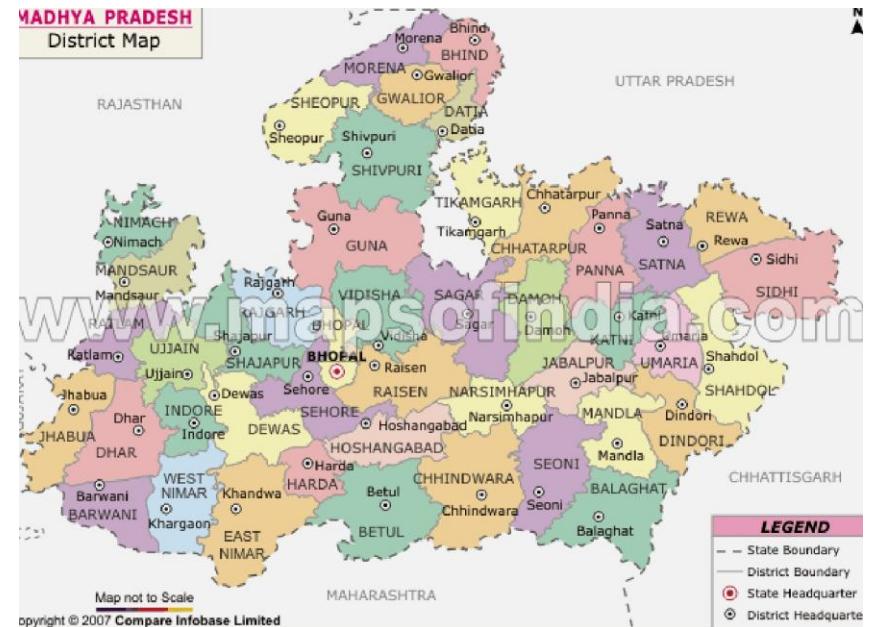


Chapter – I

INTRODUCTION

Madhya Pradesh (including what is now Chhattisgarh) was constituted on recommendations of the State Re-organisation Commission on 1st November 1956. The Mahakoushal and Chhattisgarh part of the Old Central Provinces (CP) and Berar, Vindhya Pradesh, Madhya Bharat and Bhopal were merged to form the new state. Some districts of CP and Berar were transferred to Maharashtra and there were a few minor adjustments with Rajasthan, Gujarat and Uttar Pradesh. From 1st November 2000 Chhattisgarh was carved out of Madhya Pradesh. The state is endowed with rich natural resources, salubrious climate and fertile agro-climatic conditions. At present Madhya Pradesh consists of 10 divisions and 50 districts. As per 2001 census, it has a population of 60 million with a population density of 196 persons per sq.km.



1.1 Physiography

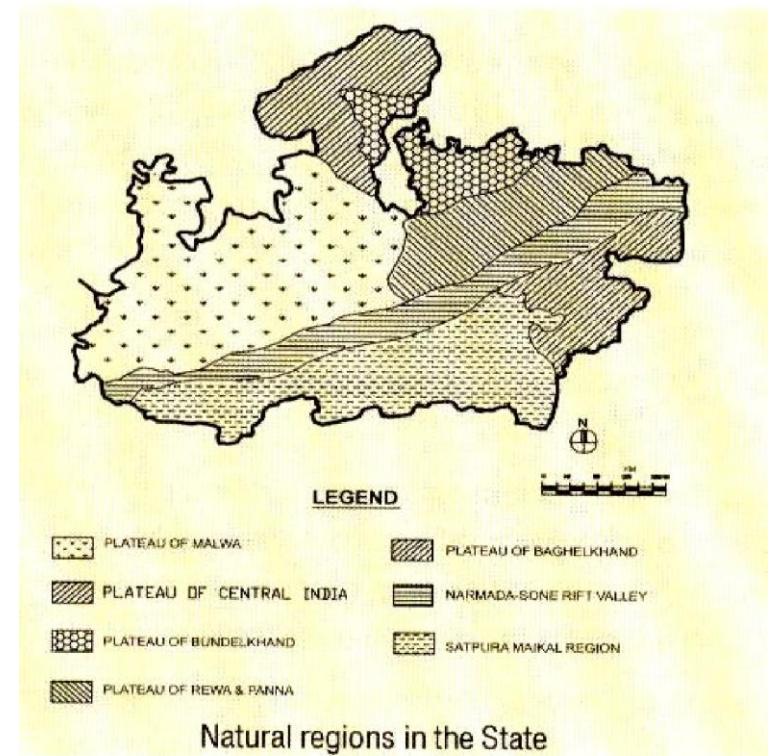
Madhya Pradesh lies between latitude 21° 6' and 26° 54'N and longitude 74° and 82° 47'E. It covers a geographical area of 308,245 sq.km which is about 9.38% of the total area of India. The State is land - locked and at no point is the sea less than 300 kms away. Uttar Pradesh, Chhattisgarh, Andhra Pradesh, Maharashtra, Gujarat and Rajasthan surround it.

Most of the State lies on the tableland of Central India bounded by the Upper Gangetic plains in the north; the Godavari valley in the south; the plains of Gujarat in the west; and plateau of Bundelkhand and Chhattisgarh in the east. The State is traversed by the Vindhya, Satpura and Maikal hill ranges running east west. The highest point is at Dhupgarh near Pachmarhi in Hoshangabad district, at 1,350 m. Most of the State has an elevation of between 305 to 610 m above MSL. Low-lying areas are in the narrow Narmada valley in the central southern parts. In general, the State stretches across a geographically elevated position. Based on its topography, the state can be divided in to the following natural regions :-

The Plateau of Malwa : Covering almost the entire western region of Madhya Pradesh, the plateau, formed by the Deccan trap rocks, starts north of the Narmada and Betwa rivers and found in Guna, Rajgarh, Mandsaur, Jhabua, Dhar, Ratlam, Dewas, Ujjain, Sehore, Vidisha, Shajapur, Raisen and Sagar districts. Its average height is normally 350 to 450 m but some peaks have attained a height of even more than 800 m. Chambal, Mahi, Kshipra, Betwa and Parvati are the main rivers of this region.

The Plateau of Central India : This region covers the northern part of the lower basin of Chambal river. It is formed by the Vindhyan rock groups with the Deccan trap in the south and the Bundelkhand gneiss rocks in the east. The Bundi and Karauli hills form its western boundary. The region presents an amalgam of low land and upland topography. The area is marked by deep ravines of the Chambal, Kalisindh and Parvati rivers. This region spreads in Morena, Bhind, Gwalior, Shivpuri, Sheopur, Guna and Mandsaur districts. Maximum height of the region is 500 m., however, the plain situated to the north and north east has a height between 150 – 300 m.

The Plateau of Bundelkhand : It lies to the east of the Central India Plateau and is bound on the northeast by the Rewa – Panna plateau. The area consists of granite rocks of the Arabian era. Generally, the plateau is flat with marginal slopes and the topography is smooth and undulating. One



third of the northern plain area is monotonously flat and is in strong contrast to the Vindhyan tableland which rises in three well – marked escarpments roughly delineated by the Betwa, Dhasan, Ken and Sindh rivers. This region in Madhya Pradesh is spread over in Tikamgarh, Chhatarpur, Datia, Gwalior and Shivpuri districts. The height of this region is between 150 to 450 m. Sidhababa hills (1172 m) constitute the highest peak.

The Plateau of Rewa and Panna: This is also known as Vindhyan plateau and lies to the northeast of the Bundelkhand plateau. The maximum height of the plateau is 750 m. The Bhander hills of the Vindhya State group and the Kymore ranges have a number of waterfalls with heights up to 450 m. The area is drained by the Ken, Sonar, Berma and Tons rivers. The covered area has most of its spread in Damoh, Panna, Satna and Rewa districts.

The Narmada-Sone Valley : It is drained by the Narmada and Sone rivers and extending from the northeast to west with an average height of 300m. It is bounded by the Vindhyan, Bhander and Kymore hills in north of the valley; the Satpura and the Maikal hills in the south; and the Baghelkhand hightlands in the east. The valley is narrow, and the trap falls in the Narmada River do not allow much navigation. The districts included are Mandla, Jabalpur, Hoshangabad, Raisen, East Nimar, West Nimar, Barwani, Harda, Dhar and Dewas of Madhya Pradesh. Part of Rewa, Shahdol, Umaria and Sidhi districts form the part of Sone valley.

The Satpura and Maikal Region : The region south of Narmada Valley has an average height of only 300m though it contains the highest point in the State, the peak of Dhupgarh. The Satpura slope is sharp on the south face and gentle on the north. The region is drained by Tawa, Johila, Denwa, Wainganga and Vardhan rivers. The area includes Chhindwara, Betul, Seoni, Balaghat, Mandla and parts of Khandwa and Khargone districts.

The Eastern Plateau : This region has a spread in the eastern districts of Madhya Pradesh, which is called Baghelkhand Plateau in Sidhi district. In this region, the height of plateau varies from 400 to 1000m.

1.2 Drainage System and River Basins of Madhya Pradesh :

There are ten major rivers that originate from the State. As Madhya Pradesh is located in the center of India, most of the rivers are interstate rivers. The rivers namely Chambal, Sindh, Betwa, Ken flow northward and meet with Yamuna whereas the river Sone falls directly into Ganga. Narmada, Tapti and Mahi rivers flow westward and meet Arabian Sea whereas Wainganga and Pench rivers meet Godavari in the south. Annual run-off from these rivers within the state is estimated 81,719 hm. out of which about 49, 743 hm can be harnessed for irrigation purpose. Rivers in Madhya

Pradesh are mostly seasonal and rainfed, receiving maximum water flow during the monsoon season. The non-monsoon flow in some perennial rivers is mainly due to flow from groundwater. Due to varied topographical, rainfall and climatic conditions in the State, the availability of water is not uniform spatially or temporally. There is an increasing demand of water for human consumption, agriculture and industrial purposes, etc. This coupled with scanty rainfall in past few years, has led to water scarcity which has become a major concern in the State. The post monsoon flow in most of the rivers is used for irrigation which further reduces the already reduced flow in the rivers.

The drainage system of the state is governed by six major river basins, the details of which are as follows :

1. **Ganga Basin** : River Ganga originated from the hills of Himalayas at Gangotri and meets Bay of Bengal. The basin extends into 11 states viz. Uttarakhand, Himachal Pradesh, Uttar Pradesh, Haryana, Delhi, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh and West Bengal. In Madhya Pradesh, the basin extends up to the districts of Mandsaur, Ujjain, Shajapur, Rajgarh, Neemuch, Vidisha, Guna, Shivpuri, Datia, Gwalior, Morena, Sheopur, Bhind, Tikamgarh, Chhatarpur, Panna, Satna, Rewa, Ashoknagar, Dindori, Dhar, Ratlam, Indore, Dewas, Sehore, Raisen, Sagar, Bhopal and Damoh. The Ganga Basin can be further sub-divided into three sub-basins viz. Yamuna, Tons and Sone, details of which are discussed below :
 - a. **Yamuna Sub Basin** : Total geographical area of Yamuna sub-basin in Madhya Pradesh is 1,42,250 sq.km, out of which the area available for Agriculture is estimated as 90,105 sq.km and water available at 75% dependability is 27,627 hm Total water available for use of the State after deducting for interstate agreements is 23,642 hm only. The major rivers of this sub-basin in Madhya Pradesh are Chambal, Ken, Dhasan, Betwa, Kunwari, Sindh, Paisuni and Jamni details of which are as under
Chambal sub-sub basin : River Chambal originates from Indore districts and meets river Yamuna near Bhind. Total catchment area of Chambal in Madhya Pradesh is 59,940 km. Total length of the river 938 km, out of which initial length of 320 km lies in Madhya Pradesh, 226 km in Rajasthan, 216 km makes the boundary between Madhya Pradesh and Rajasthan, 112 km makes the boundary between Madhya Pradesh and Uttar Pradesh and 64 km in Uttar Pradesh before confluence with Yamuna river. Kalisindh, Parvati, Kuno and Sip are the main tributaries of the river Chambal.

Kunwari Sindh sub-sub basin : River Sindh originates in Vidisha district. Total catchment area of the river in Madhya Pradesh is 26,699 sq.km and total length is 470 km. A length of 461 km of the river falls in M.P. and 9 km in Uttar Pradesh. Major tributaries of Sindh are Mahuar, parbati, Pahuj, Kunwari.

Jamni sub-sub basin : River Jamni originates in Sagar district. Total catchment area in Madhya Pradesh is 1,235 sq.km and total length is 201 km. In Madhya Pradesh the river flows for 29 km, for 85 km river makes boundary between Madhya Pradesh and Uttar Pradesh and last 87 km flows in Uttar Pradesh.

Betwa sub-sub basin : River Betwa originates near Bhopal and meets Yamuna near Hamirpur. Total Basin area in Madhya Pradesh is 19,365 sq.km. Total length of river is 575 km, out of which 216 km lies in Madhya Pradesh, 98 km common boundary between the two states and 261 km in Uttar Pradesh. The major tributaries are Kaliasote, Halali, Bah, Sagar. Budhna, Jamni Bina.

Dhasan sub-sub Basin : This river originates in Raisen district of Madhya Pradesh. Total basin area in Madhya Pradesh is 8,291 sq.km. Total length of the river is 365 km, out of which 240 km lies in Madhya Pradesh, 54 km common boundary between Madhya Pradesh and Uttar Pradesh and 71 km in Uttar Pradesh.

Ken sub-sub Basin : River Ken originates in Jabalpur district. Total basin area in Madhya Pradesh is 24,785 sq.km. Total length of river is 427 km, out of which 292 in Madhya Pradesh and Uttar Pradesh and 51 km makes the common boundary between the two states.

Paisuni and Badhain sub-sub Basin : Total basin area of river Paisuni in Madhya Pradesh is 416 sq.km and of Baidhan river is 1504 sq.km in Madhya Pradesh. These two rivers originate in Satna and Panna district and meet river Yamuna below Banda district.

- b. **Tons sub basin** : River Tons originates in Satna district. Total basin area in Madhya Pradesh is 11,974 sq.km. The river meets Ganga after flowing 246 km in Madhya Pradesh. 7 km making boundary between Madhya Pradesh and Uttar Pradesh and finally 67 km in Uttar Pradesh. Total land put to use for agriculture purpose in Tons basin is 8,460 sq.km in the State for which 2,244 hm of water is available for its use against total available water at 75% dependability is 2,244 hm.
- c. **Sone Sub Basin** : Total basin area of this river in Madhya Pradesh is 28880 sq.km. Total length of the river is 784 km. In Madhya Pradesh the river flows for 470 km. The river meets Ganga in Bihar state near Patna. The major tributaries of river Sone are Johilla, Mahanadi,

Gopad, Rehar, Kanhar, Banas. As interstate agreement between Madhya Pradesh, Uttar Pradesh and Bihar, Madhya Pradesh can use 5.25 MAF (6,475.77 hm). As some part of the basin now lies in Chhattisgarh state, the share of the state will have to be decided in future.

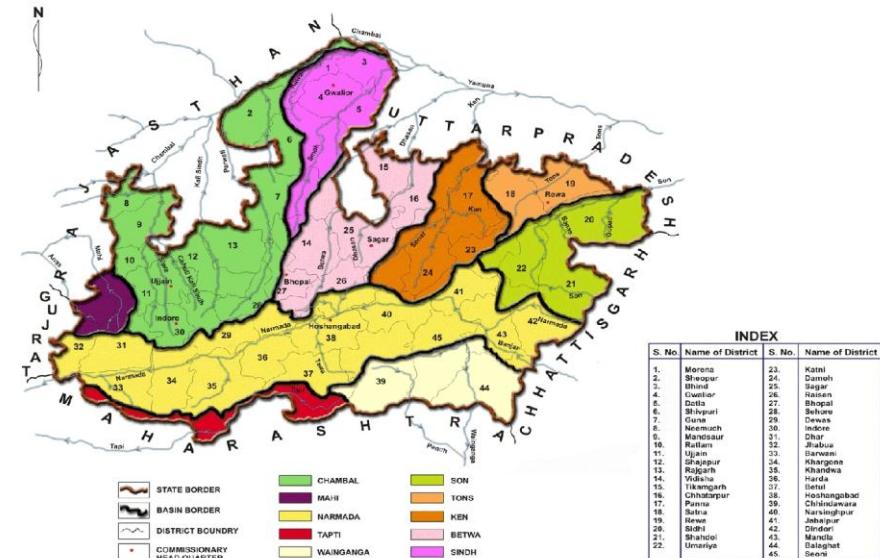
- Narmada Basin :** River Narmada originates from Amarkantak and flows from east to west and joins Arabian Sea. Total drainage area of the river is 98,796 sq.km out of which 85149 sq. km lies in Madhya Pradesh after formation of Chhattisgarh, which has 710 sq.km. Total length of river is 1312 km and in Madhya Pradesh the river flows for a length of 1077 km. As per Narmada award of Tribunal Madhya Pradesh has been allocated 18.25 MAF of water. Major tributaries of the river Narmada are Banjar, Heran, Kolar, Sukta, Tawa, Tendoni, Beda, Sher, Shakkar, Man, Jobat and Goi rivers.

- Godavari Basin :** In Madhya Pradesh, only the river Wainganga, Wardha and Pench originate in district Seoni and Chhindwara respectively. Total drainage area of these rivers in Madhya Pradesh is 23,388 sq.km.

- Tapti Basin :** River Tapti originates from Multai in Betul district. This river also flows from east to west. Total basin area of Tapti is 65,145 sq.km, out of which Madhya Pradesh has 9,800 sq.km. Total length of the river is 724 km. In Madhya Pradesh the length of river is 332 km. Total agriculture land available in the State is 6,330 sq.km. Water available at 75% dependability in the state is 2,401 hm. Madhya Pradesh can use 1,646 hm as per agreement with the Maharashtra state.

- Mahi Basin :** River Mahi originates in Dhar district and joins Gulf of Khambat. Total drainage area of this basin is 34,842 sq.km out of which only 6,700 sq.km lies in Madhya Pradesh. Total length of the river is 583 km of which 158 km traverses in Madhya Pradesh. An as is the major tributary of Mahi in the State. Total agriculture land available in the basin in the state is 3,450 sq.km for which 338 hm (12 TMC) of water has been allocated to Madhya Pradesh against total water availability at 75% dependability is 1,952 hm per agreement with Rajasthan.

- Mahanadi Basin :** After the formation of Chhattisgarh state, the major portion of Mahanadi basin now lies in Chhattisgarh. Presently, only 154 sq.km basin area of Hasdeo river in district– Annuppur lies in Madhya Pradesh.



Details of above mentioned basins, sub-basins, sub-sub basins with respective drainage area in Madhya Pradesh, water availability @75% dependability and share of the state of Madhya Pradesh in water utilisation in respective basins are summarized in **Table – 1** as given below :

Table – 1 : Basin wise Water availability in Madhya Pradesh

Name of Basin	Drainage Area (Sq.km)	Water Availability (hm)	Water Share of MP (hm)
1. Ganga Basin			
a. Yamuna sub-basin	1,42,250	27,267	23,642
b. Sone sub basin	28,880	7870*	3970*
c. Tons sub-basin	11,924	2,244	2244
2. Narmada Basin	85,149	34,542	22,511
3. Godavari/Wainganga sub Basin	23,388	5083*	2700*
4. Tapi Basin	9,800	2,401	1,646
5. Mahi Basin	6,700	1,952	338
6. Mahanadi	154	Not Defined	Negligible
Total	3,08,245	81,719	57,051

* Tentative on account of division of erstwhile Madhya Pradesh into two states : Chhattisgarh.

In Madhya Pradesh there are 3,960 (2001-02) major, medium and minor dams/reservoirs have been constructed on almost all the major rivers as given below in **Table - 2**

Table – 2 : Basin-wise Number of Irrigation Schemes in M.P. : 2001-2002

S.N	River Basin/Sub Basin	No. of irrigation Schemes									Grand Total	
		Major			Medium			Minor				
		Completed	Under construction	Total	Completed	Under Construction	Total	Completed	Under construction	Total		
1.	Ganga											
	• Chambal Betwa	02	01	03	27	05	32	594	111	705	740	
	• Yamuna	02	04	06	06	02	08	388	19	407	421	
	• Ganga (independent)	01	03	04	24	03	27	675	215	890	921	
	Sub-Total	05	08	13	57	10	67	1657	345	2002	2082	
2.	Narmada Tapti	02	02	04	23	01	24	1193	205	1398	1426	
3.	Wainganga	00	03	03	19	01	20	393	36	429	452	
	Grand Total	07	13	20	99	12	111	3243	586	3829	3960	

Source : Irrigation statistics 2001-2002, CE, WRD, GoMP

The details of irrigation potential created (2001-02)are shown in following **Table - 3** :-

Table – 3 : Irrigation Potential Created in Madhya Pradesh

S.N	Scheme	Numbers	Irrigation potential created (in ha.)	Total irrigated area (in ha.)
1.	Major			
	• Completed	07	76269	405733
	• Under construction	13	21461	91071
	Total	20	977350	496804
2.	Medium			
	• Completed	99	372439	235974
	• Under construction	12	17425	6468
	Total	111	389864	242442
3.	Minor			
	• Completed	3243	651162	198681
	• Under construction	586	18558	2295
	Total	3829	669720 *	200976
	Total 1 + 2 + 3			
	• Completed	3349	1786280	840388
	• Under construction	611	250654	99834
	Grand Total	3960	2036934 **	940222

Source : Irrigation statistics 2001-02, Water Resources Deptt. (WRD), GoMP

Note * :- 6.69 lakh ha under WRD+0.44 lakh ha transferred to panchayats

**20.36 lakh ha under WRD + 0.44 lakh ha under panchayats = Total 20.80 lakh ha.

1.3 Delineation and Codification of Microwatershed:

The drainage map of entire Madhya Pradesh has been prepared from Survey of India topographical maps on 1:50,000 scale. Delineation of watershed boundary was taken from the “Watershed Atlas of India” published by Soil and Land Use Survey India, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi.

