197 drought relief works were sanctioned out of which 90 works were completed during the drought period by the Public Works, Irrigation, Forest and Agriculture Departments. Labour intensive works like construction of village roads, construction and deepening of *nistar* tanks, and stop dams were taken up under drought relief/NREP/RLEGP works. The number of works taken under various programmes and number of labourers engaged on relief works since October, 1987 to June, 1988 are shown in Table 24.

8.16 On every scarcity work disbursing officer from various Government Departments other than the executing department was appointed for disbursement of wages to the labourers. In the month of June, that is, the closing month of scarcity, with a view to take extra precaution, it was decided that a revenue officer not below the rank of *Nayab Tahsildar* was present at the time of disbursement of wages. This system proved very effective and there were very few cases of misappropriation or non-payment of wages.

8.17 All the executing department were instructed to keep earthen pots in sufficient number to ensure proper supply of drinking water to the labourers. Chlorine tablets were also provided at all the work sites to purify the drinking water as precautionary measure against the summer season diseases. In additon, first-aid boxes were kept at work sites. A programme in consultation with Chief Medical Officer, Bilaspur was chalked out which envisaged visit of government doctors to work sites in an organised manner. It was ensured that every work site was visited by some doctor or a group of doctors atleast once in a forthight. The date of disbursement of wages to scarcity labourers was fixed normally on the market day of the area. Mobile shops of *Nagrik Aapurti Nigam* were sent to work sites with enough workers to buy food grains.

8.18 For monitoring of scarcity works, following two committees were constituted: (i) District Drought Relief Coordination Committee; and (ii) District Drought Relief Vigilance Committee. Committees comprised of all M.Ps., M.L.A., *Janpad Adhyakshas,* members of State 20-Point Programme Committee from Bilaspur district and district heads of all recognised political parties. The meetings of these committees were held every month regularly and the valuable suggestions and observations of these committee members were taken into consideration and implemented in the best possible manner.

Table 24: Relief Works and Labour Strength under Drought Relief in Bilaspur District, October, 1987 to June, 1988

S.No.	As on	Number of Works		Number of Labourers	
		Total	Drought Relief	Total	on Drought Releif
1.	31-10-87	1040	20	26534	433
2.	28-11-87	1155	55	29591	1764
3.	26-12-87	1186	79	38748	6373
4.	30-01-88	1278	80	46425	9382
5.	27-02-88	1858	108	98403	16399
6.	26-03-88	1736	100	109583	13380
7.	30-04-88	1644	107	92654	9666
8.	28-05-88	1774	123	151876	13387
9.	18-06-88	1873	124	101253	12766

8.19 During scarcity period DC Bilaspur reviewed the implementation of scarcity works in the meeting of all concerned officers on first and third Monday of every month. All S D Os (Revenue) were also called in the meeting. In this meeting, DC reviewed the following:

(i) Labour position on Plan, non-Plan NREP/RLEGP and scarcity works,

(ii) Requirement of funds by the Departmental officers and position of Labour payment on each and every scarcity works;

(iii) Inspection of Scarcity works by Departmental Officers and by Revenue Officers both; and, their observations in this regard;

(iv) Inter-Departmental problems, if any, in implementation of works;

(v) Complaints received from public or public representatives by Collector regarding scarcity works; and

(vi) Amenities for labourers at work-sites; like medical care and drinking water, hutment and *jhoolaghar* etc.

8.20 Inspection work was entrusted to different agencies. All Departmetal heads of the works Departments were given responsibility to inspect their own works frequently atleast once in a month and to submit their reports to DC. All revenue officers including Deputy Collectors posted at district headquarters were given responsibility of inspection of drought relief works. Every officer was required to send inspection notes of the works inspected by him to the DC in the prescribed proforma from time to time. Deputy Collectors posted at headquarters were also sent to make surprise inspection of some drought relief works to cross-check the postition. Irregularities found during inspections were taken up very seriously. Consequently, one sub-Engineer of Irrigation Department was placed under suspension while another was relinquished of his charge, and four time keepers were dismissed by the Department. Proceedings in some other cases were also initiated.

8.21 Public representatives also inspected drought relief works going on in the district from time to time. The press notes regarding sanction of works, number of labourers engaged on the different works in the district were regularly issued. All the reports about any irregularity in the scarcity works was enquired into thoroughly.