For practical developmental purposes the watersheds are further subdivided into subwatersheds so that the area coverage is amenable and manageable under land development schemes. For this purpose the further delineation and codification has been done on 1:50,000 scale maintaining the watershed codes of Watershed Atlas of India. The subwatersheds are further subdivided into microwatersheds considering lower order drainage.

Systematic delineation and codification of microwatersheds have been done starting from bigger to smaller hydrological unit. The river basin of the country was taken as geographic reference and the systematic delineation of the entire river systems of the country was made by Dr. A. N. Khosla of Central Water and Power Commission (CWPC) in 1949. According to his system the whole of India was delineated into six water resources regions:

- | | | |
|-------------|---|---|
| Region No.1 | : | Indus Drainage |
| Region No.2 | : | Ganges Drainage |
| Region No.3 | : | Brahmaputra Drainage |
| Region No.4 | : | All Drainage flowing into Bay of Bengal except those at 2 & 3 |
| Region No.5 | : | All Drainage flowing into Arabian Sea except that at 1 |
| Region No.6 | : | The Ephemeral drainage in Rajasthan |

The delineation up to watershed level is followed as per Watershed Atlas published by Soil and Land Use Survey India (1990).

The delineation has been done in 5 stages starting with Water Resource Regions (WRRs) and their subsequent division into Basins, Catchments, Subcatchments and Watersheds on 1:1 million scale. Subsequently, two-stage delineation starting with subwatershed and microwatershed has been done on 1:50,000 scale. The stages of delineation are described below.

- The water resources regions are segregated and the codes 1 - 6 have been assigned.
- Each Water resource region is divided into different basins. In some of the cases, where the drainage systems are too large, basin is divided into lower and upper basins or left bank and right bank basins.
- The basins have been further subdivided into number of catchments, which mostly pertain to main tributaries or a group of contiguous small tributaries or individual streams.
- As a fourth stage of delineation the catchments are further divided into a number of subcatchments, which are mainly smaller tributaries and streamlets.
- Each subcatchment has been subjected to further divisions in the number of watersheds, which have been taken as the smallest hydrologic entity on the 1:1 million scale.

- The delineation and codification up to watershed is then transferred on 1:50,000 scale for further delineation. Each watershed is subdivided into subwatersheds.
- The subwatersheds are further divided into smallest micro level hydrological unit i.e. microwatershed which are part of a small streams or streamlets.

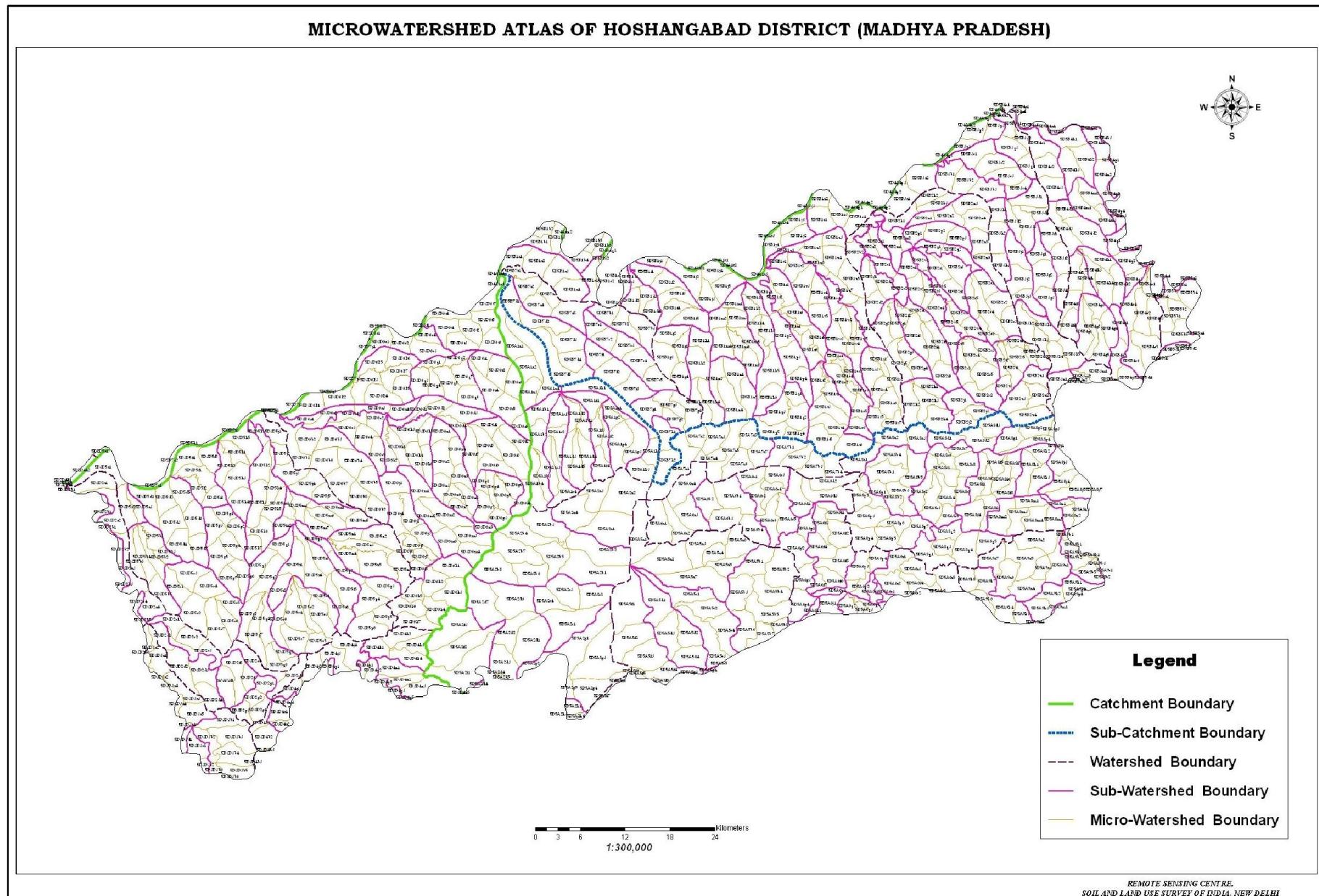
The different stages of delineation mentioned above have been codified in a systematic way alternating with Arabic numerals, English capital and small alphabets as follows:

Water Resources Regions	1, 2, 3, 4, 5, 6
Basins	A, B, C, D, E, F
Catchments	1, 2, 3, 4
Sub Catchments	A, B, C, D, E, F, G
Watersheds	1, 2, 3, 4, 5, 6.....9
Subwatersheds	a, b, c, d, f, g..... (except e, i, l and o)
Microwatersheds	1, 2, 3, 4, 5, 9

Thus, at microwatershed level the code appears 5D5A6b1connotes,

- 5 : Region (Rivers flowing into Arabian Sea)
 D : Basin (Narmada)
 5 : Catchment (Tawa confluence of Marble rocks left bank of Narmada)
 A : Sub-catchment (Tawa confluence to Denwa)
 6 : Watershed (SonbhadrA)
 b : Sub-watershed (Sub watershed no. b)
 1 : Micro-watershed (Microwatershed no. 1)

Sample map of Demarcated Microwatershed – District Hoshangabad



1.4 Overview of the State :

Madhya Pradesh is the second largest state in the country in terms of area. Its population has crossed the 60 million mark and accounts for 5.88% of the total population of the country. The population density is 196 per kilometer. Out of the total population 26% reside in urban areas and 74% in rural areas. The percentage of scheduled tribe population to total population, as per 2001 Census, works out to 20.27 percent and the percentage of scheduled caste population to total population is 15.17 percent. The State is characterized with variety of geographical, social and cultural variations.

Table SPSP 1 : State Profile

S.No.	Name of District	No. of Blocks	Total no. of villages	Total no. of Gram Panchayats	Geographical area in Sq Km	Population (As per the 2001 Census)									% of BPL to total population	
						Male			Female			Total				
						SC	ST	Others	SC	ST	Others	SC	ST	Others		
1	Balaghat	10	1367	693	9229	56953	159285	524511	59117	167255	530847	116070	326540	1055358	46.37	
2	Barwani	7	714	417	5422	34587	365568	148454	33839	359167	139826	68426	724735	288280	59.21	
3	Betul	10	1328	558	10043	75789	275793	358374	71815	274114	339290	147604	549907	697664	43.34	
4	Bhind	6	935	447	4459	169271	3580	608051	137515	3140	507002	306786	6720	1115053	25.4	
5	Bhopal	2	526	202	2772	135756	31862	805031	122417	28699	719745	258173	60561	1524776	38.14	
6	Chhatarpur	8	1076	558	8687	183680	26880	578373	159310	24713	501767	342990	51593	1080140	35.42	
7	Chhindwara	11	1984	808	11815	110576	322458	514303	103625	318963	479358	214201	641421	993661	35.67	
8	Damoh	7	1229	461	7306	112242	69837	388150	99016	66338	348366	211258	136175	736516	66.25	
9	Datia	3	602	281	2691	84794	5224	248214	71938	4753	213317	156732	9977	461531	20.81	
10	Dewas	6	1061	497	7020	123916	110064	443886	115018	105087	410252	238934	215151	854138	37.52	
11	Dhar	13	1557	762	8153	57839	478757	353820	55137	469677	325099	112976	948434	678919	42.77	
12	Dindori	7	899	364	7470	17410	186193	88113	16438	188254	84322	33848	374447	172435	46.99	
13	Guna	9	2751	757	11065	155591	105843	622586	137936	97899	546912	293527	203742	1169498	107.11	
14	Gwalior	4	706	300	4560	167249	29787	686281	141415	27161	580216	308664	56948	1266497	29.68	
15	Harda	3	571	211	3330	40056	65028	142142	36144	61294	129752	76200	126322	271894	38.89	
16	Hosangabad	7	923	428	6707	90078	84892	396804	80702	79157	352632	170780	164049	749436	52.05	
17	Indore	4	677	335	3898	200344	85442	1003566	188115	78430	909930	388459	163872	1913496	27.5	
18	Jabalpur	7	1474	542	5211	142609	164878	819817	131344	158012	734543	273953	322890	1554360	49.2	
19	Jhabua	12	1360	665	6782	19965	607652	74436	19325	603464	69719	39290	1211116	144155	61.07	

S.No.	Name of District	No. of Blocks	Total no. of villages	Total no. of Gram Panchayats	Geographical area in Sq Km	Population (As per the 2001 Census)									% of BPL to total population	
						Male			Female			Total				
						SC	ST	Others	SC	ST	Others	SC	ST	Others		
20	Katni	6	882	409	4950	62512	123932	361924	59659	121586	334554	122171	245518	696478	44.4	
21	Khandwa	9	1060	590	10779	98383	259613	526970	91305	248919	487944	189688	508532	1014914	82.29	
22	Khargone	9	1407	600	8030	89881	274740	419983	84614	268022	392322	174495	542762	812305	41.72	
23	Madsaur	5	943	493	5535	108742	19296	477081	103520	18230	456855	212262	37526	933936	62.48	
24	Mandla	9	1214	441	5800	21176	252350	174430	20129	259448	166703	41305	511798	341133	38.61	
25	Morena	7	799	489	4989	184742	6851	682496	150986	6123	561516	335728	12974	1244012	29.41	
26	Narsinghpur	6	1078	457	5133	81000	64514	356131	73552	61625	320824	154552	126139	676955	37.27	
27	Neemach	3	676	239	4256	46425	31962	294032	44663	29828	279160	91088	61790	573192	37.29	
28	Panna	5	936	395	7135	90444	67834	292271	80909	63962	261138	171353	131796	553409	61.32	
29	Raisen	7	1429	502	8466	98473	91666	408108	85761	85473	355673	184234	177139	763781	42.53	
30	Rajgarh	6	1664	627	6154	113104	24568	511434	105602	22802	476575	218706	47370	988009	49.86	
31	Ratlam	6	1053	419	4861	83203	159375	378284	79798	155329	359404	163001	314704	737688	46.37	
32	Rewa	9	2352	827	6314	158448	132058	726181	148787	122003	685829	307235	254061	1412010	35.24	
33	Sagar	11	1868	760	10252	222368	101162	749675	193006	95310	660466	415374	196472	1410141	51.92	
34	Satna	8	1784	703	7502	157025	137562	676809	147192	130542	620974	304217	268104	1297783	65.36	
35	Sehore	5	1011	499	6578	115754	59751	389632	105323	56371	352081	221077	116122	741713	45.71	
36	Seoni	8	1585	645	8758	61688	212822	314240	58969	216282	302607	120657	429104	616847	49.7	
37	Shahdol	9	1390	674	9952	59421	351539	394028	56483	349112	364720	115904	700651	758748	93.5	
38	Shajapur	8	1068	554	6196	147465	18408	503979	136174	16894	467765	283639	35302	971744	52.25	
39	Sheopur	3	533	226	6606	48384	61958	184955	42036	58524	163638	90420	120482	348593	47.85	
40	Shivpuri	8	1326	615	10278	146130	82961	547099	124734	78432	462594	270864	161393	1009693	48.65	
41	Sidhi	8	1822	716	10526	111279	280675	555876	105747	266700	510875	217026	547375	1066751	97.15	
42	Tikamgarh	6	875	459	5048	155749	26688	455476	136422	25269	403394	292171	51957	858870	43.06	
43	Ujjain	6	1092	612	6091	217348	27725	637798	205534	25505	597072	422882	53230	1234870	45.35	
44	Umaria	3	646	234	4076	18014	115247	131867	17112	112003	121720	35126	227250	253587	47.7	
45	Vidisha	7	1624	580	7371	129018	30960	487860	112113	28363	426543	241131	59323	914403	46.59	
Total		313	53857	23051	308256	4804881	6195240	20443531	4350296	6038234	18515841	9155177	12233474	38959372	46.24	

1.5 Economic Development :

Economic Growth :

There have been significant macroeconomic structural changes in India during the years 1999-2000 to 2006-07. The contribution of primary sector has decreased from 25% to 18.40% and the tertiary sector contribution has increased from 49.7% to 55%. Comparatively, these changes have been very limited for Madhya Pradesh highlighting the need for supporting structural reforms. The share of primary sector has reduced marginally from 29.75% in 1999-00 to 28.12% in 2006-07 as shown in **Table 4**. Also, the share of secondary and tertiary sectors has been practically stagnant during the last 7 years, when the Indian economy has seen a significant growth in the tertiary sector.

Table – 4 : Sectoral Composition of Economy – Madhya Pradesh and All-India

Sector/Year	All-India		Madhya Pradesh	
	199-00	2006-07	1999-00	2006-07
Primary	25.0	18.4	29.75	28.12
Secondary	25.3	26.6	24.23	25.06
Tertiary	49.7	55.0	46.02	46.82

Source : GoMP FRBM statement, 2008-09

The structural distribution of the population in the State reflects the backwardness of the economy. Though the contribution of the primary sector to the total Net State Domestic Product is gradually coming down, agriculture still remains the mainstay of the State's economy with 70% of the population is still dependent upon agriculture. Madhya Pradesh economy continues to be predominately agrarian, agricultural sector's contribution being 26.01 percent in GSDP for 2007-08. The agrarian character of the economy is also reflected in most of the districts as shown in **Annexure - 1**. The highest contribution in Gross District Domestic Product (GDDP) from the agriculture sector was 53.05 percent in Harda in 2007-08. In Shivpuri, Panna, Shajapur, Dewas, Jhabua, Dhar, East Nimar, Rajgarh, Vidisha, Sehore, Raisen, Narsinghpur and Dindori districts, the contribution in GDDP from agriculture sector was more than 40 percent in 2007-08.

The share of the Manufacturing sector in GSDP was 12.29% in 1999-2000 which declined to 9.99% in 2007-08. Out of the manufacturing sector, the share of Registered Manufacturing has declined significantly from 8.55% in 1999-2000 to 6.29% in 2007-08. The decline in the share of Unregistered Manufacturing was only marginal from 3.74% to 3.69%. The share of Registered Manufacturing was significantly higher than the State average in

1999-2000 in Gwalior, Satna, Ujjain, Dewas, Dhar, Indore, East Nimar, Bhopal, Raisen and Jabalpur. In 2007-08, the share was significantly higher than the State Average in Satna, Ujjain, Dewas, Dhar, Indore, Bhopal, Raisen, Katni and Jabalpur. All the important industrialized districts – Bhind, Gwalior, Satna, Dewas, Dhar, Indore, Bhopal, Raisen and Jabalpur have experienced a decline in share of Registered Manufacturing in this period. Sidhi and Shahdol occupied the top two positions in respect of the share of the Mining Sub-sector in GDDP with 45.82% and 28.66% share in 1999-2000. Umaria, Chhindwara and Balaghat also had significantly higher share of increase in the share of mining in this period. Bhopal and Indore districts have the highest share from the Service Sector at 71.87% and 70.98%, respectively. In Gwalior and Jabalpur districts also the share of the Service Sector is significantly higher than the State Average. The share of the Sector is lowest in Shahdol at 15. 48%.

Growth of State Domestic Product and Sectoral Contribution :

GSDP at current price was Rs. 86744.96 crore in 2001-02 and Rs. 142499.93 crore in 2007-08. GSDP at factor cost in constant prices (1999-2000) was Rs. 79891.09 crore in 2001-02 and it grew at an annual growth rate of 4.9% to touch the level of Rs. 98,344.43 crore in 2006-07 as shown in **Table 5**. Despite a relatively slow growth pace Madhya Pradesh has shown considerable improvement in its growth pattern in recent years as compared to its own past growth rates.

Table 5 : Trend of GSDP of Madhya Pradesh at Factor Cost (Rs. In Crore)

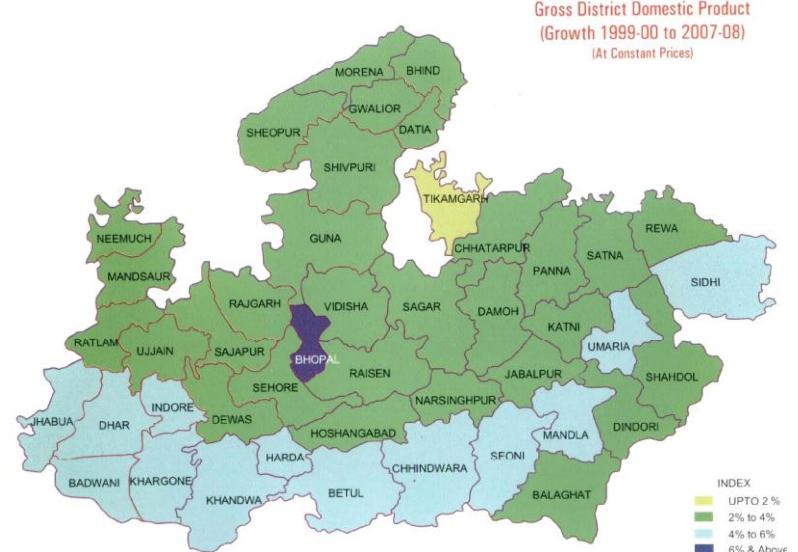
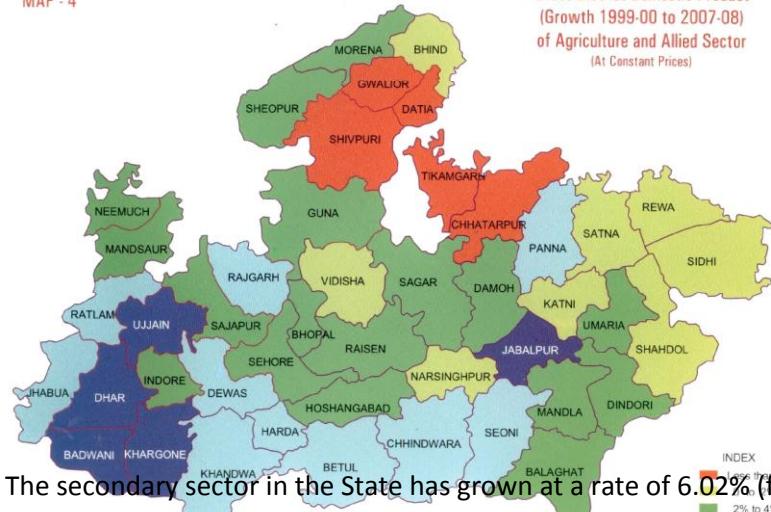
Sector	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	CAGR (2001-07)
A. Primary Sector	21,715.16	17,677.89	24,173.98	23,132.75	24,867.11	25,377.33	24,901.08	5.15%
B. Secondary Sector	19,472.01	19,318.48	20,351.02	21,882.39	23,972.92	25,377.80	27,120.16	6.02%
C. Tertiary Sector	38,703.93	39,769.12	41,005.48	43,152.94	45,041.41	47,589.30	51,482.17	4.25%
D. GSDP	79,891.10	76,765.49	85,530.48	88,168.08	93,881.44	98,344.43	10,3503.41	4.90%
E. Population (In lakh)	610.55	623.12	635.21	647.2	659.1	670.93	682.66	1.90%
F. Per Capita GSDP (Rs.)	13,085	12,320	13,465	13,623	14,244	14,658	15,162	2.94%

Source : Estimates of Directorate of Economics and Statistics, M.P.

District which have recorded higher growth rate in comparison with the state average are Sidhi, Jhabua, Dhar, Indore, West Nimar, Barwani, Bhopal, Betul, Harda and Jabalpur. District which have a lower growth rate in comparison with the state average are Bhind, Datia, Shivpuri, Tikamgarh, Chhatarpur, Satna, Rewa, Vidisha, Raisen, Katni, Narsinghpur and Dindori.

An analysis of sector-wise growth profile (from 2001-02 to 2006-07) given in **Table – 5** shows that the primary sector grew at a rate of 5.15%. Performance of this sector has important implications for industrial growth and political stability. Madhya Pradesh is the second largest State in terms of area in the Country. Agriculture and allied activities is the dominant sector in Madhya

MAP - 4



Pradesh, with over 70% rural population dependent on it, directly or indirectly. The performance of predominantly tribal districts, Balaghat, Seoni, Chhindwara, Mandla, Betul, West Nimar, Badwani, Dhar and Jhabua is really impressive. Similarly, the performance of backward districts Panna and Rajgarh is also remarkable. Five districts, viz Tikamgarh, Chhatarpur, Shivpuri, Gwalior and Datia have recorded negative growth rate in the agriculture sector. Katni, Bhind, Rewa and Satna have recorded growth rate of less than 1% in the sector. The poor performance in these districts is possibly because of frequent droughts.

Tertiary sector in Madhya Pradesh grew at a lower rate of 4.25% during last 7 years, an evidence of low levels of economic activity for this sector in the State.

NSDP at current prices was Rs. 77521.85 crore in 2001-02 and touched the level of Rs. 123229.63 crore in 2007-08. NSDP at factor cost in constant prices (1999-2000) in 2001-02 was Rs. 71525.34 crore and touched the level of Rs. 90786.10 crore in 2007-08. The growth of NSDP at current price from 1999-2000 to 2007-08 is shown in **Table - 6**.

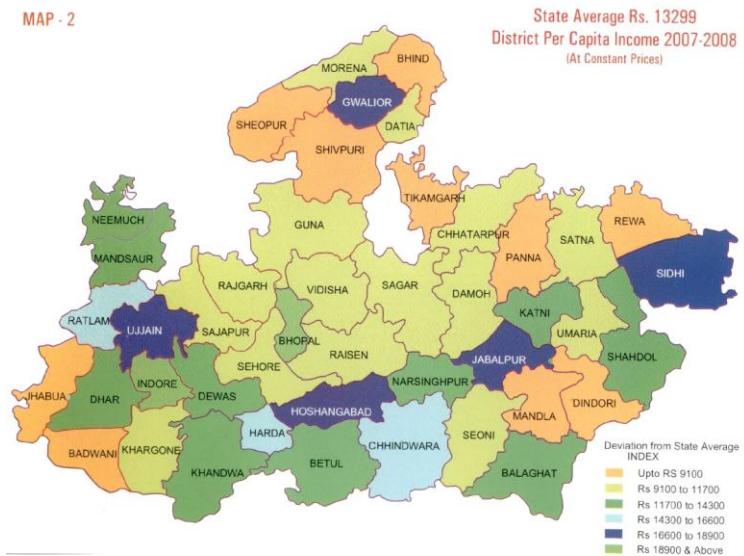
Table 6: Trend of NSDP of Madhya Pradesh at Factor Cost

(Rs. In Crore)

Sector	1999-00	2000-01	2001-02	2003-04	2007-08
A. Primary Sector	22,878.43	18,541.44	22,765.99	29,496.96	34,722.89
B. Secondary Sector	15,629.14	16,225.18	16,701.54	18,173.68	28,648.08
C. Tertiary Sector	34,147.79	36,244.01	38,054.32	43,199.95	59,858.66
D. NSDP	72,655.36	71,010.63	77,521.85	90,870.59	123,229.63

Per Capita Income of Madhya Pradesh

District wise Per Capita Income variation is shown in the **Map**, which indicates that predominantly tribal districts have very low Per Capita Income. **Table - 7** shows the inter-state disparity from 2001-02 to 2006-07 in per capita income (PCI) level. PCI for Madhya Pradesh is substantially lower than PCI of other States except that of Bihar and Uttar Pradesh. For the year 2006-07, per capita GSDP for Madhya Pradesh stood at Rs. 14,658 as against per capita GDP of Rs. 25,529 for India. Moreover, slow annual growth at 2.94% highlights the fact that Madhya Pradesh has not been able to keep pace with growth trends in other parts of the country. The reasons for this anomaly include high dependence on agriculture, largely



traditional method of cultivation, droughts, tribal predominated demographic profile of the State, limited accessibility to road and rail network in

many parts and its typical geographical characteristics including large areas under forest cover that have been explained in greater detail in the following sub-sections.

Table - 7: State-wise Per Capita Real GSDP at 1999-2000 Prices : 2001-02 to 2006-07

States/Uts	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	Annual Growth Rate (%)	As % of Per Capita GDP in 2006-07
Bihar	6,571	7,243	6,816	7,434	7,315	8,351	3.83	32.71
Madhya Pradesh	13,085	12,320	13,465	13,623	14,244	14,658	2.94	57.42
Uttar Pradesh	10,857	11,053	11,398	11,649	12,073	12,734	3.15	49.88
India Per Capita GDP	18,967	19,397	20,735	21,932	23,624	25,529	6.28	

Source : Central Statistical Organisation

Madhya Pradesh is a culturally rich state endowed with vast natural resources. However the state has historically been suffering from constrained growth and cost disabilities such as :

- **Vast Drought Affected Area and Rainfed Agriculture :** With its vast expanse, geographical features and varying climate conditions, different parts of the State have been perennially prone to drought conditions. Many districts of Madhya Pradesh have been facing a drought situation repeatedly every year. During 2007-08, 39 out of 50 districts (165 Tehsils and one cluster) of Madhya Pradesh have been declared as drought affected. The State has faced drought in the nine out of last ten years. Though irrigated area has increased substantially in the State, yet production in almost 70% agriculture area remains highly dependent on rainfall.
- **Large Forest Area and Difficult Terrain :** Madhya Pradesh has a mixed topography and agro climatic zones. It has a terrain of plains in some areas and a hilly topography in other areas with a very high percentage of area under forest cover. This adds to cost disability in developing physical infrastructure as well as service delivery to dispersed population residing in forest areas. The imposition of net present value for diversion of forest land by the Supreme Court has resulted in various developmental projects becoming economically unviable. Since Madhya Pradesh has a large forest area, a large number of projects have been thus adversely affected.

- **High Tribal Population :** Madhya Pradesh is home to the highest number of tribal population in India, spread out in remote, sparsely populated areas. The State Government is committed to their development and has been focusing on pro poor policies for the vulnerable groups. There are however additional administrative costs imposed on the Government in providing basic public services to such populations and bringing them into the mainstream of the development process.
- **Control on Use of Mineral Resources by Centre :** Availability of mineral resources plays an important role in industrial and economic development of a State. Madhya Pradesh is endowed with rich mineral wealth. However limited use of mineral resources by the state to the extent determined by the centre imposes severe constraints on State's growth needs.
- **Inadequate Technical skills of Population Leading to Poor Service Sector Growth :** Literacy rate has improved in the State from 44% in 1991 to 64% in 2001, but the State does not have a large pool of technically qualified personnel which is an essential requisite for non-primary sector growth. The lack of poor technical skills in the population has constrained the growth of secondary and tertiary sector in the State.
- **Poor Communication Infrastructure :** Madhya Pradesh is a landlocked State. The State is not very well connected by the three common modes of transport, namely; roads, railways, and airways. There are several interior areas where railway network is still absent. The road density in the State is very poor. Being a landlocked State and equally distant from major ports and consumption centers, the State is handicapped in attracting major industries to the State.

The above constraints have put the State in a vicious cycle of low growth where lack of infrastructure, low levels of industrialization and consequent poor consumption base leads to a lower revenues and limits new investments in infrastructure. This in turn , leads to lower growth and consequently impacts the ability of the State to break out of this vicious cycle.

Strategies for Future economic Growth

Government of Madhya Pradesh has displayed fiscal prudence and has been adhering to the requirements of the Fiscal Responsibility and Budget Management Act (FRBMA). However, the state is facing peculiar cost disabilities as mentioned above, the impact of which is reflected in the outcomes like abysmal growth rates, despite several reform measures and substantial investments. Thus the additional resources are required for

ameliorating socio-economic backwardness, enabling achievement of national minimum levels of public service delivery and ensuring efficient use of resources. Government of Madhya Pradesh is determined to focus on following key areas for the economic development of the state:-

- Making agriculture an economically profitable activity and reducing the vulnerability of droughts through Productivity Enhancement, Watershed Development Programme, Focus on Subsistence Crops and Technologies, Promotion of Organic Farming, Seed Replacement etc.
- Poverty alleviation
- Infrastructure development
- Enhancing industrial investment
- Empowerment of women
- Expansion of education and health facilities
- Promoting Public Private Partnership

ROLE OF WATERSHED MANAGEMENT PROGRAMME IN THE STATE

In Madhya Pradesh the agriculture sector accounts for nearly one-third of GSDP and forms the backbone of the State's economy. Sustainable and continued agricultural development is essential for the overall development of the State. In Madhya Pradesh, agriculture is characterized by several problems, prominent among which is that of wide year-to-year fluctuations in production and consequently, farm incomes. The absence of assured irrigation in large parts of the State and of appropriate technology for dry land and drought prone areas compounds the problem. The State has 5 crop zones, 11 agro climatic regions and 4 soil types, which add to biodiversity in the State and acts favorably for production of various agriculture and horticulture crops. There are a high proportion of low value crops with low productivity and agriculture holdings are highly fragmented. There are also large areas of cultivable wastes and fallow lands. According to the 2000-01 Agriculture Census there were 73.60 lakh operational holdings in the State. 65% of agriculture in the State is still traditional and mostly rainfed. With its most cropped area belonging to the rainfed category, the incidence of drought has become more or less a perpetual feature. It is pertinent to note here that in the last ten years the State has faced drought in nine years, which has impacted the GSDP adversely. Added to this the relentless exploitation of the natural resources base in the form of soil cover, vegetative cover and ground water due to increased biotic pressure mounting pressure on fragile eco-system. Rural poverty and extensive unemployment amongst the casual farm and non-farm workers indicates inadequate work opportunities. As consequences the livelihood of rural people's in rainfed agriculture areas has always been under constant threat.

In the context of above background the watershed management programme is the most appropriate and scientific approach for conserving the soil and water resources and optimizing their utilisation to have increased/sustainable agricultural productivity, regeneration of natural vegetation and better livelihood opportunities in rainfed areas of Madhya Pradesh.

Ministry of Rural Development, Govt. of India had started watershed management programme in the year 1994 under Drought Prone Area Programme (DPAP), Employment Assurance Scheme (EAS) and Integrated Wasteland Development Programme (IWDP). Considering its importance, Government of Madhya Pradesh, Panchayat and Rural Development Department had also constituted Rajiv Gandhi Mission for Watershed Management (RGMWM) in August, 1994 to plan and implement the watershed projects in mission mode with the aim of reducing the vulnerability to droughts, improving the incomes and livelihood of people and also providing short-term employment opportunities. The watershed projects of National Watershed Development Programme In Rainfed Areas under Department Of Agriculture and Watershed Projects funded by NABARD have also been implemented in the state.

Objectives of Watershed Management Programme :

- Augmentation, conservation and optimum utilization of soil and water resources in rainfed areas.
- Reducing the vulnerability to droughts and fluctuations in agricultural production.
- To restore ecological degradation and improving the environmental resource base.
- To develop an easily available repository of scientific and technological inputs for detailed and area specific planning available to the field level implementing agencies.
- To maximize people's participation in the planning, implementation, management and maintenance of watershed development activities.
- To focus on disadvantaged communities through equitable distribution of resources and sharing of benefits. to develop and demonstrate replicable Public Private Partnership (PPP) models for innovative and synergistic watershed planning, implementation, management and monitoring
- Value addition to the Watershed Development Projects for sustainable livelihoods and economic benefits by enhancing agro-biomass production, implementation of income generation



activities/micro enterprises, providing backward and forward market linkages and micro-finance solutions etc.

Implementation Mechanism of RGMWM :

The Mission does not view watershed management as the programme, merely for soil and water conservation or engineering interventions, but provides the opportunity to neglected and weaker sections of rural public to have the access to resources. The most important element of the strategy envisaged for Rajiv Gandhi Mission for Watershed Management is to make rural people the hub of all development activities. This task sounds simpler than it actually is, because of heterogeneous groups of rural public which is stratified by caste, ethnicity, sex, religion, class, asset level, occupation, literacy, etc. Therefore to bring these diverse groups together to come forward with their aspirations and needs and to convert community demand into community action, the bottom to top participative implementation mechanism has been adopted by Mission, which hinged on:

- Establishing multidisciplinary institutional arrangements at block and district level to act as the facilitator for community organisation, capability building, planning and implementation and community action processes.
- Making rural people the key actors in the programme from planning and implementation to maintenance, monitoring and management for which necessary community structures at village level in participatory manner have been evolved.
- Harnessing all available techno-scientific resources to support the decision making process of the people.
- Developing a "cascade" approach to the idea of soil and water conservation whereby it is seen not as an accumulation of isolated water harvesting structures but as a completely integrated group of soil conservation-water impounding structures each drawing upon and adding to the other.
- Location specific and need based action plans.
- Preference to low cost, indigenous and simple technologies, local materials and skills.
- Tying up area development as well as beneficiary oriented programme
- Involving Expert Personnel, Voluntary Groups, Consultants and organisations best equipped for the Mission aims.
- Equitable sharing of gains and benefits to ensure distributive justice.

Present Status and Achievements:

Watershed Management Programme in Madhya Pradesh has affected a greening of antipoverty investment in the state and made significant progress. The key achievements are as given below :-

S.No.	Project	Area Selected (Ha.)	Area Treated (Ha.)
1	Drought Prone Area Programme	1633500	1263110
2	Integrated Wasteland Development Programme	764000	552432
3	National Watershed Development Programme in Rainfed Areas	1034738	821149

- Increase in Kharif Area - 22.44%
- Increase in Kharif Production - 36.73%
- Increase in Rabi Area - 49.20%
- Increase in Rabi Production - 36.03%
- Increase in Rabi Irrigated Area - 46.89%
- Increase in Double Cropped Area - 56.32%
- Decrease in wasteland - 44.65%
- No. of villages where water table increase has been observed – 6014



Under Watershed Management Project in Mili Watershed, Sohanpur in Beghumganj block of Raisen district, 35934 met. staggered contour trenches, 17964 met. continuous contour trenches, 608 boulder checks, 19 farm ponds, 62 tanks, 15 stop dams, 2 rock fill dams, 3 Sanchi structures, 38 Bori bunds and 229 sock pits have been constructed. Due to the direct and indirect benefits of these soil and water conservation structures, the area under irrigation in the project area has increased from 362 hectare to 1760 hectare. This has led to increase in production. The two-crop area has increased by 1680 hectare. Earlier, only 23 wells had water round the year, but now 380 wells have become all weather.

Under the jurisdiction of Charohandol Watershed Committee in Shahdol district, one tank, two nullah bunds and 8 farm ponds have been constructed. These structures are irrigating about 20 hectare. Paddy of improved variety is produced in this area and following construction of these structures; its production has increased from 6 quintals to 10 quintals per hectare. These works have benefited 25 farmers. Besides field bunds have been constructed for ground water conservation and to check soil erosion. Moisture of soil and water level has increased, benefiting to farmers.



In Vidisha district, 4 stop dams have been constructed on Chandrahai nullah in micro watershed area under Watershed Management Project in Sironj development block. This has provided irrigation facility to about 140 hectare three times in a year, which has led to increase in farm output. Under the same project, the construction of an earthen check dam at a cost of Rs. 1,41,000 in Orakhedi Micro Watershed has augmented the irrigation facility as a result of which now farmers are taking two crops on 14.5 hectare. Under Gwari Micro Watershed also 4.5 hectare wasteland

has been made arable by 94 earthen check dam constructed at a cost of Rs. 1.01,000. Besides, single irrigation facility has been provided to 9.5 hectare, which has directly benefited farmers and water level of 4 wells has gone up.

Chapter – II

2.0 AGRO-CLIMATIC ZONES

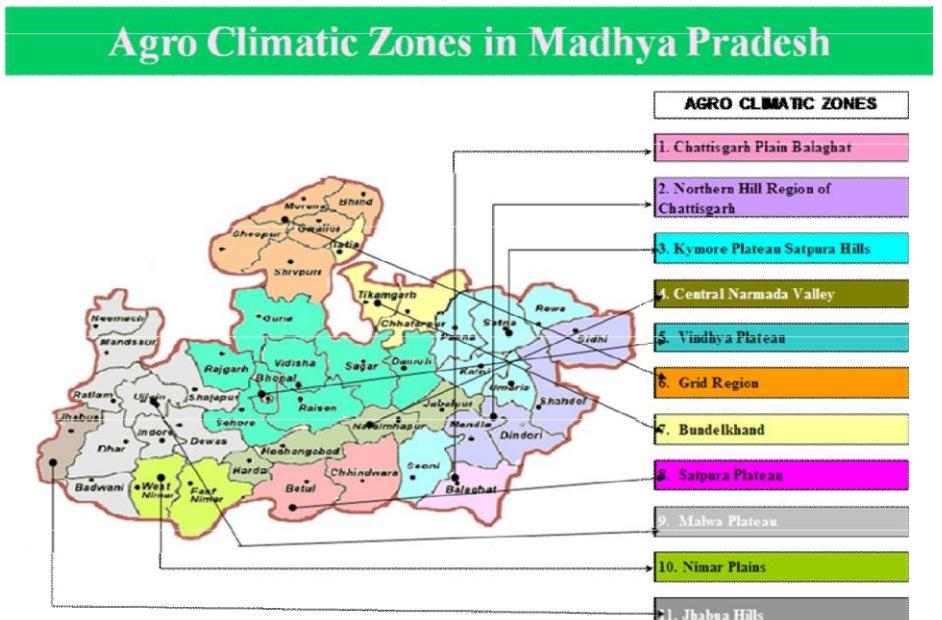
The state has a typically tropical climate with 3 distinct seasons (winter, summer and monsoons). The average rainfall for the state is 1200 mm.

District in the western and northwestern parts of the state are considered to be susceptible to desertification. These regions also do not have a thick forest cover in comparison with the central and eastern parts of the state.

The state has broadly been divided into 11 Agro-climatic Zones (ACZ). Agriculturally, Malwa and Central Narmada Valley (CNV) are advanced ACZ. The cropping pattern shows a significant presence of cash crops and horticultural crops in Malwa and CNV ACZ. The average productivity of land in these regions is also higher than that the state average. CNV ACZ has the higher percentage of irrigated land to net sown area while

Malwa is third in the list. Bundelkhand ACZ due to large parts of the region under traditional tanks/ponds occupies the second position in the state. NHC ACZ has the lowest percentage of irrigated area to net sown area. It also shows the lowest productivity percentages of both kharif and rabi crops.