8.22 925 handpumps were installed in 670 villages in 1987-88. Transport of drinking water to these villages by tractor-tankers and by bullock carts was arranged. The responsibility of transportation of water in these villages was entrusted to SDO, Bilaspur and an amount of Rs. 0.794 lakh was sanctioned on this account. No necessity was felt for deepening of wells in the district as rains came in time in August 1988.

8.23 In every block 24 quintal of rice and 1 quintal of *dal* was provided and it was distributed to all the *sarpanches* with the instruction to distribute it to the destitute and helpless persons with a view to avoid any starvation death. Wide publicity was made through the press. This provision paid rich dividend as it was widely known that for every needy person there was some foodgrain in all *panchayats*.

Maharashtra is the third biggest State in the Country, both in terms of area and population. For administrative purposes, the State has been divided into 31 districts, which in turn have been sub-divided into 303 *talukas*. Of these, 89 *talukas* have been identified as drought prone. These *talukas* cover almost one-third of the geographical area of the State. Drought is an old and recurring problem in Maharashtra which has the largest drought prone area amongst the States in the country.

1.2 The precipitation in the drought prone area, where the normal rainful ranges between 460 mm. and 800 mm., is highly erratic and undependable as far as crops in these areas are concerned. These areas often suffer from a total failure of rains. Even when the total precipitation is not sub-normal, its spatial distribution is often uneven. Late onset of the rains, early withdrawal of the monsoon and long dry spells often have a disastrous effect on crops. The irrigated area in the State is only 13.18 per cent and rest of the cropped area is rainfed.

1.3 The terrain in drought prone area is generally undulating and the soil cover is usually shallow with poor water retention capacity The soils have a substratum of homogeneous rock of great depth known as the Deccan Trap. As a consequence, most of the precipitation in this area runs off. The percolation into the soil is less than 10 per cent. The location of underground acquifers is very

uncertain. Even when such acquifers are located, the yields are very poor. Further, there has been a progressive increase in the exploitation of ground water. This combined with the sub-moral precipitation in 1982-83, 1984-85, 1985-86 and 1986-87 resulted in a calamitous depletion of underground acquifers. The progressive and steep decline in the underground water table resulted in drinking water supply sources drying up. Not only dug wells, but even bore wells drilled to a depth of more than 60 metre dried up in many areas. Completed pipe water supply schemes failed owing to the drying up of their sources, originally considered dependable. Even where the sources did not dry up, the availability was much less than the minimum requirement of the dependent population.

1.4 During *kharif* 1987 the monsoon reached the State at usual time. In the beginning good rains were received in Konkan area. In other parts scattered and light rains were received. In Konkan Division good rains were received between 6th to 17th June and during last week of June, 1987. Good rains were received between 11th to 17th June, 1987 in the State except Nasik, Ahmednagar, Pune, Solapur, Satara and Sangli districts and entire Nagpur division which helped in starting the sowing operations in the State.

1.5 Sowing nurseries of *Nagli* and paddy was also started in Konkan and *ghat* zone, sowing of paddy nurseries was however started in 3rd week of June. During last 2-3 days of June and first week of July good rains were received which benefited in completing sowing paddy and *Nagli* nurseries throughout the State and sowing of *kharif* crops was also started all over the State. Upto middle of July 1987 sowing operations were in progress. But in some parts of the State, like Nasik, Jalgaon, Ahmednagar Pune, Solapur, part of Satara district and entire Nagpur division sowing was withheld for want of sufficient rains. In other parts germination and growth of crops was satisfactory.

1.6 However, after 15th July, 1987 there was a break in rains and the situation became difficult. Crops on the light soil started drying up. This sort of situation prevailed in the State for about 3 to 4 weeks affecting the sown crops especially crops like *urd, mung* and groundnut adversely. In Konkan and Marathwada area quantum of rains received was good from the very beginning and there was no break in the rains. In these parts transplanting of paddy and sowing of *kharif* crops was in full swing.

1.7 In other parts of Maharashtra, rains were not sufficient. However, farmers had undertaken sowing operations. Situation was grim in Jalgaon, Nasik, Ahmdnagar, Pune, Solapur, Satara (some parts) and Nagpur and Bhandara, Gadchiroli and Chandrapur districts of Vidarbha. However, good rains were received between 5th to 9th August, 1987 in most parts of the State which helped in completing *kharif* sowing and also in improving the condition of crops already sown.