The zones have special cropping patterns, soil types and varying degrees of rainfall as shown in the **Table SPSP – 2** given below :-



SPSP – 2 : Agro-climatic Zones in State

S.No	Name of the Agro-	Area in	Names of	Major soil types	Average	Major crops
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	climatic zone	Sq Km	the districts	a) Type	b) Area in Ha.	rainfall in mm (preceding 5 years average)	Name	Area in 000 Ha.
1	Chhattisgarh Plains	17987	Balaghat	Red and Yellow	922900	1623	Paddy, Wheat, Linseed	277
			Seoni	Mixed Red and Black	875800	1170	Paddy, Kodokutki, Soybean, Wheat, Gram	379.1
2	Northern hill Region of Chhattisgarh	33748	Sidhi,	Red and yellow	1052600	1287	Paddy, Maize, Kodokutki,Tur, Sesamum, Wheat, Barley, Gram, Linseed	417.3
			Shahdol	Red and yellow Medium Black	995200	1326	Paddy, Kodokutki,Wheat	152.1
			Dindhori	Red and yellow	747000	1241	Paddy, Maize,Kodokutki,Niger, Wheat, Mustard, Lentil	242.2
			Anuppur	Red and yellow Medium Black			Paddy, Maize,Kodokutki, Niger, Wheat	144.7
			Mandla	Red and yellow Medium Black	580000	1370	Paddy, Maize,Kodokutki, Wheat, Peas, Mustard, Lentil	248.8
3	Kymore Plateau & Satpura Hills	29979	Panna	Mixed Red and black, Deep Black	713500	1213	Paddy, Wheat, Gram,Lentil	238.9
			Satna	Mixed Red and Black	750200	896.3	Paddy,Kodokuti, Soybean, Wheat, Gram,Lentil	431.7
			Rewa	Medium and Black	631400	1035	Paddy, Jowar, Tur, Soybean, Wheat, Gram,Lentil, Linseed	473.6
			Katni	Mixed Red and black, Deep Black	495000	1027	paddy, wheat, gram, lentil	205.3
			Umaria	Red and yellow Medium Black	407800	1326	paddy, maize, kodokutki, wheat	99.6
4	Central Valley	20381	Harda	Deep Black	333000	1417	Soybean, Wheat,Gram	292.2
			Hosangabad	Deep Black	670700	1294	Soybean, Wheat, Gram	451.2
			Narsingpur	Deep Black	513300	1105.2	Tur, Urd, Soybean, Wheat, Gram, Lentil,Sugarcane	413.3
			Jabalpur	Deep Black	521100	1161.9	Paddy, Urd, Wheat, Gram,Peas, Lentil	306.9

S.No	Name of the Agro-climatic zone	Area in Sq Km	Names of the districts	Major soil types		Average rainfall in mm (preceding 5 years average)	Major crops	
				a) Type	b) Area in Ha.		Name	Area in 000 Ha.
5	Vindhyan Plateau	59966	Guna	Medium and Deep Black		1052.8	Jowar, Maize, Soybean, Wheat, Gram, Mustard	349.8
			Rajgarh	Medium Black	615400	1134	Jowar, Maize, Soybean, Wheat, Gram	497.3
			Vidisha	Medium and Deep Black	737100	1133	Urd, Soybean, Wheat, Gram, Lentil	645.1
			Bhopal	Medium Black	277200	1079	Soybean, Wheat, Gram	194.3
			Sagar	Medium and Deep Black	1025200	1125	Urd, Soybean, Wheat, Gram, Lentil	660.9
			Raisen	Medium and Deep Black	846800	1330	Tur, Soybean, Wheat, Gram, Lentil	455.6
			Sehore	Medium and Deep Black	657800	1262	Maize, Soybean, Wheat, Gram	537.4
			Damoh	Medium and Deep Black	730600	1224	Paddy, Urd, Soybean, Wheat, Gram, Lentil	380.2
6	Gird Region	30892	Morena	Alluvium	498900	709	Bajra, Wheat, Mustard	298.7
			Bhind	Alluvium	445900	668	Bajra, Wheat, Mustard	284.2
			Sheopur	Alluvium	660600	723.7	Bajra, Soybean, Sesamum, Wheat, Mustard	167.4
			Shivpuri	Alluvium	1027800	871	Maize, Soybean, Groundnut, Wheat, Gram, Mustard	414.3
			Gwalior	Alluvium	456000	858.1	Wheat, Gram, Mustard	165.9
			Ashoknagar	Alluvium			Urd, Soybean, Wheat, Gram, Lentil	333.6
7	Bundelkhand	16426	Datia	Mixed Red and Black	269100	742.6	Sesamum, Wheat, Gram, Peas	161.1
			Tikamgarh	Mixed Red and Black	504800	1101	Urd, Soybean, Sesamum, Wheat, Gram, Mustard	236.1
			Chhatarpur	Mixed Red and Black	868700	1075	Urd, Sesamum, Wheat, Gram, Peas	311.1
8	Satpura Plateau	21858	Betul	Shallow Black	1004300	1084	paddy, Jowar, Maize, Tur, Soybean, Wheat, Gram, Sugarcane	476.3
			Chhindwara	Shallow Black	1181500	1053.7	Paddy, Jowar, Maize, Tur, Soybean, Groundnut, Cotton, Wheat, Gram, Sugarcane	532.2
9	Malwa Plateau	51432	Neemach	Medium Black	425600	823	Maize, Soybean, Wheat, Gram, Mustard	221.4
			Mandsaur	Medium Black	553500	1012	Maize, Urd, Soybean, Wheat, Gram, Mustard	419.3
			Ratlam	Medium Black	486100	895	Maize, Soybean, Wheat, Gram	361.2
			Ujjain	Medium Black	609100	935	Soybean, Wheat, Gram	666.2
			Shajapur	Medium Black	619600	977	Jowar, Maize, Soybean, Wheat, Gram	574.3
			Indore	Medium Black	389800	980	Soybean, Wheat, Gram	363
			Dewas	Medium Black	7072000	1067	Soybean, Wheat, Gram	470.8
			Dhar	Medium Black	815300	875	Maize, Soybean, Cotton, Wheat, Gram,	617.7
			Badwani	Medium Black	542200	844	Jowar, Maize, Soybean, Cotton, Wheat	332.5
10	Nimar Plains	18809	Khandwa	Medium Black	1077900	880	Jowar, Soybean, Wheat, Gram, Cotton	320.6
			Burhanpur	Medium Black			Jowar, Soybean, Wheat, Cotton, Sugarcane	95.5
			Khargone	Medium Black	803000	830	Jowar, Maize, Soybean, Cotton, Wheat	388.3

The state of Madhya Pradesh has a variety of soils ranging from rich clayey to gravelly. The major groups of soils found in the state can be divided into 4 categories namely; alluvial, medium and deep black, shallow and medium black, mixed red and black. The district wise detail are given in **Table- 8:-**

Table- 8



Type of soils Area and (%)	No. of Districts	Name of Districts
Shallow & medium Black soil Area 3.06 m ha. (6.91%)	3	Betul, Chhindwara and Seoni
Deep medium Black soil Area 16.21 m. ha. (36.53%)	33	Narsinghpur, Hoshangabad, Harda, Shahdol, Damoh, Vidisha, Raisen, Bhopal, Sehore, Rajgarh, Ujjain, Dewas, Shajapur, Mandsaur, Neemuch, Ratlam, Jhabua, Dhar, Indore, Khargone, Barwani, Khandwa, Guna (partly), Shivpuri (partly), Datia (partly) and Sidhi (partly), Anuppur, Ashoknagar, Burhanpur
Alluvial soil Area 3.35 m. ha. (7.57%)	4	Gwalior, Morena, Sheopurkala, Bhind & Shivpuri (partly)
Mixed Red & Black soil Area 8.11 m. ha. (18.30%)	8	Mandla, Dindori, Balaghat,, Rewa, Satna, Panna, Chhatarpur, Tikamgarh, Shivpuri (partly), Guna (partly), Datia (partly) and Sidhi (partly)

2. RAINFALL

- a. Annual rainfall in the state varies from 600 to 1600 mm. The average rainfall for the state is 1200 mm. There is one distinct rainy season when the state receives rains through the southwest monsoon, in the months of June to October and the average numbers of rainy days are 54. The district-wise details of average rainfall recorded at the district head quarter are given in **Table – SPSP-3** :-

SPSP – 3 Details of average rainfall

1	2	3
S.No.	Name of the District	Average rainfall in mm (preceding 5 years average)
1	Betul	1084.00
2	Balaghat	1623.20
3	Barwani	844.00
4	Bhind	668.00
5	Bhopal	1079.00
6	Chhatarpur	1075.00
7	Chhindwara	1053.70
8	Damoh	1224.00
9	Datia	742.60
10	Dewas	1067.00
11	Dhar	875.00
12	Dindori	1241.00
13	Guna	1052.80
14	Gwalior	858.10
15	Harda	1417.00
16	Hosangabad	1294.00
17	Indore	980.00
18	Jabalpur	1161.90
19	Jhabua	580.00
20	Katni	1027.00
21	Khandwa	880.00
22	Khargone	830.00
23	Madsaur	1012.00
24	Mandla	1370.00
25	Morena	709.20

26	Narsinghpur	1105.20
27	Neemach	823.00
28	Panna	1213.00
29	Raisen	1330.40
30	Rajgarh	1134.00
31	Ratlam	895.00
32	Rewa	1035.00
33	Sagar	1125.00
34	Satna	895.30
35	Sehore	1262.16
36	Seoni	1170.00
37	Shahdol	1326.00
38	Shajapur	977.00
39	Sheopur	723.70
40	Shivpuri	871.00
41	Sidhi	1248.00
42	Tikamgarh	1101.00
43	Ujjain	935.00
44	Umaria	1326.00
45	Vidisha	1133.80
	Total	

d. **Brief Of Droughts and Flood in the State :**

Almost every year, one or other part of the state is generally hit by drought in last 10 years causing damage to crops and shortage of drinking water. The year wise details are as given below:-

Year	No. of Districts	Name of Districts	Type of Calamity
1991-92	23	Rewa, Sidhi, Satna, Shahdol, Jabalpur, Balaghat, Chhindwara, Mandla, Seoni, Rajgarh, Betul, Dhar, Jhabua, Khandwa, Sagar, Damoh, Panna, Tikamgarh, Chhatarpur, Gwalior, Guna, Data, Ratlam	Drought
1992-93	4	Mandla, Khandwa, Chhindwara, Balaghat	Drought
1994-95	4	Rajgarh, Tikamgarh, Balaghat, Khandwa	Drought
1995-96	8	Panna, Tikamgarh, Chhatarpur, Rajgarh, Ratlam, Khandwa, Jhabua, Chhindwara	Drought
1996-97	5	Balaghat, Jabalpur, Seoni	Drought
1997-98	35	Indore, Khargone, Khandwa, Ujjain, Dewas, Shajapur, Mandsaur, Ratlam, Gwalior, Shivpuri, Guna, Bhind, Rewa, Shahdol, Satna, Sagar, Damoh, Panna, Chhatarpur, Tikamgarh, Bhopal, Betul, Raisen, Rajgarh, Sehore, Vidisha, Hoshangabad, Jabalpur, Balaghat, Chhindwara, Seoni, Mandla, Narsinghpur	Excessive Rains & Hail Storms
1998-99	23	Vidisha, Dhar, Neemuch, Ujjain, Bhopal, Ratlam, Betul, Shajapur, Sagar, Guna, Chhindwara, Damoh, Dindori, Dewas, Khandwa, Khargone, Indore, Mandsaur, Gwalior, Sehore, Mandla, Jabalpur, Rajgarh	Hail Storms
1999-2000	4	Dhar, Jhabua, Khargone, Badwani	Drought
	6	Hoshangabad, Harda, Raisen, Sehore, Narsinghpur, Dewas	Flood
2000-01	32	Ratlam, Rajgarh, Panna, Seoni, Jhabua, Ujjain, Khargone, Badwani, Balaghat, Khandwa, Dhar, Neemuch, Katni, Bhind, Mandsaur, Chhindwara, Mandla, Jabalpur, Damoh, Chhatarpur, Narsinghpur, Tikamgarh, Shahdol, Indore, Sheopur, Satna, Betul, Sidhi, Dindori	Drought
2001-02	6	Ujjain, Shajapur, Ratlam, Rajgarh, Seoni & Chhindwara	Drought

2002-03	33	Ratlam, Rajgarh, Panna, Seoni, Ujjain, Morena, Gwalior, Balaghat, Neemuch, Katni, Shivpuri, Guna, Datia, Bhind, Mandsaur, Chhindwara, Mandla, Jabalpur, Damoh, Chhatarpur, Tikamgarh, Shahdol, Shajapur, Barwani, Sheopur, Satna, Sidhi, Dindori, Raisen, Sagar, Rewa, Umaria and Vidisha	Drought
2004-05	21	Sheopur, Datia, Tikamgarh, Balaghat, Panna, Chhatarpur, Rewa, Shahdol, Sidhi, Chhindwara, Harda, Hoshangabad, Seoni, Betul, Dewas, Khargone, Barwani, Ratlam, Umaria, Sehore, Ujjain	Drought
2005-06	9	Tikamgarh, Ratlam, Mandsaur, Shajapur, Chhatarpur, Khargone, Rajgarh, Chhindwara, Panna	Drought
	3	Chhindwara (Chindwara)	Drought
		Shajapur (Agar), Panna (Gunnor & Pawai)	Drought
2006-07	9	Panna, Tikamgarh, Chhatarpur, Satna, Gwalior, Shivpuri, Rewa, Katni, Ratlam	Drought
	4	Datia, Gwalior, Morena, Anuppur	Cluster

CHAPTER - III

3. DEMOGRAPHY AND LAND DISTRIBUTION

The State has 10 divisions, 50 districts with 53857 villages with 23051 Gram Panchayats. As per the 1991 Census, the total population of the State was 485.66 lakh with 253.94 lakh males and 231.72 lakh females. The density of population was 158 persons per Sq. Km, far below the all India average of 274. However, as per 2001 census the total population of the state works out to 603.85 lakh with 314.57 males & 289.28 lakh females. In terms of population it holds the seventh position among States and Union territories in the country. Out of the total population 26% reside in urban areas and 74% in rural areas. The percentage of scheduled tribe population to total population, as per 2001 Census, works out to 20.27 percent and the percentage of scheduled caste population to total population is 15.17 percent which is lower than the all India figure. The 2001 population census suggests that the population of Madhya Pradesh continues to increase at an average annual rate of growth of 2 percent per year. Every year nearly 1.4 million people are added into the state's population. The district wise decadal growth in population is given in **Table - 10**.

Table – 10 : Population, decadal growth rate, sex ratio and density – States/Union territories and Districts : 2001

S.No.	District	Population 2001			Decadal growth rate		Sex ratio		Density	
		Persons	Males	Females	1981-1991	1991-2001	1991	2001	1991	2001
1	2	3	4	5	6	7	8	9	10	11
1	Sheopur	559.715	295.630	264.085	33.32	29.72	880	893	65	85
2	Morena	1.587.264	871.243	716.021	30.58	24.09	808	822	256	318
3	Bhind	1.426.951	780.122	646.829	25.18	17.06	816	829	273	320
4	Gwalior	1.629.881	882.258	747.623	27.97	26.00	831	847	284	357
5	Datia	627.818	337.842	289.976	26.01	21.82	847	858	192	233
6	Shivpuri	1.440.666	775.473	665.193	30.84	27.16	849	858	110	140
7	Guna	1.665.503	883.433	782.070	30.77	27.11	875	885	118	151
8	Tikamgarh	1.203.160	637.842	565.318	27.66	27.88	871	886	186	238
9	Chhatarpur	1.474.633	788.845	685.788	30.61	27.33	856	869	133	170
10	Panna	854.235	447.923	406.312	27.40	24.17	897	907	96	120

S.No.	District	Population 2001			Decadal growth rate		Sex ratio		Density	
		Persons	Males	Females	1981-1991	1991-2001	1991	2001	1991	2001
1	2	3	4	5	6	7	8	9	10	11
11	Sagar	2.021.783	1.073.032	948.751	24.53	22.70	881	884	161	197
12	Damoh	1.081.909	568.704	513.205	24.49	20.46	905	902	123	148
13	Satna	1.868.648	970.114	898.534	27.05	27.52	918	926	195	249
14	Rewa	1.972.333	1.017.402	954.931	28.77	26.84	932	939	246	312
15	Umaria	515.851	264.998	250.853	31.83	22.58	942	947	103	127
16	Shahdol	1.572.748	803.416	769.332	28.96	18.87	940	958	133	158
17	Sidhi	1.830.553	947.276	883.277	38.67	33.28	922	932	130	174
18	Neemuch	725.457	371.972	353.485	22.58	21.25	943	950	141	170
19	Mandsaur	1.183.369	604.942	578.427	23.42	23.67	947	956	173	214
20	Ratlam	1.214.536	620.119	594.417	24.17	24.97	948	959	200	250
21	Ujjain	1.709.885	881.509	828.376	23.82	23.63	929	940	227	281
22	Shajapur	1.290.230	669.419	620.811	22.97	24.87	918	927	167	208
23	Dewas	1.306.617	676.414	630.203	29.99	26.39	924	932	147	186
24	Jhabua	1.396.677	701.742	694.935	42.16	23.56	977	990	167	206
25	Dhar	1.740.577	890.853	849.724	29.31	27.29	951	954	168	213
26	Indore	2.585.321	1.352.849	1.232.472	30.26	40.82	906	911	471	663
27	West Nimar	1.529.954	785.212	744.742	23.04	27.95	941	948	149	191
28	Barwani	1.081.039	547.837	533.202	26.30	29.87	964	973	154	199
29	East Nimar	1.708.170	882.371	825.799	24.11	19.31	938	936	133	159
30	Rajgarh	1.253.246	648.850	604.396	23.88	26.24	923	931	161	204
31	Vidisha	1.214.759	647.632	567.127	23.92	25.18	874	876	132	165
32	Bhopal	1.836.784	968.964	867.820	51.05	35.91	889	896	488	663
33	Sehore	1.078.769	565.387	513.382	27.99	28.22	898	908	128	164

S.No.	District	Population 2001			Decadal growth rate		Sex ratio		Density	
		Persons	Males	Females	1981-1991	1991-2001	1991	2001	1991	2001
1	2	3	4	5	6	7	8	9	10	11
34	Raisen	1.120.159	595.730	524.429	23.35	27.80	879	880	104	132
35	Betul	1.394.421	709.525	684.896	27.68	18.02	966	965	118	139
36	Harda	474.174	247.129	227.045	29.14	24.53	914	919	114	142
37	Hoshangabad	1.085.011	571.796	513.215	25.01	22.40	892	898	132	162
38	Katni	1.063.689	548.077	515.612	23.43	20.61	939	941	178	215
39	Jabalpur	2.167.469	1.134.870	1.032.599	19.12	22.59	903	910	339	416
40	Narsinghpur	957.399	501.407	455.992	20.76	21.88	913	909	153	187
41	Dindori	579.312	290.572	288.740	24.94	13.23	985	994	68	78
42	Mandla	893.908	446.487	447.421	24.17	14.66	990	1.002	134	154
43	Chhindwara	1.848.882	946.582	902.300	27.21	17.86	953	953	133	156
44	Seoni	1.165.893	588.135	577.758	23.60	16.49	974	982	114	133
45	Balaghat	1.445.760	714.938	730.822	19.00	5.85	1.002	1.022	148	157
	Madhya Pradesh	60.385.118	31.456.873	28.928.245	27.24	24.34	912	920	158	196

Based on the Census of 2001, various socio-demographic details of Madhya Pradesh are given below in **Table – 11** :-

Table – 11 : Details of various socio-demographic in Madhya Pradesh :

INDICATORS	M.P.	India
Area (In sq. km)	3,08,245 (9.38% of India's total area)	32,87,263
Population (Census 2001)	6,03,85,118 (5.88% of India's population) Urban - 15967000 Rural - 44381000 BPL - ~53,00,000	1,027,015,247 Urban - 285,354,954 Rural - 741,660,293
Population growth rate (1991-2001)	24.34	21.34
Urban Growth	31.19%	
Rural Growth	22.02%	
Population density	196	313
Literacy Rate Total	63.7	64.8
• Male Literacy	76.1	75.3
• Female Literacy	50.3	53.7
• Total Rural	57.8	58.7
• Total Urban	79.4	79.9
Sex ratio (Females per 1000 Males)	919	933
Urban population	26.46%	27.82%
Scheduled Castes	91, 55,000 (15.17%)	16, 65, 76,000 (16.20%)
Scheduled Tribes	12,233,000 (20.27)	8,31,88,235 (8.20%)

The age group wise population of Madhya Pradesh based on 2001 census is given in **Table-12** :-

Table – 12 : Age Group wise Population

Age Group	Total			Rural			Urban		
	Person	Male	Female	Person	Male	Female	Person	Male	Female
0-4	7368736	3801712	3567024	5776585	2969769	2806816	1592151	831943	760208
05-09	8114671	4198430	3916241	6249858	3222812	3027046	1864813	975618	889195
10-14	7769009	4123794	3645215	5783834	3073349	2710485	1985175	1050445	934730
15-19	5690617	3155715	2534902	3975497	2217629	1757868	1715120	938086	777034
20-24	5168016	2693698	2474318	3633948	1862686	1771262	1534068	831012	703056
25-29	4664502	2364315	2300187	3338674	1689802	1648872	1325828	674513	651315
30-34	4348461	2189149	2159312	3133954	1567973	1565981	1214507	621176	593331
35-39	3927208	2062808	1864400	2771848	1464861	1306987	1155360	597947	557413
40-44	3016434	1635980	1380454	2122388	1138061	984327	894046	497919	396127
45-49	2437191	1281601	1155590	1726760	897520	829240	710431	384081	326350
50-54	1890978	1035226	855752	1366303	740408	625895	524675	294818	229857
55-59	1511753	723319	788434	1118938	523221	595717	392815	200098	192717
60-64	1572796	778022	794774	1206420	598278	608142	366376	179744	186632
65-69	1102622	523430	579192	838754	397151	441603	263868	126279	137589
70-74	816977	414281	402696	626008	319504	306504	190969	94777	96192
75-79	352761	168501	184260	265610	126534	139076	87151	41967	45184
80+	435768	207559	228209	328393	158588	169805	107375	48971	58404
Age not stated	159523	86112	73411	117106	62947	54159	42417	23165	19252

According to the 2001 census, the total no. of workers was 257.56 lakh comprising 62.70% males and 37.30% females. Of the total workers 74% are main workers and 26% are marginal workers. Of the total workers 81% were in rural areas and 19% in urban areas. Of the total workers 42.9% were cultivators,

28.7% were agriculture labourers, and remaining were engaged in household industries and other services. The district wise detail of workforce in different sectors in the state is given in **Table 13** :