1.8 Scarce and erratic precipitation adversely affected the *kharif* and *rabi* crops in the State. According to final estimates of *Kharif* and *rabi* crops based on crop cutting experiments, the *paisewari* of 7,056 villages in 13 districts was found to be 50/60 paise or below (60 paise in drought prone area) These villages were declared as drought affected villages. Districtwise details of affected villages, population and bovine population are given in Table 25.

Employment Generation

2.1 Maharashtra is the pioneer State in accepting the principle of providing employment as enshrined in Article 41 of the Constitution of India. The right of employment was recognised by the Maharashtra Employment Guarantee Act, 1977, which came into force from 26th January, 1979. The aim of the Employment Guarantee Scheme (EGS) is to provide gainful and productive employment. The guarantee of work is restricted to unskilled manual work. The operation of the scheme has been designed in such a way that the EGS does not adversely affect agricultural operations and production.

2.2 Labour intensive works of a productive nature which create community assets are only to be taken up under the EGS. A productive work is defined as any work which in the opinion of the State Government directly or indirectly contributes to the increase in production. As regards the works being labour intensive, any work in which the unskilled component is more than 60 per cent of the total cost qualifies as a labour intensive work. The works taken up under the scheme have to be technically feasible and financially viable.

2.3 The District Collector (DC) is in overall charge of EGS. He has to accord sanction to the works from a sheet of works approved by the District Level Committee. Works in respect of which plans

Table 25: Districtwise Number of *Talukas*, Villages, Population and Bovine Population Affected in Maharashtra, 1987

S.No.	District	Number of Affected Talukas	Number of Affected Villages	Population Affected (lakh)	Bovine Population Affected (lakh.)
1.	Ahmednagar	9	538	8.12	3.75
2.	Amravati	5	105	0.85	0.36
3.	Bhandara	13	1777	19.45	7.00
4.	Chandrapur	9	580	4.89	2.28
5.	Dhule	5	197	2.57	1.18
6.	Gadchiroli	8	833	3.10	3.23
7.	Jalgaon	3	99	1.33	0.39
8.	Nagpur	8	541	4.43	2.10
9.	Nasik	5	246	2.80	1.54
10.	Pune	8	459	9.23	5.36
11.	Thane	4	449	3.91	1.52
12.	Wardha	8	899	6.74	4.30
13.	Yavatmal	5	243	1.69	0.84.
	TOTAL:	90	7056	69.11	34.94

and estimates are prepared, administratively approved and technically sanctioned are only taken up under the EGS. The Planning Department makes a budget provision and releases the quarterly credit limits to the DCs. The DCs have discretion to make further releases.

2.4 The wages under the EGS are linked with the quality and quantity of work output of the labour. A uniform schedule of rates of wages for all types of works taken up under the scheme has been devised. The schedule of rates of wages has been devised in such a way that an average person working deligently for 7 hours in a day should earn wages equal to the minimum wage for agricultural labour prescribed for various zones in the State. There is neither maximum nor minimum limit for earnings under the EGS. The wages are paid on a fortnightly basis. Amenities like potable water, creches and first-aid facility are provided at works site. The State Government has emphasised, *inter-alia,* to give priority to works of water conservation, soil conservation and afforestation (including social forestry) so as to ensure that the drought proofing measures are also undertaken to the maximum extent.

2.5 From October 1986 to June, 1987 acute drought conditions prevailed in 27 districts of Maharashtra. The drought conditions were dealt with by relaxing the rules and regulations of EGS. A summary of such decisions is mentioned below:—

1) Even non-plan works could be taken under EGS by prior permission of the Divisional Commissioners, subject to certain conditions;

2) It was directed that the formalities of prior registration for work under EGS and demand for work in prescribed forms were relaxed and it was further directed that prior completion of these formalities should not be insisted upon.

3) Works of land levelling could be undertaken with the help of bullock *kenies.*

4) Initially, in a village only two village tanks could be taken up under EGS. However, in the drought affected areas works of additional village tanks could be taken up under EGS, subject to the availability of suitable sites.;

5) During the drought period, it was necessary to give assistance to the EGS workers so as to enable them to support their bullocks and other animals. Hence, bullock-carts owned by the labourers on EGS works were also provided work under the EGS.;

6) Expenditure on survey of the works taken up under EGS in the drought affected area could be debited to the EGS.;

7) Some new types of works like renovation of Ex-*malguzari* tanks and repairs of paddy bunds were allowed during the drought period. Due to these relaxations, additional works could be started to cope up with increased labour demand.

2.6 The details of the manday generated in the drought affected area over and above the normal EGS manday, the expenditure incurred and the relief assistance actually sanctioned by the GOI are shown in Table 26.

2.7 The most important problem faced was resource requirement on a large scale to meet the drought conditions, especially to provide employment during that period. The relief assistance provided by the GOI was inadequate to meet the requirement. In view of the EGS Act, the State Government is bound to provide employment to the unskilled labourers in rural area on demand. In drought conditions, this demand increased considerably. The GOI, in consultation with the State Government, formulated a principle to provide relief assistance in drought period. According to this formula the average employment provided during the normal conditions from 1975-76 to 1977-78 is increased according to the population growth rate factor, every year. This expected increase in manday is presumed as the figure of 'normal mandays' under the EGS. The difference between the actual manday generated during the drought conditions and the normal manday is considered as relief employment. The GOI provides relief assistance on the reduced manday arrived at, in this manner.

2.8 In effect, the State Government is put to a loss when compared to the other States, which are not implementing the EGS and take up only relief works during the drought period. While calculating the relief assistance according to this formula, the material component necessary to provide employment is not taken into account and only the average wage is considered for calculating relief assistance.

Cattle Care

3.1 When crops fail due to drought along with the loss of crop production, the fodder availability also suffers and it becomes necessary to provide adequate fodder to the needy cattle owners. For this purpose, the State Government took a number of steps during 1987-88.

Table 26: Drought Relief Manday, Expenditure and Central Assistance Received in Maharashtra,— October, 1986 to June, 1987

S.No.	Drought Period	Drought Relief Manday (Crore)	Expenditure on Drought Relief Manday (Rs. in Crore)	Central Assistance (Rs. in Crore)
1.	October, 1986 to March, 1987	3.06	48.61	11.84
2.	April, 1987 to June, 1987	1.64	23.76	11.10
	Total	4.70	72.37	22.94

Table 27: Villages covered and Expenditure incurred on Drinking Water Supply Schemes in Maharashtra, October 1987 to March 1988.

S. No.	Schemes	Number of Villages	Expenditure (Rs. in lakh)
1.	Bore Wells with Hand Pumps.	1333	234.50
2.	Piped Water supply Schemes (Acelerated)	124	104.57
3.	Temporary Piped Water Supply Schemes.	166	411.81
4.	Repairs to Piped Water Supply Schemes.	879	1621.75
	Total	2502	2372.63

3.2 The State Government assessed the total requirement of fodder at 53,922 tonne till the onset of 1988 monsoon. In order to meet this situation the State Government decided to procure fodder from the following agencies: (i) Grass from forest land - 7,200 tonne, (ii) Fodder from the Maharashtra State Farming Corporation Ltd. - 3,722 tonne, (iii) Fodder from Maharashtra Tribal Development Corporation Ltd. 40,000 tonne, and (iv) Damaged Foodgrains - 3,000 tonne. Thus a total quantity of 53,992 tonne of fodder was to be procured from different agencies.

3.3 The Occassional rains received during the months of November 1987 and December 1987, considerably reduced the scarcity of fodder in the State. The demand for fodder supply was very low till May 1988. The State Government distributed 5,826 tonne of fodder during 1987-88 and following measures were also undertaken for augmenting the fodder supply in the affected area:

(i) Grass on forest land was reserved for distribution to needy agriculturists in drought affected area;

(ii) Movement of fodder out of drought affected district was banned;

(iii) Instructions were given to the district authorities to open cattle camps wherever necessary. However,no necessity was felt to open the cattle camp in drought affected area during 1987; and

(iv) Fodder *taqai* in kind was granted to the needy agriculturists at the following rates:—