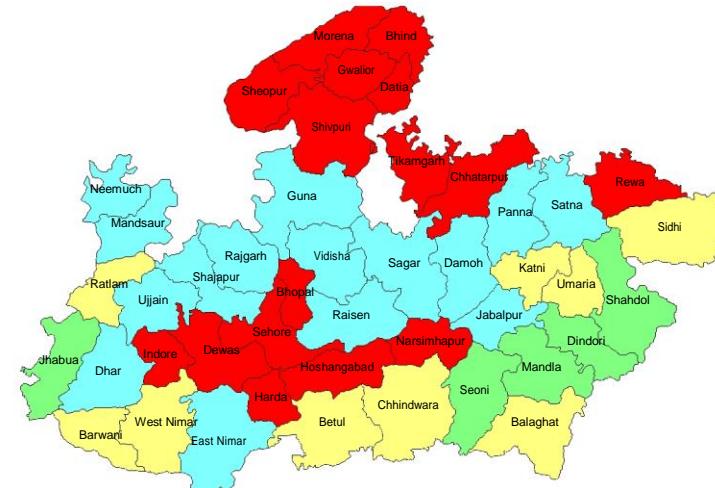
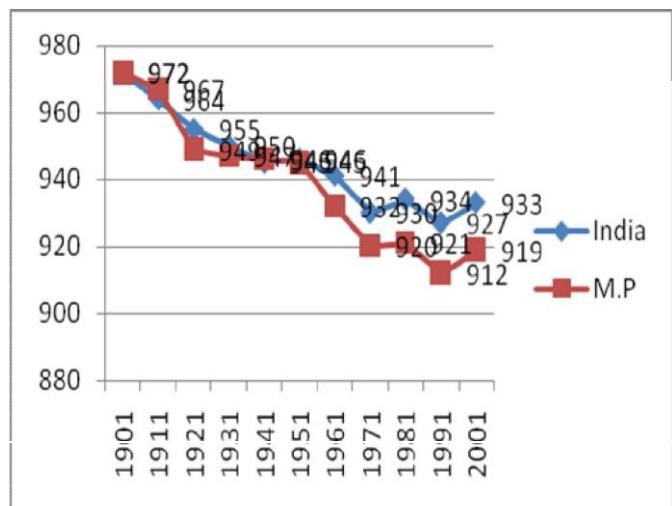
Table – 13 : District-wise Total Workers in different sectors - Madhya Pradesh (2001 Census)

S.No.	Name of District	Total Workers	Main Workers	Marginal Workers	Non Workers	Cultivators	Agricultural Labourers	Household Industries	Other Workers
1	Sheopur	230027	153331	76696	329688	123555	63105	2882	40485
2	Morena	589236	450067	139169	998029	335299	68011	10548	175378
3	Bhind	525495	396595	128900	901456	282154	98114	11042	134185
4	Gwalior	529841	441803	88038	1100040	142987	70764	15529	300561
5	Data	316247	226149	90098	311582	196728	50538	6256	62725
6	Shivpuri	652718	507427	145291	787964	425280	115792	8704	102942
7	Guna	681951	496244	185707	983627	341184	191709	19650	129408
8	Tikamgarh	566468	395969	170499	636692	366452	95407	18581	86028
9	Chhatarpur	593112	441466	151646	881521	325847	121007	26210	120048
10	Panna	371694	259533	112161	482541	178233	115199	12758	65504
11	Sagar	839313	637546	201767	1182470	223277	216008	204805	195223
12	Damoh	485195	347723	137472	596734	135623	144022	111978	93572
13	Satna	745213	554459	190754	1124229	254509	237174	65616	187914
14	Rewa	863608	585601	278007	1109408	374785	301399	40849	146575
15	Umaria	218229	142523	75706	297621	87019	80730	6790	43690
16	Shahdol	687868	458818	229050	884696	268774	237501	17776	163817
17	Sidhi	757408	544083	213325	1073229	385176	237517	18351	116364
18	Neemuch	348228	281932	66296	377229	176851	85548	4745	81084
19	Mandsaur	570771	454612	116159	612598	293500	163723	7511	106037
20	Ratlam	547359	404655	142704	667746	254675	154545	9184	128955
21	Ujjain	754308	587288	167020	955811	320461	190788	16117	226942

S.No.	Name of District	Total Workers	Main Workers	Marginal Workers	Non Workers	Cultivators	Agricultural Labourers	Household Industries	Other Workers
22	Shajapur	630091	436725	193366	660139	310165	201501	9703	108722
23	Dewas	579217	428109	151108	727514	241715	204559	8767	124176
24	Jhabua	732960	487963	244997	661385	537242	102101	7009	86608
25	Dhar	811705	595638	216067	928872	423040	240563	9841	138261
26	Indore	890961	765760	125201	1570483	149046	133103	29781	579031
27	Khargone	704463	589868	114595	826523	328606	245504	10643	119710
28	Barwani	523096	389939	133157	557943	296571	145826	6409	74290
29	Khandwa	749860	626895	122965	958067	270724	294538	12886	171712
30	Rajgarh	626352	438389	187963	626894	340264	172634	11833	101621
31	Vidisha	450975	345555	105420	763784	169585	167265	10567	103558
32	Bhopal	589490	499202	90288	1250261	70506	65025	10938	443021
33	Sehore	452390	308690	143700	626380	203907	163725	7062	77696
34	Raisen	409791	307259	102532	710368	139626	155450	18589	96126
35	Betul	615971	417646	198325	778450	258482	231435	10513	115541
36	Harda	213034	151586	61448	261140	84644	86570	3767	38053
37	Hoshangabad	386643	293477	93166	698368	110612	134450	9342	132239
38	Katni	443390	295073	148317	620299	138541	141638	40429	122782
39	Jabalpur	799035	624689	174346	1355749	120224	200852	76560	401399
40	Narsinghpur	403220	309808	93412	554179	136802	173007	15049	78362
41	Dindori	330918	260917	70001	248856	202843	96288	6158	25629
42	Mandla	463641	321257	142384	430267	203695	191960	7257	60729
43	Chhindwara	779222	559050	220172	1069360	305562	274442	11915	187303
44	Seoni	569211	381256	187955	596682	235977	237352	8606	87276
45	Balaghat	726560	474993	251567	719380	287752	282489	30561	125758
Total		25756485	19077568	6678917	34496254	11058500	7380878	1010067	6307040

The 2001 census shows that the sex ratio for MP is 919 and is in a decreasing trend. The rural sex ratio is much better at 927 as compared to urban sex ratio, which is 899. At all India level the sex ratio has increased from 927 to 933. The districts of Bhind, Morena, Gwalior, Datia, Shivpuri, Guna, Sheopur, Tikamgarh, Chhatarpur and Sagar are the districts with sex ratio even lower than 900. The tribal districts like Balaghat and Mandla do fairly well in terms of sex ratio in favour of girls.

Decreasing Sex ratio of India and Madhya Pradesh



3.1 LAND REFORM

The economy of Madhya Pradesh is agrarian, therefore the issue of land reforms in the state has a vital role for poverty eradication in rural area. The details of various activities of land reforms are described below :-

1. Land ceiling has been considered as one of the effective instruments for reducing disparities in ownership of land. In Madhya Pradesh ceiling law has already been implemented as a result of which, the total quantum of land declared surplus is 2,23,264 acres, out of which about 1,90,449 acres have been taken into possession and 1,34,188 acres have been distributed to 47,058 beneficiaries. 73% beneficiaries are SC/ST.
2. Out of 1,72,000 acres Bhoojan land 1,41,000 acres have been distributed.
3. Distribution of govt. wasteland has always been one of the key strategies of land reforms. In Madhya Pradesh 79,000 acres of govt. wastelands has been distributed.
4. Consolidation of fragmented agriculture land holding forms and integral part of the land reform policy. In Madhya Pradesh an area of 95.53 lakh acres has been consolidation.
5. For prevention of alienation and restoration of alienated tribals lands in Madhya Pradesh 53,806 cases have been registered covering 1,58,398 acres of land, of which 29,596 cases have been disposed off covering an area of 97,123.

3.2 OPERATIONAL LAND HOLDING

In Madhya Pradesh the number of small and marginal farmers is about 62% of total land holders but their share in area is only 22%. Others are having 78% of area with 38% share in numbers. District-wise details are indicated in **SPSP – 5 given below :-**

Districts	Marginal		Small		Semi Medium		Medium		Large		Total Holdings	
	(Below 1 Hect.)		(1 to 2 Hect.)		(2 to 4 Hect.)		(4 to 10 Hect.)		(10 Hect. and Above)			
	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
Balaghat	136717	56631	49059	69697	30714	83063	13869	80369	1594	23470	231953	313230
Betul	81907	22345	42504	63832	42798	121160	31231	190867	7546	111079	205986	509283
Bhind	65342	32914	35003	52226	23174	91708	21636	128043	2673	37837	147828	342728

Districts	Marginal		Small		Semi Medium		Medium		Large		Total Holdings	
	(Below 1 Hect.)		(1 to 2 Hect.)		(2 to 4 Hect.)		(4 to 10 Hect.)		(10 Hect. and Above)			
	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area	Number	Area
Bhopal	9824	5217	13827	20366	12805	35646	10021	60544	2465	39972	48942	161745
Chhatarpur	67556	36037	64723	95069	47296	128620	25754	150960	4256	65797	209585	476783
Chhindwara	76092	37483	65368	92905	53932	150535	34288	201598	4355	63227	234035	545748
Damoh	60028	29370	34316	48560	25780	42264	17122	102944	4485	74225	141731	327363
Datia	18355	9853	14469	21037	12931	35876	8394	50021	1503	22175	55652	138962
Dewas	27149	13025	27979	41938	25930	72562	25497	157504	8468	141167	115023	426196
Dhar	42803	22997	44795	66272	42464	117971	32569	196502	7788	119893	170419	523635
Khandwa	26349	15540	47372	70606	41114	114452	31120	186796	6667	99896	152622	487290
Guna	62322	30142	61134	80846	55200	142989	39548	223297	10549	161058	228753	638329
Gwalior	42291	20861	29373	43273	23685	67624	16248	97311	2878	50725	114475	279794
Hoshangabad	28495	15924	35511	53787	33275	92948	29986	180767	9469	168161	136736	511587
Indore	27135	13289	23692	35462	21159	58633	16351	99245	4084	66951	92421	273580
Jabalpur	173740	81537	81103	112517	57454	156417	28983	165052	3589	56786	344869	572309
Jhabua	50800	28358	50493	73884	43474	121561	22222	127812	1848	24344	168837	375959
Mandla	95925	43994	52285	76180	48334	138018	37077	221651	5900	84209	239521	564052
Mandsaur	78573	41692	59235	85353	50632	142143	35225	212176	5192	75500	228857	556864
Morena	109191	56282	66661	96670	47019	129208	21464	122874	2004	30691	246339	435725
Narsinghpur	38171	19636	38059	56704	26470	74517	18720	111735	3332	51159	124752	313751
Panna	57696	26889	36837	54045	28603	78257	16024	94951	2235	32845	141395	286987
Raisen	23816	12387	34758	52349	30135	85011	27335	167681	7102	122167	123146	439595
Rajgarh	66530	31315	48679	64337	40861	113700	29193	172183	5615	81558	190878	463093
Ratlam	40014	21741	34688	50112	29904	84131	21664	130248	4191	62106	130461	348338
Rewa	107043	44802	41664	59076	33595	93530	22471	133645	5915	105817	210688	436870
Sagar	79680	39183	62896	89808	44928	125243	28898	174241	7633	131036	224035	559511
Satna	109601	45832	50269	71627	36342	99829	21304	125052	3447	54520	220963	396860
Sehore	25728	12971	30736	45657	29033	79858	26472	161464	6551	109740	118520	409690
Seoni	56241	23316	40448	59578	35998	102009	27221	163192	6116	91775	166024	469870

CHAPTER - IV

4. LAND USE PATTERN

The land use data of Madhya Pradesh is given in **Table – 14**. Based on this data, following trends are emerging regarding change in land use :-

- a. Madhya Pradesh is very rich in terms of forest wealth, when compared to its neighbors, and is ranked fourth in the country. The national forest area is 25%, whereas Madhya Pradesh has forest area of 28%. The analysis of land use data of last 15 years shows that forest area in the state is increasing, which is due to reforms at local level such as empowerment of JFM committees.
- b. The percentage of land put to non agriculture use to the geographical area is 6.33%. There is gradual increase observed in the land put to non agriculture use indicating environmental degradation and change in the land use pattern.
- c. The trend line shows increase in the area of barren and unculturable land. This kind of land constitutes 4.69% of the geographical area.
- d. Permanent pasture and grazing land have been decreasing continuously and constitutes 4.35% of geographical area.
- e. The land under miscellaneous tree crops and grooves is almost static with slight variation.
- f. Culturable wasteland constitutes 3.78% of geographical area and its trend line shows a decrease, which indicates the utilisation of such land for agriculture or other productive purpose. The higher area of culturable wasteland from the year 2000-2003 is probably due to droughts in this period.
- g. The percentage of fallow land is 3.85% of geographical area. There is gradual decrease in the area of fallow land towards the year 2005-06.
- h. The gross cropped area is 64.09% of the total geographical area. The net shown area has a decreasing trend from the year 2000 to 2003, however after the year 2003 it is increasing. Gross cropped area is also having variable trend as shown in **Table - 14**.

Table – 14 : Table - Land Use of Madhya Pradesh

(Area in 000 hectare)

Particular	90-91	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	% to Geographical area
Geographical area	307.35	307.33	307.34	307.50	307.50	307.49	307.49	307.45	307.45	307.50	307.55	307.55	307.56	307.56	307.55	307.56	100.00
Forests	81.71	81.78	82.17	84.64	84.86	84.79	85.05	84.95	84.92	86.13	85.52	85.81	85.78	85.80	85.85	85.89	27.93
Not available for cultivable																	
A. Land put to non-agricultural uses	17.41	17.47	17.63	17.69	17.40	18.10	18.13	18.40	18.45	18.35	18.896	18.60	18.90	19.25	19.24	19.47	6.33
B. Barren and unculturable land	16.74	16.56	16.25	14.30	14.55	14.01	13.84	13.66	13.47	13.65	13.49	13.95	14.17	14.25	14.40	14.42	4.69
Total	34.15	34.03	33.88	31.99	31.95	32.11	31.97	32.06	31.92	32.00	32.38	32.55	33.07	33.50	33.64	33.89	11.02
Other Uncultivated land excluding fallow land																	
A. Permanent pasture & other grazing lands	18.69	18.53	18.31	17.86	17.78	17.87	17.61	17.55	16.99	16.58	15.85	14.81	13.95	13.60	13.41	13.39	4.35
B. Land under tree misc. crops & grooves	0.23	0.23	0.18	0.29	0.24	0.22	0.20	0.19	0.17	0.15	0.20	0.18	0.19	0.19	0.20	0.19	0.06
Total	18.92	18.76	18.49	18.15	18.02	18.09	17.81	17.74	17.16	16.73	16.05	14.99	14.14	13.79	13.61	13.58	4.36
Fallow land																	
A. current fallows	5.26	7.21	5.69	4.99	5.97	5.16	4.95	4.91	4.99	4.86	8.18	6.04	9.96	6.21	5.96	5.90	1.92
B. Old fallow	5.97	6.19	6.22	5.81	5.68	5.74	4.51	5.45	5.41	5.38	5.75	6.36	6.26	5.99	5.96	5.95	1.39
Total	11.23	13.40	11.91	10.80	11.65	10.90	9.46	10.36	10.40	10.24	13.93	12.40	16.22	12.20	11.92	11.85	3.85
Cropped Area																	
A. Net area sown	148.65	146.72	148.71	150.19	149.37	150.22	150.68	151.03	151.30	150.70	147.66	149.62	146.21	150.48	150.78	150.74	49.01
B. Area sown more than once	33.54	28.20	33.97	40.73	39.37	42.51	46.71	51.63	53.52	53.49	32.07	41.85	35.60	48.43	52.28	46.37	15.08
C. Gross Cropped Area	182.19	174.92	182.68	190.92	188.74	192.73	197.39	202.66	204.82	204.19	179.73	191.47	181.81	198.91	203.06	197.11	64.09
Cropping intensity in %	123	119	123	127	126	128	131	134	135	135	122	128	124	132	135	131	

Table : SPSP – 8 : District-wise Land Use Status

District-wise Land use Pattern																		(Area In Hectares)			
S.No	Name of Districts	Geograph-hical Area	Forests	Not Available For Cultivation			Other Uncultivated Land Excluding Fallow Land						Fallow Land			Net Area Sown	Total Cropped Area	Area Sown More than Once	Net irrigate d Area		
				Area Under Non Agricultural Uses	Barren and Un-Cultur-able Land	Total	Perma-nent Pasture s and Other Grazing Lands	Land Under Misc Tree Crops and Groves not Included in Net Area	Cultura -ble Waste Land	Total	Fallow Lands Other than Current Fallows	Current Fallow	Total								
1	Anuppur	391465	76448	34560	21481	56041	3139	200	26792	30131	25198	25228	50426	261625	269511	31899	19300				
2	Ashok Nagar	519843	52701	27531	36241	63772	12366	-	25652	38018	4142	4138	8280	304623	352701	58078	110000				
3	Badwani	700714	353789	22470	72479	94949	4366	517	9534	14417	3286	2295	5581	231978	267570	35592	122800				
4	Balaghat	924500	504819	46468	9623	56091	32177	668	28080	60925	15344	11860	27204	275461	348922	73461	63600				
5	Betul	1007800	396280	46798	25939	72737	27641	4	42325	69970	35998	31684	67682	401131	529293	128162	107200				
6	Bhind	445204	8905	36127	21827	57954	16567	493	11290	28350	7146	14847	21993	328002	355531	27529	108700				
7	Bhopal	277880	44106	31097	3947	35044	33051	27	4949	38027	3546	4711	8257	152446	214718	62272	85600				
8	Burhanpur	342741	202368	15557	6419	21976	10303	-	650	10953	1890	1709	3599	103845	116770	12925	34400				
9	Chhatarpur	863036	214215	35798	1609	37407	70513	301	74394	145208	42058	36505	78563	397643	485018	97375	226600				
10	Chindwara	1184923	479504	52810	27193	80003	51794	31	18651	70476	32467	38672	71139	483801	541969	108168	110900				
11	Damoh	728583	266995	32113	59238	91351	33549	54	14180	47783	7332	6189	13521	308933	388650	79717	111600				
12	Datia	295874	24798	21607	14564	36171	4472	2814	13537	20823	7483	7267	14750	199332	237243	37911	133500				
13	Dewas	701307	206037	34523	10846	45369	60850	24	2415	63289	1424	773	2197	384415	575273	190858	1500				
14	Dhar	819541	120755	47401	75653	123054	46881	33	16274	63188	3583	2559	6142	506402	696563	190161	138300				
15	Dindori	358935	25311	26979	11219	38198	12255	60	13493	25808	31833	32440	64273	205345	271815	66470	166000				
16	Guna	630766	100911	34246	61529	95775	29378	19	65251	94648	9022	7719	16741	322691	410881	88190	139500				
17	Gwalior	456449	110640	33149	50937	84086	14280	75	22906	37261	8682	9542	18224	206238	256501	50263	113900				
18	Harda	330579	104597	16402	6921	23323	18328	495	7777	26600	3471	1379	4850	171209	298600	127391	139500				
19	Hoshangabad	668689	255675	19474	25792	45266	26580	557	28382	55519	10072	6535	16607	295622	492871	197249	261000				
20	Indore	383097	52208	24033	6857	30890	21526	75	14705	36306	2973	2109	5082	258611	425814	167203	93700				
21	Jabalpur	519757	77639	31985	36828	68813	40120	53	24155	64328	16984	17517	34501	274476	374533	100057	108500				
22	Jhabua	675716	131748	56739	83411	140150	8680	4	25976	34660	5026	4927	9953	359205	415299	56094	57600				
23	Katani	493092	100028	31398	37192	68590	39621	129	37669	77419	25767	23264	49031	198024	263555	65531	59000				
24	Khandwa	775616	309300	67855	8595	76450	54424	40	187	54651	11961	5988	17949	317266	393711	76445	113900				
25	Khargone	647789	75442	36178	31408	67586	58524	13	25788	84325	8792	2305	11097	409339	475786	66447	146000				
26	Mandla	965559	592951	42766	10631	53397	19603	66	19642	39311	32656	28914	61570	218330	281048	62718	19900				
27	Mandsaur	551790	36585	74494	48183	122677	13184	46	19611	32841	1307	3184	4491	355196	459313	104117	103300				
28	Morena	501686	50669	39767	89510	129277	18746	-	23342	42088	6925	8812	15737	263915	326446	62531	168000				
29	Narsinghpur	513651	136207	24099	1028	25127	23934	164	16675	40773	5772	4036	9808	301736	400600	98864	174300				
30	Nimach	393553	94487	42656	39058	81714	7706	3	19962	27671	971	1584	2555	188126	259009	71883	84100				

S.No	Name of Districts	Geographical Area	Forests	Not Available For Cultivation			Other Uncultivated Land Excluding Fallow Land					Fallow Land				Net Area Sown	Total Cropped Area	Area Sown More than Once	Net irrigated Area
				Area Under Non Agricultural Uses	Barren and Un-Cultivable Land	Total	Perma-nent Pasture s and Other Grazing Lands	Land Under Misc Tree Crops and Groves not Included in Net Area	Cultura -ble Waste Land	Total	Fallow Lands Other than Current Fallows	Current Fallow	Total						
31	Panna	702924	299533	40598	22839	63437	20302	-	41814	62116	15783	15309	31092	246746	282114	35368	84400		
32	Raisen	848746	333672	39479	3617	43096	24336	107	12744	37187	3085	1202	4287	430504	500037	69533	194700		
33	Rajgarh	616300	17636	40692	30173	70865	68586	50	31435	100071	5415	2417	7832	419896	584650	164754	118900		
34	Ratlam	486007	34299	29857	42434	72291	28895	62	18113	47070	1471	1317	2788	329559	461003	131444	92300		
35	Rewa	628745	85289	59931	34499	94430	27197	1596	5181	33974	23341	20089	43430	371622	503781	132159	88600		
36	Sagar	1022759	296919	54099	18605	72704	76947	1575	15731	94253	14412	10570	24982	543901	709695	175794	236600		
37	Satna	742432	203659	61823	14882	76705	19817	3634	46383	69834	16586	15963	32549	359685	475908	116223	136800		
38	Sehore	656368	172597	38752	8342	47094	37944	13	11245	49202	4511	957	5468	382007	586902	204895	203600		
39	Seoni	875401	328081	48015	11835	59850	19829	31	38403	58263	31324	30123	61447	367760	471005	103245	110500		
40	Shahdol	561006	227886	42270	9244	51514	6537	639	38762	45938	27847	35351	63198	172470	201871	29401	21000		
41	Shajapur	618539	5980	52725	41696	94421	49206	71	14780	64057	2377	871	3248	450833	662214	211381	147400		
42	Sheopur	666650	291187	31440	97164	128604	34457	-	42563	77020	8206	6183	14389	156450	194319	38869	115100		
43	Shivpur1	995392	330111	60496	37966	98462	25887	3886	81309	111082	28093	26912	55005	400732	523352	122620	193100		
44	Sidhi	1039194	433441	81755	16538	98293	15985	8	64419	80412	27844	38920	66764	360284	492351	132067	62000		
45	Tikamgarh	504002	68369	32289	74623	106912	14158	30	18782	32970	16173	21406	37579	268172	350969	135952	163000		
46	Ujjain	609874	3149	57616	5981	63597	40823	138	10656	51617	1991	1248	3239	488272	762481	274209	143900		
47	Umariya	450329	236714	29764	8663	38427	16312	172	15439	31923	16565	18166	34731	108534	140479	31945	4200		
48	Vidisha	730197	108500	36796	9677	46473	18522	114	15490	34126	3250	2805	6055	535607	622355	137312	243100		
Total		30825000	8683140	1925477	1424936	3350413	1360298	19091	1177493	2556882	621385	598501	1219886	15078000	19711000	4842732	5681400		

e. Irrigated Areas

In Madhya Pradesh wells and tubewells are the major source of irrigation covering almost 66% of net irrigated area. Canals constitute 18% and tanks constitutes 2% share of irrigated area. The percentage of irrigated area to the net irrigated area from other sources is 14%. In Madhya Pradesh, Rivers are mostly seasonal and rainfed, receiving maximum water flow during the monsoon season. The non-monsoon flow in some perennial rivers is mainly due to flow from groundwater. The availability of water in the rivers is not uniform spatially or temporally. In Madhya Pradesh there are 3,960 (2001-02) major, medium and minor dams/reservoirs have been constructed on almost all the major rivers. The status of irrigation potential created (2001-02) through various irrigation projects taken up on rivers is given below in **Table - 15** :-

Table – 15 : Irrigation potential through irrigation projects

Number of projects	Irrigation potential created (in ha.)	Total irrigated area (in ha.)
3960	2036934	940222

Table : SPSP -9 : Irrigation Status

(Area in Hectare)

S.No.	District	Net Area Sown	Gross Sown Area	Net Irrigated Area	Gross Irrigated Area	% of Gross Irrigated Area to Gross Sown Area	Rainfed Area
1	Anuppur	109700	138900	19300	19300	13.89	119600
2	Ashoknagar	307500	372300	110000	110000	29.55	262300
3	Balaghat	273900	344000	122800	141600	41.16	202400
4	Barwani	228900	254400	63600	142600	56.05	111800
5	Betui	403500	554800	107200	107200	19.32	447600
6	Bhind	329900	359000	108700	112900	31.45	246100
7	Bhopal	153900	227000	85600	85600	37.71	141400
8	Burhanpur	104500	117900	34400	41300	35.03	76600
9	Chhatarpur	403800	511300	226600	226600	44.32	284700
10	Chhindwara	477200	593000	110900	133700	22.55	459300
11	Damoh	311100	398700	111600	114100	28.62	284600
12	Datia	197200	278400	133500	136300	48.96	142100

S.No.	District	Net Area Sown	Gross Sown Area	Net Irrigated Area	Gross Irrigated Area	% of Gross Irrigated Area to Gross Sown Area	Rainfed Area
13	Dendori	204900	273700	1500	154500	56.45	119200
14	Dewas	386100	560600	138300	217200	38.74	343400
15	Dhar	504500	638800	166000	166000	25.99	472800
16	Guna	328600	427900	139500	139800	32.67	288100
17	Gwalior	208800	264000	113900	147000	55.68	117000
18	Harda	179800	316300	139500	139500	44.10	176800
19	Hoshangabad	399100	510000	261000	261000	51.18	249000
20	Indore	258200	370300	93700	145100	39.18	225200
21	Jabalpur	272700	364600	108500	123600	33.90	241000
22	Jhabua	358900	414200	57600	58200	14.05	356000
23	Katni	198300	259600	59000	71900	27.70	187700
24	Khandwa	304400	381700	113900	113900	29.84	267800
25	Khargone	405400	453300	146000	146000	32.21	307300
26	Mandla	219000	280200	19900	19900	7.10	260300
27	Mandsaur	360700	477900	103300	104800	21.93	373100
28	Morena	262600	332200	168000	169200	50.93	163000
29	Narsinghpur	303500	390700	174300	175500	44.92	215200
30	Neemuch	186700	292900	84100	84200	28.75	208700
31	Panna	251500	297600	84400	84400	28.36	213200
32	Raisen	431000	507400	194700	194700	38.37	312700
33	Rajgarh	424500	548400	118900	158400	28.88	390000
34	Ratlam	331900	445900	92300	93300	20.92	352600
35	Rewa	369400	502200	88600	97900	19.49	404300
36	Sagar	539000	710700	236600	236700	33.31	474000
37	Satana	357000	481400	136800	138400	28.75	343000
38	Sehore	383500	579500	203600	203600	35.13	375900
39	Seoni	368000	482700	110500	110500	22.89	372200
40	Shahdol	179700	206800	21000	21000	10.15	185800
41	Shajapur	452400	621800	147400	184200	29.62	437600
42	Sheopurkala	159900	199000	115100	120200	60.40	78800
43	Shivpuri	405900	545000	193100	199100	36.53	345900

S.No.	District	Net Area Sown	Gross Sown Area	Net Irrigated Area	Gross Irrigated Area	% of Gross Irrigated Area to Gross Sown Area	Rainfed Area
44	Sidhi	353800	480300	62000	66800	13.91	413500
45	Tikamgarh	240900	410600	163000	206800	50.37	203800
46	Ujjain	489400	674500	143900	205200	30.42	469300
47	Umaria	161800	195700	4200	18900	9.66	176800
48	Vidisha	531100	662900	243100	222200	33.52	440700
Madhya Pradesh		15074000	19711000	5681400	6370800		13340200

The source-wise irrigated area in the state is given in following **Table – SPSP – 10.**

Table : SPSP -10 : Source wise Irrigation Status

(Area in 00 hectare)

District	Canals	Tanks	Tube Wells	Wells	Other Sources	Gross Irrigated Area
Anuppur	7	1	15	2	168	193
Ashok Nagar	98	16	129	282	575	1100
Badwani	44	0	322	159	891	1416
Balaghat	852	299	209	2	64	1426
Betul	117	1	661	95	198	1072
Bhind	256	2	676	184	11	1129
Bhopal	76	5	229	305	241	856
Burhanpur	4	0	263	109	37	413
Chhatarpur	297	50	1468	21	430	2266
Chhindwara	105	24	818	198	192	1337
Damoh	121	4	232	249	535	1141
Datia	306	11	767	43	236	1363
Dewas	44	4	566	813	118	1545
Dhar	86	77	540	1073	396	2172
Dindori	11	32	1	1613	3	1660
Guna	130	39	361	423	445	1398

District	Canals	Tanks	Tube Wells	Wells	Other Sources	Gross Irrigated Area
Gwalior	607	3	324	430	106	1470
Harda	723	2	315	100	255	1395
Hoshangabad	1423	9	472	445	261	2610
Indore	31	42	81	1151	146	1451
Jabalpur	83	1	229	654	269	1236
Jhabua	103	69	208	30	172	582
Katani	156	17	291	25	230	719
Khandwa	45	13	749	112	220	1139
Khargone	159	4	916	187	194	1460
Mandla	127	0	26	0	46	199
Mandsaur	5	1	584	45	413	1048
Morena	360	3	1115	163	51	1692
Narsinghpur	11	0	911	723	110	1755
Nimach	15	0	297	140	390	842
Panna	126	88	212	46	372	844
Raisen	565	7	254	686	435	1947
Rajgarh	51	49	1021	291	172	1584
Ratlam	16	35	340	476	66	933
Rewa	148	20	289	271	251	979
Sagar	79	28	803	463	994	2367
Satna	72	16	370	632	294	1384
Sehore	392	49	851	525	219	2036
Seoni	492	68	298	15	232	1105
Shahdol	40	9	26	16	119	210
Shajapur	76	57	959	541	209	1842
Sheopur	458	10	64	440	230	1202
Shivpuri	317	49	917	431	277	1991
Sidhi	128	4	265	110	161	668
Tikamgarh	162	73	1682	47	104	2068
Ujjain	3	47	459	1289	254	2052
Umaria	28	8	44	29	80	189
Vidisha	353	38	318	874	639	2222
Madhya Pradesh	9905	1352	22945	15348	8251	63708

CHAPTER - V

5.0 TRENDS IN AGRICULTURE AND FOOD PRODUCTIVITY

Madhya Pradesh economy continues to be predominately agrarian, agricultural sector's contribution being 26.01 percent in GSDP for 2007-08. Though the contribution of the primary sector to the State Domestic Product is gradually coming down, agriculture still remains the mainstay of the State's economy with 70% of the population is still dependent upon agriculture. The net sown area of Madhya Pradesh is 15.07 million ha., which is 49.01% of geographical area. The gross cropped area is 20.30 million ha. More than 70% of workforce finds employment in agriculture sector. 65% of land holders are small and marginal farmers with only 26% land, whereas 35% of land holders are big farmers with 74% of land. Agriculture in Madhya Pradesh is mostly rain-fed, and has to contend with the impeding factors of soil erosion due to rolling topography, the practice of keeping land fallow during the kharif season and taking only one crop in rabi, existence of large areas of cultivable waste land, high proportion of low value crops with low productivity, low consumption of fertilizers.

Cropping Pattern

Madhya Pradesh is predominantly a kharif crop growing state. Kharif crops occupy about 54-56% whereas rabi crops occupy 44 – 46% area out of the total cropped area in the state. About 38% of the cropped area is generally occupied by cereal crops, while pulses occupy 22% area and oilseed occupy 31% area. Vegetables, fruits, fodder and other horticultural crops occupy the remaining 6% area. The major crops, their area and production is given in

Table - 16.

Table - 16 : Area, Production & Yield of Major Crops in Madhya Pradesh

Crops	Year 2006-07		
	Area (000 ha.)	Production (000 Tonnes)	Yield (Kg./ha.)
Peddy (Rice)	1661	1368	868
Jowar	571	593	1042
Maize	861	840	979
Bajra	186	254	1360
Kodokutki	303	78	255
Crops	Year 2006-07		

	Area (000 ha.)	Production (000 Tonnes)	Yield (Kg./ha.)
Other cereals	31	12	387
Kharif Cereals	3613	3145	870
Wheat	3993	7326	1915
Barley	59	70	1186
Other cereals	4	3	750
Rabi Cereals	4056	7399	1824
Total Cereals	7669	10544	1680
Tur	323	220	679
Urad	436	152	347
Moong	77	26	315
Kulthi	28	8	292
Other Pulses	5	2	400
Kharif Pulses	869	408	470
Gram	2463	2413	981
Peas	199	90	452
Lentil	522	259	497
Teora	44	30	682
Other Pulses	12	4	333
Rabi Pulses	3240	2796	863
Total Pulses	4109	3204	780
Kh. Foodgrains	4482	3553	793
Rabi Foodgrains	7296	10195	1397
Total Foodgrains	11778	13748	1167
Groundnut	204	193	940
Soyabean	4757	4785	1007
Sesamum	192	66	344

Crops	Year 2006-07		
	Area (000 ha.)	Production (000 Tonnes)	Yield (Kg./ha.)
Niger	117	26	219
Castor	2	1	355
Sunflower	1	N	514
Kh. Oilseeds	5272	5071	962
Rape/Mustard	694	693	1000
Linseed	120	49	411
Sunflower & Others	2	N	
Rabi Oilseeds	816	742	909
Total Oilseeds	6088	5813	955
Cotton (B)	639	829	665
Prod. in 000 Tonnes		423	
Sugar Cane (G)	64	281	4367
Total Kharif	10393	9047	870
Total Rabi	8176	11218	1372
Total (Kharif + Rabi)	18569	20265	1091

Change in Cropping Pattern

The area under kharif and rabi crops from 1992-93 to 2005-06 is shown in **Table - 17**. The analysis of this data is showing change in cropping pattern. There is gradual decrease in area of food crops in both kharif and rabi season due to the decrease in area of cereals like Jowar, small millets and pulses like Urad, Moong. The area of non food crops are showing increasing trend due to increase in the area of oilseeds like Soyabean, Til, Niger, Rapeseed etc.

Table – 17 : Area under Kharif and Rabi Crops

Particulars		92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06
Kharif	Food Crops	5880	5597	5199	5120	5076	4821	4929	4884	4882	4942	4936	5274	4970	4800
	Non Food Crops	4878	5260	4992	5587	5875	6180	6183	6052	6104	6077	5792	5829	6221	7639
	Total	10758	10857	10191	10707	10951	11001	11112	10936	10986	11019	10728	11103	11191	12439
Rabi	Food Crops	6538	7186	7664	7535	7735	8310	8414	8511	6336	7368	6877	8042	8153	6290
	Non Food Crops	972	1049	1018	1031	1053	955	956	972	651	760	576	746	962	1030
	Total	7510	8235	8682	8566	8788	9265	9370	9483	6987	8128	7453	8788	9115	7320
Net Area Sown		14871	15019	14937	15022	15068	15103	15130	15070	14766	14962	14621	15048	15078	15074
Area Sown More Than Once		3397	4073	3937	4251	4671	5163	5352	5349	3207	4185	3560	4843	5228	4637
Total Cropped Area		18268	19092	18874	19273	19739	20266	20482	20419	17973	19147	18181	19891	20306	19711
% of Area Sown More Than Once To Net Area Sown		23	27	26	28	31	34	35	30	18	22	24	32	35	31
% of Area Sown During	Kharif	59	57	54	56	55	54	54	54	61	58	59	56	55	63
	Rabi	41	43	46	44	45	46	46	46	39	42	41	44	45	37

The compound growth rate of production of various crops is shown in **Table -18**, which is also indicating the decrease in the production of Jowar and increasing trend of production of Soyabean.

Table – 18 : Compound Growth Rate of Production in Madhya Pradesh

(Unit – Thousand Tonnes)

S.No.	Crops	Long Term Growth Rate (1970-71 to 2005-06)			Short Term Growth Rate (1990-91 to 2005-06)		
		1970-71	2005-06	Growth Rate %	1990-91	2006-06	Growth Rate %
1	Rice	950	1694	1.67	1435	1694	1.11
2	Wheat	2536	6200	2.59	5742	6200	0.51
3	Jowar	1322	610	-2.19	1468	610	-5.69
4	Maize	505	1248	2.62	1126	1248	0.69
5	Bajra	120	275	2.40	152	275	4.03
6	Gram	803	2378	3.15	1792	2378	1.90
7	Food Grains	7380	13486	1.74	12896	13486	0.30
8	G.Nut	311	231	-0.85	218	231	0.39
9	Soyabean *	97	4814	16.90	2182	4814	5.42
10	Rape/Mustard	44	856	8.85	492	856	3.76
11	Cotton (Thousand Bales)	208	709	3.57	397	709	3.94

The status of share of Madhya Pradesh and other states in National Agriculture Production (based on year 2005-06) is described **Table - 19**, which shows the state has been ranked as 1st in the production of pulses with the 24.14% share of country and second in the production of oilseeds with the 20.44% share of the country.

Table – 19 : State-wise Share in National Agriculture Production and Their Status 2005-06

Crop Group	First Position		Second Position		Third Position		Position of M.P. if	
	State	(%) Share	State	(%) Share	State	(%) Share	Position	(%) Share
Total Cereals	Uttar Pradesh	19.56	Andhra Pradesh	7.98	West Bengal	7.91	Eight	5.11
Total Pulses	Madhya Pradesh	24.14	Uttar Pradesh	16.67	Maharashtra	15.02		
Total Food Grains	Uttar Pradesh	19.37	Punjab	12.27	Andhra Pradesh	8.13	Sixth	6.33
Total Oil seeds	Rajasthan	21.30	Madhya Pradesh	20.44	Gujarat	16.73		
Rice	West Bengal	15.81	Andhra Pradesh	12.75	Uttar Pradesh	12.13	Thirteenth	1.81
Jowar	Maharashtra	51.11	Karnataka	21.89	Madhya Pradesh	8.26		
Maize	Andhra Pradesh	21.01	Karnataka	18.56	Bihar	9.25	Fourth	8.50
Bajra	Rajasthan	35.94	Uttar Pradesh	16.28	Gujarat	13.93	Seventh	3.52
Wheat	Uttar Pradesh	34.71	Punjab	20.89	Haryana	12.78	Fourth	8.59
Arhar	Maharashtra	28.83	Karnataka	16.06	Uttar Pradesh	13.87	Sixth	8.76
Gram	Madhya Pradesh	42.32	Maharashtra	12.68	Uttar Pradesh	11.79		
Massor	NA		NA		NA			
Groundnut	Gujarat	42.43	Andhra Pradesh	17.15	Tamilnadu	13.77	Seventh	2.88
Soyabean	Madhya Pradesh	54.41	Maharashtra	30.59	Rajasthan	10.40		
Rape/Mustard	Rajasthan	54.37	Uttar Pradesh	11.19	Madhya Pradesh	10.46		
Cotton	Gujarat	36.59	Maharashtra	17.08	Punjab	12.97	Seventh	4.05
Sugarcane	Uttar Pradesh	44.62	Maharashtra	13.82	Tamilnadu	12.49	Eleventh	0.86

Agriculture Workforce

According to 2001 census the number of cultivators was 11058500 and agricultural labourers were 7380878, which constitutes 71.6% of the total workers (25756485) in the state. The share of agricultural and other workers to total workers is shown in the following graph.