(1) Head of cattle	:	upto Rs. 400
(2) Heads of cattle	:	upto Rs. 800
(3) Heads of cattle	:	upto Rs. 1200
(4) Heads of cattle	:	upto Rs. 1600
(5) Heads or more of Cattle	:	Rs. 2000

Drinking Water

4.1 Due to irregular and scanty rainfall during the monsoon period of 1987 a number of villages in Maharashtra faced drinking water scarcity during the summer season of 1988. In the preliminary assessment made by the district officers in October 1987 it was expected that about 7,135 villages might face drinking water scarcity from January 1988 to June 1988. Taking into consideration the rains received in November-December 1987, an action plan was prepared. In accordance with this action plan, 2,502 villages were covered and an expenditure of Rs. 23.72 crore was incurred on drinking water supply schemes in Maharashtra from October 1987 to March 1988 as shown in Table 27

4.2 The GOI approved a ceiling of Rs. 864.50 lakh on *adhoc* basis for undertaking drought relief measures as against an expenditure of Rs. 2372.63 lakh.

4.3 In accordance with the action plan from April to June 1988, 1,443 villages were covered and an expenditure of Rs. 685.23 lakh was incurred on drinking water supply schemes in Maharashtra from April 1988 to June 1988 as shown in Table 28.

Table 28: Villages Covered and Expenditure Incurred on Drinking Water Supply Schemes in Maharashtra April to June 1988

S. No.	Schemes	Number of Villages	Expenditure (Rs. in lakh)
1.	Accelarated Piped Water Supply Scheme	34	20.64
2.	Borewells with Hand Pumps	889	217.29
3.	Borewells with Power Pumps	63	
4.	Temporary Piped Water Supply Scheme	183	312.26
5.	Repairs to Piped Water Supply Scheme	274	135.08
	Total	1443	685.27

4.4 The GOI further approved a ceiling of Rs. 422 lakh on adhoc basis for undertaking drought relief measures as against an expenditure of Rs 685.27 lakh.

4.5 In addition to the above permanent measures, the State Government also undertook emergency measures such as deepening of wells, construction of *budkies*, water supply through tankers and bullock carts in the villages where permanent measures were not feasible.

4.6 The level of storages in irrigation reservoirs was abnormally low during 1987. The sources of drinking water supply in 101 urban area were accordingly affected. It was, therefore, necessary to take emergency measures for augmenting the water supply to the affected urban area. The measures undertaken during the drought of 1987 included construction of balancing tanks (additional storage tanks), supply of water from existing wells through pumping arrangements, deepening of wells, digging of bore wells, increasing the height of *bundharas*, and augmentation of sources.

4.7 In order to tackle this problem, 101 emergency water supply schemes were sanctioned in 1987-88 at an estimated cost of Rs. 1347.49 lakh. Out of these, 99 schemes were executed with an expenditure of Rs. 1195.81 lakh.

Contingency Crop Planning

5.1 In order to provide succour to the drought affected population, the State Government took the following steps to minimise crops losses during 1987-88:

i) In order to minimise the loss in *kharif* production, the State Government allowed the farmers to lift water from denotified rivers and *nallas* in the State;

ii) Arrangements were made for supply of adequate seeds, fertilizers, insecticides and other agricultural inputs and credit to the affected farmers for *rabi* sowing;

iii) Various concessions were given by the State Electricity Board to the agriculturists using agricultural pump sets;

iv) Plant protection programmes were implemented in 4 lakh hectare during *rabi* season of 1987-88 and the total expenditure incurred was Rs. 1 80 crore; and

v) Agricultural inputs containing seeds and fertilizers *(minikits)* were distributed to the affected farmers during the *rabi* season. From 15th to 28th August, 1987 very good and wide spread rains were received. About 3.36 lakh hectare *kharif* area remained unsown. As the first significant step in the direction of overcoming the effect of drought, efforts were made to bring maximum hectarage from this unsown area under *rabi* crops.

5.2 Contingency seed stocking was arranged at district headquarters during 1987-88 such as Sangli, Parbhani, Thane, Akola, Wardha, Amaravati and Jalna. About 1397.71 quintal seeds were stocked to meet the requirement. Out of this stock, 1130.53 quintals were distributed to the needy farmers.