Share of Agriculture in the State income: Table 20 : Share of Agriculture in the GSDP (Rs. In Crore)

Sector	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	CAGR (2001-07)
A. Agriculture Sector	21,715.16	17,677.89	24,173.98	23,132.75	24,867.11	25,377.33	5.15%
B. GSDP	79,891.10	76,765.49	85,530.48	88,168.08	93,881.44	98,344.43	4.90%

The percentage share of major crops of Madhya Pradesh in India is given below in **Table -21 (Area : 000 ha., Prod.: 000 Tonnes, Yield : Kg/ha.)**

Crops	All India (Estimates)			Madhya Pradesh (FFC)			% of M.P.	
	Area	Prod.	Yield	Area	Prod.	Yield	Area	Prod.
Kharif Crops								
Paddy (Rice)	43700	91050	2084	1661	1368	868	4	2
Jowar	8510	7630	896	573	596	1042	7	8
Maize	7770	13850	1783	861	840	979	11	6
Bajra	9480	8280	873	186	254	1360	2	3
Small Millets	2680	3160	1179	338	93	275	13	3
Tur	3530	2510	712	323	220	679	9	9
Groundnut	5800	4980	860	204	193	940	4	4
Soyabean	8250	8670	1051	4757	4785	1007	58	55
Cotton (000 Bales)	9130	21040	392	639	829	222	7	4
Rabi Crops								
Wheat	28170	73700	2617	3993	7328	1956	14	10
Gram	7630	5970	782	2463	2413	981	32	40
Lentil (2005-06)	1510	950	629	582	293	503	39	31
Rape/Mustard	6330	6690	1057	694	693	1000	11	10
Sugar Cane (G)	4830	32294	6683	64	280	4367	1	1

SPSP – 12 : Crop Production and Productivity

1	2	3	4	5	6						
S. No.	Names of the Districts	Name of crops	Kharif	Rabi	Zaid						
			Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)
1	Balaghat.	Paddy, Wheat,Linseed	269.4	1278.0	344.3	59.9	671.0	40.2	-	-	-
2	Shahdol	Paddy, Kodokutki, Wheat	165.9	80.0	114.6	34.5	646.0	22.3	-	-	-

3	Mandla	Paddy, Maize, Kodokutki, Wheat, Peas, Mustard,Lentil	191.1	610.0	118.4 87.5	654.0	57.2	-	-	-
4	Dindori	Paddy, Maize,Kodokutki,Niger, Wheat, Mustard, Lentil	179.5	610.0	110.9 94.4	466.0	44.0	-	-	-
5	Anuppur	Paddy, Maize,Kodokutki, Niger, Wheat	152.5	660.0	101.6 39.7	471.0	18.7	-	-	-
6	Sidhi	Paddy, Maize, Kodokutki, Tur,Sesamum, Wheat, Barley, Gram, Linseed	297.3	670.0	200.1 178.6	629.0	112.3	-	-	-
7	Umaria	Paddy, Maize, Kodokutki, Wheat	87.2	520.0	45.6 50.9	601.0	30.6	-	-	-
8	Rewa	Paddy, Jowar, Tur, Soybean, Wheat, Gram, Lentil, Linseed	210.4	660.0	140.8 273.1	843.0	230.1	-	-	-
9	Satna	Paddy, Kodokuti, Soybean, Wheat, Gram,Lentil	167.6	84.0	114.1	293.6	786.0	230.7	-	-
10	Panna	Paddy, Wheat, Gram, Lentil	86.3	460.0	40.2	192.1	787.0	151.2	-	-
11	Jabalpur	Paddy, Urd, Wheat, Gram, Peas,Lentil	126.9	780.0	98.6	225.5	1205.0	271.7	-	-
12	Seoni	Paddy, Kodokutki, Soybean, Wheat,Gram	287.1	960.0	275.9	188.9	745.0	140.7	-	-
13	Katni	Paddy, Wheat,Gram,Lentil	128.8	650.0	84.0	112.7	771.0	86.9	-	-

1	2	3	4			5			6		
S. No.	Names of the Districts	Name of crops	Kharif			Rabi			Zaid		
			Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)
14	Narsinghpur,	Tur, Urd, Soybean, Wheat, Gram, Lentil, Sugarcane	123.9	1310.0	163.0	259.4	1653.0	428.8	-	-	-
15	Hoshangabad	Soybean, Wheat, Gram	227.6	120.0	227.5	258.2	2291.0	591.6	-	-	-
16	Bhopal,	Soybean, Wheat, Gram	98.8	1090.0	108.0	108.5	1478.0	160.4	-	-	-
17	Sagar,	Urd, Soybean, Wheat, Gram, Lentil	259.2	730.0	190.6	445.5	821.0	365.8	-	-	-
18	Damoh,	Paddy, Urd, Soybean, Wheat, Gram, Lentil	143.8	670.0	97.6	261.6	943.0	246.7	-	-	-
19	Vidisha,	Urd, Soybean, Wheat, Gram, Lentil	180.7	940.0	170.3	489.1	1130.0	552.5	-	-	-
20	Raisen	Tur, Soybean, Wheat, Gram, Lentil	120.7	980.0	118.5	380.4	1218.0	463.3	-	-	-
21	Sehore	Maize, Soybean, Wheat, Gram	301.0	1090.0	328.9	260.4	1560.0	406.1	-	-	-
22	Guna	Jowar, Maize, Soybean, Wheat, Gram, Mustard	196.0	1020.0	201.6	163.4	1136.0	185.6	-	-	-
23	Gwalior	Paddy, Urd, Soyabean Wheat, Gram, Mustard	66.5	1420.0	94.9	174.0	1712.0	297.9	-	-	-
24	Bhind	Bajra, Wheat, Mustard	64.5	1070.0	69.1	274.2	1244.0	341.0	-	-	-
25	Morena,	Bajra, Wheat, Mustard	92.1	1660.0	153.3	232.6	1818.0	422.9	-	-	-
26	Sheopur	Bajra, Soybean, Sesamum, Wheat, Mustard	65.0	1120.0	73.3	122.5	1613.0	197.6	-	-	-

1	2	3	4			5			6		
S. No.	Names of the Districts	Name of crops	Kharif			Rabi			Zaid		
			Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)
27	Ashoknagar	Urd,Soybean, Wheat, Gram,Lentil	95.4	860.0	82.3	264.1	939.0	247.9	-	-	-
28	Chhattarpur	Urd, Sesamum, Wheat,Gram, Peas	163.2	390.0	65.0	269.1	1080.0	290.7	-	-	-
29	Datia	Sesamum, Wheat, Gram, Peas	58.0	520.0	30.5	165.7	1492.0	247.3	-	-	-
30	Tikamgarh,	Urd,Soybean, Sesamum, Wheat, Gram,Mustard	175.1	520.0	91.7	143.1	1333.0	190.7	-	-	-
31	Shivpuri	Maize, Soybean, Groundnut, Wheat, Gram,Mustard	250.3	950.0	239.3	234.1	1291.0	302.2	-	-	-
32	Betul	Paddy,Jowar,Maize,Tur, Soybean, Wheat, Gram,Sugarcane	385.3	930.0	360.5	139.9	1329.0	185.9	-	-	-
33	Chhindwara	Paddy, Jowar, Maize, Tur, Soybean, Groundnut, Cotton, Wheat, Gram, Sugarcane	431.9	1340.0	582.8	141.9	1831.0	259.8	-	-	-
34	Mandsaur	Maize, Urd, Soybean, Wheat, Gram, Mustard	317.7	900.0	288.0	122.8	1429.0	175.5	-	-	-
35	Neemuch	Maize, Soybean, Wheat, Gram,Mustard	160.1	970.0	155.4	80.2	1499.0	120.2	-	-	-
36	Ratlam	Maize,Soybean, Wheat, Gram	292.0	1290.0	378.2	131.2	1902.0	249.5	-	-	-
37	Ujjain	Soybean, Wheat, Gram	449.5	1022.0	459.8	264.8	1585.0	419.6	-	-	-
38	Dewas	Soybean, Wheat, Gram	355.1	1210.0	431.6	193.9	1673.0	324.4	-	-	-

1	2	3	4			5			6		
S. No.	Names of the Districts	Name of crops	Kharif			Rabi			Zaid		
			Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Average Yield (kg) per ha.	Total Production (000' tonnes)	Area (000' ha)	Averag e Yield (kg) per ha.	Total Producti on (000' tonnes)
39	Indore	Soybean, Wheat, Gram	231.2	1180.0	273.3	144.5	1965.0	284.0	-	-	-
40	Shajapur	Jowar, Maize,Soybean, Wheat,Gram	403.8	980.0	397.2	191.1	1304.0	249.2	-	-	-
41	Rajgarh	Jowar, Maize, Soybean, Wheat, Gram	372.9	1050.0	378.6	145.9	1222.0	178.3	-	-	-
42	Khandwa	Jowar, Soybean, Wheat,Gram, Cotton	293.7	780.0	230.3	74.4	1449.0	107.8	-	-	-
43	Burhanpur	Jowar, Soybean, Wheat, Coton	86.2	910.0	78.7	14.2	2444.0	34.7	-	-	-
44	Khargone	Jowar, Maize, Soybean, Coton, Wheat	383.6	1030.0	398.1	64.9	2271.0	147.4	-	-	-
45	Barwani	Jowar, Maize,Soybean,Cotton, Wheat	218.7	740.0	162.5	34.6	1642.0	56.8	-	-	-
46	Harda	Soybean, Wheat, Gram	169.6	1310.0	223.4	134.3	2217.0	297.8	-	-	-
47	Dhar	Maize, Soybean, Cotton, Wheat,Gram,	473.6	1200.0	571.1	203.2	1937.0	393.5	-	-	-
48	Jhabua	Paddy, Maize, Rrd, Soybean, Cotton, Wheat, Gram	348.3	780.0	272.5	58.4	1317.0	76.9	-	-	-
Total			10405.0		9592.2	7718.8		10896.7	0.0	0.0	0.0

Table – 22 : Per Capita Availability of Foodgrains :

Year	Availability foodgrains (Lakh Tonnes)	Per Capita availability (Tonne/Year)
1956-57	132.01	0.56
1960-61	138.06	0.42
1970-71	151.77	0.36
1980-81	160.24	0.30
1990-91	161.94	0.25
1999-2000	144.58	0.24

CHAPTER - VI

6.0 IMPLEMENTATION OF WATERSHED MANAGEMENT PROGRAMME IN THE STATE

Administrative structure

In Madhya Pradesh Rajiv Gandhi Mission for Watershed Management under the aegis of Panchayat & Rural Development Department is responsible for planning, implementation and monitoring of watershed development projects. The RGMWM has its General Body and Executive Body as per the provision of Firms and Society Registration Act. Hon'ble Chief Minister is the Chairman of General Body and Chief Secretary, Government of Madhya Pradesh is the Chairman of Executive Body of the RGMWM. The RGMWM is headed by Mission Director. A district level, Zila Panchayat is the nodal agency. At present the RGMWM H.Q. is operating through a "watershed cell" constituted in the Zila Panchayat in each district. At watershed level PIA's are appointed for planning, implementation and monitoring of watershed projects.

Area Covered under Watershed Programmes

SPSP – 14 : District-wise Area Covered Under Watershed Programme

S. No.	Names of Districts	Total micro-watersheds in the District	Micro-watersheds covered so far						Net watersheds to be covered			
			Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered					
			Pre-IWMP projects (DPAP +DDP +IWDP)	Any other watershed project	No.	Area (ha.)	No.	Area (ha.)				
1	ALIRAJPUR	534	310119	139	122928	1	800	140	123728	394	186391	
2	ANUPPUR	308	391465	54	27000	3	1500	57	28500	251	362965	
3	ASHOKNAGAR	633	519843	32	18198	5	2875	37	21073	596	498770	

S. No.	Names of Districts	Total micro-watersheds in the District	Micro-watersheds covered so far						Net watersheds to be covered			
			Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered					
			Pre-IWMP projects (DPAP +DDP +IWDP)		Any other watershed project							
			No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)		
4	BALAGHAT	973	700714	25	13982	41	20590	66	34572	907	666142	
5	BARWANI	688	924500	226	79483	165	92342	391	171825	297	752675	
6	BETUL	1037	1007800	312	167000	185	153200	497	320200	540	687600	
7	BHIND	732	445204	59	34292	26	13052	85	47344	647	397860	
8	BHOPAL	390	277880	24	14000	56	31000	80	45000	310	232880	
9	BURHANPUR	293	342741	10	5000	2	1281	12	6281	281	336460	
10	CHHATARPUR	1041	863036	47	26995	51	25657	98	52652	943	810384	
11	CHHINDWARA	1264	1184923	536	263000	66	32513	602	295513	662	889410	
12	DAMOH	990	728583	112	65434	45	22911	157	88345	833	640238	
13	DATIA	431	295874	16	10532	38	19597	54	30129	377	265745	
14	DEWAS	881	701307	108	59825	45	22870	153	82695	728	618612	
15	DHAR	1191	819541	244	124708	101	66257	345	190965	846	628576	
16	DINDORI	824	358935	215	5739	35	17876	250	23615	574	335320	
17	GUNA	705	630766	72	116414	43	38729	115	155143	590	475623	
18	GWALIOR	752	456449	70	62554	31	14807	101	77361	651	379088	
19	HARDA	403	330579	0	0	9	4527	9	4527	394	326052	

S. No.	Names of Districts	Total micro-watersheds in the District	Micro-watersheds covered so far						Net watersheds to be covered			
			Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered					
			Pre-IWMP projects (DPAP +DDP +IWDP)		Any other watershed project							
			No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)		
20	HOSHANGABAD	582	668689	13	5408	415	234582	428	239990	154	428699	
21	INDORE	506	383097	11	4000	91	39459	102	43459	404	339638	
22	JABALPUR	696	519757	109	66613	15	6840	124	73453	572	446304	
23	JHABAU	415	365597	245	174883	61	30555	306	205438	109	160159	
24	KATNI	512	493092	23	12780	169	89897	192	102677	320	390415	
25	KHANDWA	825	775616	104	86000	138	134239	242	220239	583	555377	
26	KHARGONE	971	647789	181	97209	181	95729	362	192938	609	454851	
27	MANDLA	955	965559	35	16685	209	99469	244	116154	711	849405	
28	MANDSAUR	743	551790	59	43841	58	34558	117	78399	626	473391	
29	MORENA	757	501686	40	24000	15	12500	55	36500	702	465186	
30	NARSINGHPUR	773	513651	28	11000	11	6018	39	17018	734	496633	
31	NEEMUCH	597	393553	67	41682	11	11100	78	52782	519	340771	
32	PANNA	955	702924	111	61000	108	56529	219	117529	736	585395	
33	RAISEN	1152	848746	159	92474	56	28374	215	120848	937	727898	
34	RAJGARH	501	616300	112	64708	63	31677	175	96385	326	519915	
35	RATLAM	676	486007	53	39624	36	46030	89	85654	587	400353	

S. No.	Names of Districts	Total micro-watersheds in the District	Micro-watersheds covered so far						Net watersheds to be covered			
			Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered					
			Pre-IWMP projects (DPAP +DDP +IWDP)		Any other watershed project							
			No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)		
36	REWA	743	628745	165	88760	61	39600	226	128360	517	500385	
37	SAGAR	1263	1022759	92	49605	36	45743	128	95348	1135	927411	
38	SATNA	858	742432	66	27500	143	80374	209	107874	649	634558	
39	SEHORE	834	656368	52	30000	46	23301	98	53301	736	603067	
40	SEONI	954	875401	180	139131	373	163194	553	302325	401	573076	
41	SHAHDOL	547	561006	143	82955	60	30114	203	113069	344	447937	
42	SHAJAPUR	574	618539	80	46062	56	28136	136	74198	438	544341	
43	SHEOPUR	737	666650	19	10869	8	4163	27	15032	710	651618	
44	SHIVPURI	1442	995392	164	94881	35	17608	199	112489	1243	882903	
45	SIDHI	545	869194	197	114322	40	20421	237	134743	308	734451	
46	SINGROLI	340	170000	0	0	0	0	0	0	340	170000	
47	TIKAMGARH	565	504002	70	39585	9	16258	79	55843	486	448159	
48	UJJAIN	806	609874	128	70958	12	6000	140	76958	666	532916	
49	UMARIA	372	450329	50	29000	18	9200	68	38200	304	412129	
50	VIDISHA	977	730197	54	31105	356	143787	410	174892	567	555305	
Total		37243	30825000	5111	2913724	3838	2167839	8949	5081563	28294	25743437	

Table – SPSP – 15 : Details regarding Watershed Projects sanctioned by DoLR

1		2		3		4		
S.No.	Item	Total		Pre-IWMP scheme details				
		DPAP		EAS		IWDP		
1	Area sanctioned by DoLR in ha. (as in perha. Table SSP 14)	2913724		1633500		515828		764396
2	Names of the districts covered	Alirajpur, Anuppur, Ashoknagar, Balaghat, Barwani, Betul, Bhind, Bhopal, Burhanpur, Chhatarpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Dindori, Guna, Gwalior, Harda, Hoshangabad, Indore, Jabalpur, Jhabua, Katni, Khandwa, Khargone, Panna, Raisen, Rajgarh, Ratlam, Rewa, Seoni, Shahdol, Shajapur, Shivpuri, Sidhi, Singroli, Umaria,		Alirajpur, Anuppur, Ashoknagar, Barwani, Betul, Bhind, Chhindwara, Damoh, Dewas, Dhar, Guna, Jabalpur, Jhabua, Khandwa, Khargone, Panna, Raisen, Rajgarh, Ratlam, Rewa, Seoni, Shahdol, Shajapur, Shivpuri, Sidhi, Singroli, Umaria,		Alirajpur, Anuppur, Ashoknagar, Balaghat, Barwani, Bhind, Bhopal, Burhanpur, Chhatarpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Dindori, Guna, Gwalior, Hoshangabad, Indore, Jabalpur, Jhabua, Katni, Khandwa, Khargone, Mandla, Mandsaur, Morena, Narsinghpur, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Rewa, Sagar, Satna, Sehore, Seoni, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Singroli, Tikamgarh, Ujjain, Vidisha		Anuppur, Ashoknagar, Balaghat, Barwani, Bhind, Bhopal, Burhanpur, Chhatarpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Dindori, Guna, Gwalior, Hoshangabad, Indore, Jabalpur, Jhabua, Katni, Khandwa, Khargone, Mandla, Mandsaur, Morena, Narsinghpur, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Sagar, Satna, Sehore, Seoni, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Tikamgarh, Ujjain, Vidisha
3	No.of Blocks covered	313		105		313		124
4	No.of watershed projects sanctioned by DoLR	5111		3267		813		1031 (124 Projects)

1	2	3	4		
S.No.	Item	Total	Pre-IWMP scheme details		
			DPAP	EAS	IWDP
5	No. of projects completed out of those taken at Row (4)	3109	1786	813	510
6	No.of projects foreclosed of Row (4)	0	0	0	0
7	No.of on-going projects of Row (4)	2002	1481	0	521
8	Area already treated by completed projects of Row (5)	1767610	893000	515828	358782
9	Area for treatment by on-going projects of Row (7)	1146114	740500	0	405614
10	Total area treated and under treatment (8)+(9)	2913724	1633500	515828	764396
11	Area yet to be treated and proposed to be treated by DoLR (column 1-column 10)	0	0	0	0

Table – SPSP – 16 : Details of Watershed Projects implemented other than DoLR

1 S.No	Item	Total	4	
			Watershed schemes of other Departments	NWDPRA
1	Area sanctioned in ha. (as per column 4 of Table 14)	2167839	1035538	1132301
2	Names of the districts covered	All Districts	All Districts	
3	No.of Blocks covered			
4	No.of watershed projects sanctioned other than DoLR	3838	1830	2008
5	No.of projects completed out of those taken at Row (4)	2415	1456	959
6	No.of projects foreclosed of Row (4)	0	0	0
7	No.of on-going projects of Row (4)	1423	381	1042
8	Area already treated by completed projects of Row (5)	1362025	821149	540876
9	Area for treatment by on-going projects of Row (7)	805814	214389	591425
10	Total area treated and under treatment (8)+(9)	2167839	1035538	1132301
11	Area yet to be treated and proposed to be treated by other than DoLR resources (column 1-column 10)	0	0	0

6.1 DETAILS OF PENDING UTILIZATION CERTIFICATES AND UNSPENT BALANCE

Table – SPSP 17 : Details of pending UCs

1 S. No.	2 District	3 Project	4 Instal- ment no.	5 Financial year of release of fund	6 Amount released (Rs. in lakh)	7 Amount utilized (Rs.in lakhs)	8 Submission of UC		9 Date of submission of UC		10 Reasons for not submitting/ delayed submission of UC	11 Pending UCs	
							Due date	Amount (Rs. In lakhs)	Date	Amount (Rs. In lakhs)		Period	Amount (Rs. in lakhs)
1	Anuppur	IWDP-II	IIInd	07-08	82.50	81.70	08-09	82.50	-	-	Discrepancies in the project implementation	2007-08	82.50
2	Chhatarpur	IWDP-III	IIInd	07-08	74.25	74.25	08-09	74.25	-	-	Delay in Mid- term Evaluation	2007-08	74.25
3	Sagar	IWDP-II	IVth	07-08	79.00	79.00	08-09	79.00	-	-	Unutilisation of fund	2007-08	79.00
4	Rewa	DPAP -7 th	Vth	07-08	26.8	26.8	08-09	26.8	-	-	Delayed Project	1 Year	26.8
5	Chhindwara	Hariyali – I	IIIrd	07-08	158.59	158.58	08-09	158.58	-	-	Delayed Project	1 Year	158.58
6	Umaria	Hariyali – II	IIInd	06-07	40.5	39.57	07-08	39.57	-	-	Delayed Project	2 Year	39.57
7	Dewas	Hariyali – III	Ist	05-06	33.75	32.4	06-07	32.4	-	-	Delayed Project	3 Year	32.4
8	Khandwa	Hariyali – III	IIInd	07-08	114	93.3	08-09	93.3	-	-	Delayed Project	1 Year	93.3
9	Rewa	Hariyali-III	Ist	05-06	47.25	35.29	06-07	35.29	-	-	Delayed Project	3 Year	35.29

Note : Under IWDP 14 projects are at the stage of completion in the year 2009-10. UCs has already been submitted for 50 projects for 2008-09. UCs for remaining 22 projects for 2009-10 will be submitted by the 30th October 2009.

CHAPTER - VII

7.0 STRATEGY FOR IMPLEMENTATION OF IWMP

Prioritisation of available area

The microwatersheds which are not covered/treated have been prioritised on the basis of weightage value assigned as per the criteria laid down in the format of PPR issued by Gol-DoLR. The silt yield index is also taken into consideration while prioritisation of microwatersheds.

Area coverage for treatment for next 18 years.