5.3 During *kharif* 1987 about 40,110.85 quintals *jowar* seeds worth Rs. 4,43,27,864 and 6179.32 quintal *bajra* seeds worth Rs. 54,84,715 were distributed free of cost to small and marginal farmers of Nasik, Dhule, Jalgaon, Pune, Ahmednagar, Sangli, Satara, Aurangabad, Jalna, Beed, Parbhani, Nanded, Osmanabad, Latur, Buldhana, Akola, Amaravati, Yeotmal, Nagpur and Wardha districts. Similarly, about 18,641.160 tonne of urea was also distributed free of cost for paddy crop in Thane, Raigad, Ratnagiri, Sindhudurg, Nasik, Chandrapur and Gadchiroli districts of the State. Free distribution of *rabi* season seeds to all the farmers of Vidarbha area on account of failure of *kharif*, 1987 crops was arranged.

5.4 In Vidarbha during the *kharif* season 1987, crops were affected very severely due to the drought. With a view to assist the affected farmers during *rabi* season seeds were distributed free of cost to all affected farmers. In all about 4,390 quintal *jowar* seeds, 16,053 quintals gram seeds and 1804 quintals safflower seeds in all worth Rs. 1.73 crore were distributed. With a view to fulfil the shortfall in *kharif* production by enhancing *rabi* production and also with a view to assist the drought affected farmers of 1986-87, seeds of *jowar*, gram and safflower were distributed free of cost in the districts of Nasik, Dhule, Jalgaon, Ahmednagar, Pune, Solapur, Satara, Sangli, Aurangabad, Jalna, Parbhani, Beed, Osmanabad, Latur, Nanded, Akola, Amaravati, Gadchiroli, Bhandara and Nagpur. About 27,877 quintal seeds of said crops worth Rs. 2.29 crore were supplied free of cost to 4.46 lakh farmers. The vegetable minikits were also distributed to the affected farmers for supplementing their income.

5.5 Rescheduling of cooperative loan as assistance to cultivators by way of conversion of current short term agriculture loans into medium term loans when they were not in a position to repay the loans due to natural calamities was provided from the National Agriculture Credit (Stabilisation) Fund of the NABARD as well as from Stabilisation Funds of the apex bank and District Cooperative Banks. During 1987-88, the State Government extended the conversion facilities to the extent of Rs. 1002.35 lakh to the agriculturists who were members of primary agriculture credit societies in the State.

Nutrition Programmes

6.1 A special nutrition programme was implemented in 152 *talukas* (other than *talukas* covered under ICDS) affected by drought. Under the programme the beneficiaries, namely, children upto age of 6 years and nursing/expectant women were given supplementary nutrition. The beneficiaries were given milk and/or *paushtik ahar*. The *paushtik ahar* was manufactured and supplied by Maharashtra State Co-operative Marketing Federation Ltd. (MARKED) and delivered every day at the rate of 75 gram per child beneficiary and 150 gram for nursing and expectant women on all days throughout the drought period. The drought relief feeding programme started from 13th March 1987 and was in force upto 30th June, 1987. A Central assistance of Rs. 2 crore was received, as against which the State Government incurred an expenditure of Rs. 3.53 crore. The programme was implemented through the Block Development Officers (BDOs) of *panchayat samities*.

6.2 The beneficiaries selected under the drought relief feeding programme were from the rural and tribal areas mostly from families below *poverty line*. Supplementary nutrition was provided for maintaining good health and resistance against diseases. The programme helped to maintain the health status of the people in the drought affected area.

Public Health

7.1 During a drought, there is always a danger of spread of diarroheal diseases in an epidemic proportion. Since these are mainly waterborne diseases, special efforts are required to be undertaken for prevention of spread of these diseases. Disinfection of water sources and other forms of water supply is, therefore, an essential preventive health measure. There are other health problems such as injuries and tetanus among the workers employed on relief works.

7.2 The following health facilities were made available at primary health centres, and sub-centres, during the home visits and during the regular visits to the work sites by the field staff of the health department: (i) Treatment to the ill persons; (ii) Innoculation against cholera, typhoid, and tetanus, and (iii) Disinfection of drinking water supply sources. Because of timely preventive measures, in the drought affected area, not a single outbreak of water-borne disease was reported. In addition, children below 6 years of age and mothers were given vitamin tablets and iron-folic acid tablets.