Table – SPSP 19 : Plan-wise phasing of physical (area in ha) & financial (Rs. in Crore) targets of IWMP for next 18 years

S. No.	Names of Districts	Remaining period of XI Plan		XII Plan		XIII Plan		XIV Plan		Total for 18 years	
		(2009-10 to 2011-12)		(2012-13 to 2016-17)		(2017-18 to 2021-22)		(2022-23 to 2026-27)		Phy.	Fin.
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.		
1	ALIRAJPUR	61432	7371.84	74959	8995.08	50000	6000.00	0	0.00	186391	22366.92
2	ANUPPUR	53816	6457.92	62960	7555.20	75000	9000.00	38000	4560.00	229776	27573.12
3	ASHOKNAGAR	65103	7812.36	80794	9695.28	75000	9000.00	151600	18192.00	372497	44699.64
4	BALAGHAT	66405	7968.60	66514	7981.68	80085	9610.20	0	0.00	213004	25560.48
5	BARWANI	67500	8100.00	39064	4687.68	0	0.00	0	0.00	106564	12787.68
6	BETUL	58204	6984.48	70000	8400.00	78678	9441.36	0	0.00	206882	24825.84
7	BHIND	59612	7153.44	80000	9600.00	75000	9000.00	90789	10894.68	305401	36648.12
8	BHOPAL	61440	7372.80	50000	6000.00	34690	4162.80	0	0.00	146130	17535.60
9	BURHANPUR	64832	7779.84	46884	5626.08	0	0.00	0	0.00	111716	13405.92
10	CHHATARPUR	63767	7652.04	150000	18000.00	80000	9600.00	235295	28235.40	529062	63487.44

S. No.	Names of Districts	Remaining period of XI Plan		XII Plan		XIII Plan		XIV Plan		Total for 18 years	
		(2009-10 to 2011-12)		(2012-13 to 2016-17)		(2017-18 to 2021-22)		(2022-23 to 2026-27)			
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
11	CHHINDWARA	58621	7034.52	75000	9000.00	75000	9000.00	110782	13293.84	319403	38328.36
12	DAMOH	54516	6541.92	75000	9000.00	75000	9000.00	65276	7833.12	269792	32375.04
13	DATIA	65000	7800.00	59176	7101.12	50000	6000.00	0	0.00	174176	20901.12
14	DEWAS	63711	7645.32	75000	9000.00	75000	9000.00	149095	17891.40	362806	43536.72
15	DHAR	59921	7190.52	75000	9000.00	75000	9000.00	166246	19949.52	376167	45140.04
16	DINDORI	61110	7333.20	75000	9000.00	75000	9000.00	59601	7152.12	270711	32485.32
17	GUNA	64916	7789.92	75000	9000.00	75000	9000.00	51021	6122.52	265937	31912.44
18	GWALIOR	62223	7466.76	61439	7372.68	0	0.00	0	0.00	123662	14839.44
19	HARDA	63711	7645.32	62121	7454.52	0	0.00	0	0.00	125832	15099.84
20	HOSHANGABAD	64000	7680.00	51458	6174.96	0	0.00	0	0.00	115458	13854.96
21	INDORE	61849	7421.88	75000	9000.00	75000	9000.00	41591	4990.92	253440	30412.80
22	JABALPUR	64000	7680.00	75000	9000.00	75000	9000.00	77552	9306.24	291552	34986.24
23	JHABAU	57164	6859.68	52995	6359.40	50000	6000.00	0	0.00	160159	19219.08
24	KATNI	63000	7560.00	75000	9000.00	68197	8183.64	0	0.00	206197	24743.64
25	KHANDWA	61686	7402.32	53441	6412.92	50000	6000.00	0	0.00	165127	19815.24
26	KHARGONE	68122	8174.64	75000	9000.00	75000	9000.00	77801	9336.12	295923	35510.76
27	MANDLA	65000	7800.00	75000	9000.00	50356	6042.72	0	0.00	190356	22842.72
28	MANDSAUR	66272	7952.64	75000	9000.00	75000	9000.00	97357	11682.84	313629	37635.48

S. No.	Names of Districts	Remaining period of XI Plan		XII Plan		XIII Plan		XIV Plan		Total for 18 years	
		(2009-10 to 2011-12)		(2012-13 to 2016-17)		(2017-18 to 2021-22)		(2022-23 to 2026-27)			
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
29	MORENA	65000	7800.00	75000	9000.00	75000	9000.00	34240	4108.80	249240	29908.80
30	NARSINGHPUR	64828	7779.36	75000	9000.00	75000	9000.00	119371	14324.52	334199	40103.88
31	NEEMUCH	65000	7800.00	50000	6000.00	48070	5768.40	0	0.00	163070	19568.40
32	PANNA	59913	7189.56	75000	9000.00	74912	8989.44	0	0.00	209825	25179.00
33	RAISEN	66636	7996.32	75000	9000.00	75000	9000.00	77994	9359.28	294630	35355.60
34	RAJGARH	58599	7031.88	75000	9000.00	75000	9000.00	217715	26125.80	426314	51157.68
35	RATLAM	64649	7757.88	75000	9000.00	75000	9000.00	77514	9301.68	292163	35059.56
36	REWA	53188	6382.56	75000	9000.00	75000	9000.00	102678	12321.36	305866	36703.92
37	SAGAR	63571	7628.52	75000	9000.00	75000	9000.00	336317	40358.04	549888	65986.56
38	SATNA	64859	7783.08	75000	9000.00	75000	9000.00	132135	15856.20	346994	41639.28
39	SEHORE	63824	7658.88	75000	9000.00	75000	9000.00	130352	15642.24	344176	41301.12
40	SEONI	61585	7390.20	50000	6000.00	24360	2923.20	0	0.00	135945	16313.40
41	SHAHDOL	62300	7476.00	52237	6268.44	50000	6000.00	0	0.00	164537	19744.44
42	SHAJAPUR	64250	7710.00	75000	9000.00	75000	9000.00	222090	26650.80	436340	52360.80
43	SHEOPUR	61828	7419.36	75000	9000.00	49199	5903.88	0	0.00	186027	22323.24
44	SHIVPURI	58582	7029.84	75000	9000.00	75000	9000.00	214048	25685.76	422630	50715.60
45	SIDHI	59200	7104.00	75000	9000.00	55717	6686.04	0	0.00	189917	22790.04
46	SINGROLI	55582	6669.84	75000	9000.00	39418	4730.16	0	0.00	170000	20400.00

S. No.	Names of Districts	Remaining period of XI Plan		XII Plan		XIII Plan		XIV Plan		Total for 18 years	
		(2009-10 to 2011-12)		(2012-13 to 2016-17)		(2017-18 to 2021-22)		(2022-23 to 2026-27)			
		Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
47	TIKAMGARH	67581	8109.72	75000	9000.00	75000	9000.00	39097	4691.64	256678	30801.36
48	UJJAIN	53581	6429.72	75000	9000.00	75000	9000.00	262289	31474.68	465870	55904.40
49	UMARIA	53851	6462.12	80337	9640.44	0	0.00	0	0.00	134188	16102.56
50	VIDISHA	58461	7015.32	75000	9000.00	75000	9000.00	156574	18788.88	365035	43804.20
Total		3093801	371256.12	3544379	425325.48	2958682	355041.84	3534420	424130.40	13131282	1575753.84

Table-SPSP 20: Year-wise phasing of physical (area in '000 ha) & financial (Rs. in lakh) targets of IWMP for remaining period of XI Plan

S. No	District	3												
		Remaining period of XI Plan												
		2009-10			2010-11			2011-12			Total			
		Phy.	Fin. (Rs. in lakh)	Phy.	Fin. (Rs. in lakh)	Phy.	Fin. (Rs. in lakh)	Phy.	Fin. (Rs. in lakh)	Phy.	No. of proj- ects (Micro Water sheds)	Area (Ha.)	Fin. (Rs. in lakh)	
No.	proj- ects Covered	No. of Micro WS Covered	Area (Ha.)	No. of proj- ects (Micro Water sheds)	Area (Ha.)	Total	Area (Ha.)							
1	Alirajpur	1	36	20504.00	2460.48	33	20928.00	2511.36	26	20000.00	2400.00	95	61432.00	7371.84
2	Anuppur	0	0	0.00	0.00	36	25000.00	3000.00	33	28816.00	3457.92	69	53816.00	6457.92
3	Ashoknagar	0	0	0.00	0.00	39	30000.00	3600.00	38	35103.00	4212.36	77	65103.00	7812.36
4	Balaghat	0	0	0.00	0.00	43	30000.00	3600.00	32	36405.00	4368.60	75	66405.00	7968.60
5	Barwani	3	29	17302.16	2076.26	33	20000.00	2400.00	31	30197.84	3623.74	93	67500.00	8100.00
6	Betul	5	31	26161.11	3139.33	18	12042.89	1445.15	16	20000.00	2400.00	65	58204.00	6984.48
7	Bhind	0	0	0.00	0.00	22	20000.00	2400.00	40	39612.00	4753.44	62	59612.00	7153.44
8	Bhopal	3	29	20000.00	2400.00	26	21440.00	2572.80	18	20000.00	2400.00	73	61440.00	7372.80
9	Burhanpur	0	0	0.00	0.00	27	30000.00	3600.00	29	34832.00	4179.84	56	64832.00	7779.84
10	Chhatarpur	0	0	0.00	0.00	29	25000.00	3000.00	41	38767.00	4652.04	70	63767.00	7652.04
11	Chhindwara	2	26	19500.00	2340.00	26	19121.00	2294.52	17	20000.00	2400.00	69	58621.00	7034.52
12	Damoh	0	0	0.00	0.00	12	20000.00	2400.00	31	34516.00	4141.92	43	54516.00	6541.92
13	Datia	2	31	20343.00	2441.16	18	24657.00	2958.84	18	20000.00	2400.00	67	65000.00	7800.00
14	Dewas	0	0	0.00	0.00	22	28000.00	3360.00	22	35711.00	4285.32	44	63711.00	7645.32
15	Dhar	4	31	23200.00	2784.00	14	16721.00	2006.52	16	20000.00	2400.00	61	59921.00	7190.52
16	Dindori	0	0	0.00	0.00	31	25000.00	3000.00	28	36110.00	4333.20	59	61110.00	7333.20
17	Guna	1	22	20000.00	2400.00	28	24916.00	2989.92	15	20000.00	2400.00	65	64916.00	7789.92
18	Gwalior	4	42	21752.00	2610.24	15	20471.00	2456.52	14	20000.00	2400.00	71	62223.00	7466.76
19	Harda	0	0	0.00	0.00	27	29000.00	3480.00	35	34711.00	4165.32	62	63711.00	7645.32
1	2								3					

S. No	District	Remaining period of XI Plan												
		2009-10			2010-11			2011-12			Total			
		Phy.		Fin. (Rs. in lakh)	Phy.		Fin. (Rs. in lakh)	Phy.		Fin. (Rs. in lakh)	Phy.		Fin. (Rs. in lakh)	
No. of proj- ects	No. of Micro WS Covered	Area (Ha.)			No. of proj- ects (Micro Water sheds)			No. of proj- ects (Micro Water sheds)			No. of proj- ects (Micro Water sheds)			
20	Hoshangabad	2	36	14850.00	1782.00	28	29150.00	3498.00	17	20000.00	2400.00	81	64000.00	7680.00
21	Indore	1	18	18035.00	2164.20	24	23814.00	2857.68	16	20000.00	2400.00	58	61849.00	7421.88
22	Jabalpur	4	44	25725.00	3087.00	14	18275.00	2193.00	18	20000.00	2400.00	76	64000.00	7680.00
23	Jhabua	3	20	20002.00	2400.24	13	17162.00	2059.44	22	20000.00	2400.00	55	57164.00	6859.68
24	Katni	3	20	20000.00	2400.00	21	23000.00	2760.00	23	20000.00	2400.00	64	63000.00	7560.00
25	Khandwa	3	31	22650.00	2718.00	16	19036.00	2284.32	17	20000.00	2400.00	64	61686.00	7402.32
26	Khargone	3	25	21000.00	2520.00	26	27122.00	3254.64	19	20000.00	2400.00	70	68122.00	8174.64
27	Mandla	2	25	19675.45	2361.05	25	25324.55	3038.95	20	20000.00	2400.00	70	65000.00	7800.00
28	Mandsaur	4	28	20084.00	2410.08	28	26188.00	3142.56	18	20000.00	2400.00	74	66272.00	7952.64
29	Morena	3	50	21000.00	2520.00	31	24000.00	2880.00	14	20000.00	2400.00	95	65000.00	7800.00
30	Narsinghpur	1	33	20791.00	2494.92	30	24037.00	2884.44	17	20000.00	2400.00	80	64828.00	7779.36
31	Neemuch	3	32	20807.00	2496.84	29	24193.00	2903.16	15	20000.00	2400.00	76	65000.00	7800.00
32	Panna	3	38	20000.00	2400.00	16	19913.00	2389.56	18	20000.00	2400.00	72	59913.00	7189.56
33	Raisen	0	0	0.00	0.00	17	29000.00	3480.00	38	37636.00	4516.32	55	66636.00	7996.32
34	Rajgarh	0	0	0.00	0.00	22	20000.00	2400.00	40	38599.00	4631.88	62	58599.00	7031.88
35	Ratlam	3	27	25227.82	3027.34	24	19421.18	2330.54	17	20000.00	2400.00	68	64649.00	7757.88
36	Rewa	4	26	21833.00	2619.96	11	25000.00	3000.00	8	6355.00	762.60	45	53188.00	6382.56
37	Sagar	2	25	20963.00	2515.56	16	22608.00	2712.96	18	20000.00	2400.00	59	63571.00	7628.52
38	Satna	2	28	9619.45	1154.33	18	20000.00	2400.00	36	35239.55	4228.75	82	64859.00	7783.08

S. No	District	3 Remaining period of XI Plan												
		2009-10			2010-11			2011-12			Total			
		Phy.			Fin. (Rs. in lakh)			Phy.			Fin. (Rs. in lakh)			
		No. of projects	No. of Micro WS Covered	Area (Ha.)		No. of projects (Micro Water sheds)	Area (Ha.)		No. of projects (Micro Water sheds)	Area (Ha.)		No. of projects (Micro Water sheds)	Area (Ha.)	Fin. (Rs. in lakh)
39	Sehore	0	0	0.00	0.00	41	43824.00	5258.88	17	20000.00	2400.00	58	63824.00	7658.88
40	Seoni	2	20	19983.00	2397.96	22	21602.00	2592.24	15	20000.00	2400.00	57	61585.00	7390.20
41	Shahdol	0	0	0.00	0.00	23	29000.00	3480.00	27	33300.00	3996.00	50	62300.00	7476.00
42	Shajapur	0	0	0.00	0.00	24	29000.00	3480.00	31	35250.00	4230.00	55	64250.00	7710.00
43	Sheopur	0	0	0.00	0.00	27	25000.00	3000.00	37	36828.00	4419.36	64	61828.00	7419.36
44	Shivpuri	4	43	22500.00	2700.00	15	16082.00	1929.84	15	20000.00	2400.00	73	58582.00	7029.84
45	Sidhi	0	0	0.00	0.00	18	25000.00	3000.00	38	34200.00	4104.00	56	59200.00	7104.00
46	Singroli	0	0	0.00	0.00	31	25000.00	3000.00	24	30582.00	3669.84	55	55582.00	6669.84
47	Tikamgarh	1	17	20600.00	2472.00	33	26981.00	3237.72	17	20000.00	2400.00	67	67581.00	8109.72
48	Ujjain	4	23	22527.00	2703.24	14	11054.00	1326.48	18	20000.00	2400.00	55	53581.00	6429.72
49	Umaria	0	0	0.00	0.00	19	22000.00	2640.00	36	31851.00	3822.12	55	53851.00	6462.12
50	Vidisha	2	29	21483.00	2577.96	12	16978.00	2037.36	15	20000.00	2400.00	56	58461.00	7015.32
Total		84	915	638117.99	76574.16	1187	1171061.62	140527.39	1181	1284621.39	154154.57	3283	3093801.00	371256.12

Table-SPSP 21: Details of district wise and category-wise area proposed to be taken up under IWMP during next 3 years i.e upto 11th Five Year Plan.

S. No.	District	Year	Total area available for treatment	Total area proposed to take up under IWMP in the next 3 years	Terrain of the proposed area Others	Land use type of proposed area		Ownership pattern of the proposed area					No. of beneficiaries covered		Identified DPAP/ DDP Blocks covered	
						cultivated rainfed area	Uncultivated Wasteland	Private	Community	Forest	Others (pl. specify)	Total area	Landless	Total	No. of blocks	Area
1	DATIA	2009-10	21380	20343	20343	6698.29	3889.33	8104.6	408.02	3722.01	8108.28	24232.24	3154	21189	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
2	SATNA	2009-10	14784.89	9619.45	9619.45	4045.37	929.2	5448.75	73	825.33	3272.33	9619.45	26309	46090	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
3	BETUL	2009-10	31631.43	26161.11	26161.11	12720.11	4539.56	15611.8	711.31	10051.7	6668.52	26161.11	2199	5591	5	26161.114
		2010-11									0					
		2011-12									0					
		Sub-total									0					
4	INDORE	2009-10	19815	18035	18035	6843	317.5	8359.5	449	8909	317.5	18035	802	5274	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
5	MORENA	2009-10	26926	21000	21000	6976	749	11449.5	125	0	9405.5	21000	633	10603	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
6	VIDISHA	2009-10	24073	21483	21483	10247	156	5675	480	4279	156	21483	1087	4501	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					

S. No.	District	Year	Total area available for treatment	Total area proposed to take up under IWMP in the next 3 years	Terrain of the proposed area Others	Land use type of proposed area		Ownership pattern of the proposed area					No. of beneficiaries covered		Identified DPAP/ DDP Blocks covered	
						cultivated rainfed area	Uncultivated Wasteland	Private	Community	Forest	Others (pl. specify)	Total area	Landless	Total	DPAP	
															No. of blocks	Area
7	KHANDWA	2009-10	24850	22650	22650	11281.07	921.84	14092.6	766.22	3701.48	6518.45	22650	674	2192	3	22650
		2010-11									0					
		2011-12									0					
		Sub-total									0					
8	HOSHAN-GABAD	2009-10	15639	14850	14850	5943.55	676.77	8781.09	0	2342.76	3735.15	14850	3478	13604	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
9	SEONI	2009-10	21143	19983	19983	6853.88	6546.75	9544.5	1349.12	1975.63	7113.75	19983	545	4192	1	9998
		2010-11									0					
		2011-12									0					
		Sub-total									0					
10	KATNI	2009-10	23885	20000	20000	7946.18	2401.2	10702.3	483.3	527.12	8282.74	20000	1096	5638	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
11	UJJAIN	2009-10	23712	22527	22527	14869.3	3458.2	15575.4	0	644.45	6125.2	22527	3017	28504	0	0
		2010-11									0					
		2011-12									0					
		Sub-total									0					
12	CHHINDWARA	2009-10	20062	19500	19500	7428.94	1560.4	10219.5	1457.11	4028.93	2893.87	19500	111	2597	2	19500
		2010-11									0					
		2011-12									0					
		Sub-total									0					

CHAPTER-VIII

5. LIVELIHOOD CONCERNS :

a. Context

Madhya Pradesh (MP) remains the fourth poorest Indian State with a per capita income of only three-fourths the national average. Out of an estimated population of 60 million, 75% are rural with 37% of the rural population estimated as living Below the Poverty Line (BPL). MP has a large population of Scheduled Tribes (20%) and Scheduled Castes (15.5%), who are amongst the most marginalised and vulnerable. Their livelihoods are dependent on primitive agricultural techniques providing only short-term food sufficiency for a few months. Livelihood for the remaining months have to be complemented by wage labour (local as well as migration), gathering NTFPs and other subsidiary non-farm occupations (e.g. service, handicraft, traditional art etc).

There are 40.72 lakh small and marginal farmers in the state and they are mostly underemployed. The size of land holding of these farmers (average land holdings of small and marginal farmers is 0.91 hectares) are uneconomical and majority are working as agricultural or casual labourers to supplement their incomes from farming to sustain their livelihood. The data from NSS reports that there is a gradual casualisation of the workforce, and the number of casual labourers in MP has gone up from 32 % male & 38 % female in 1993-94 to 37% male 44% female in 1999-2000.

Only about 6% of the workers are in the organised sector as compared to the total workforce. The remaining 94% are in the unorganized sectors including agricultural labour, construction labour and labour in traditional leather tanning, forestry, fishing, bidi rolling, household industry, artisans, urban informal workers etc.

Diversification of rural livelihoods is imperative in the given situation. The demographic pressure on land has been increasing significantly. With its share of around 28 per cent in GDP, Agriculture and its allied activities has to bear the burden of 75 per cent of rural workers. Therefore, labour productivity has been low in agriculture. In order to increase wages in agriculture and to shift the workers to more productive areas, livelihood diversification is urgently needed.

The ability of the rural poor to enhance their livelihoods is constrained by a range of inter-related structural, social, economic and institutional barriers. The situation of the poor is characterised by marginal and under-productive landholdings, periodic droughts, insecure land tenure and a reliance on seasonal agricultural and forest labour. The low population, relative isolation and inadequate reach of infrastructure in some districts increase the costs of delivery, resulting in poor access to agricultural inputs, extension services, credit and markets. The rural poor in forested areas, particularly tribal populations, are dependent on forest resources for subsistence, income and employment.

f. Challenges

Preliminary poverty and livelihoods assessments suggest three major challenges:

Land based livelihood are under productive and insecure;

The poorest depend upon daily wage labour and face difficulty in obtaining sufficient days' work in either their villages or in neighbouring areas to which they migrate;

Poor access to resources, markets, information and services, presents a significant constraint to realising the potential of available opportunities; and hinders diversification of livelihood strategies.

These challenges are made more difficult by the comparative lack of integration of rural populations into mainstream Indian economy and society. In addition, funds available for rural development and poverty reduction are limited, tied and spread too thin, not allowing the necessary scale to be effective.

Evidence from the field suggest that approaches that rely primarily on impacts from land-based investments can address only some causes of poverty and insecure livelihoods, particularly for households with small landholdings and limited access to forest. Many of these households rely on wage labour for much of the year to generate cash income for food security and other necessities. There is significant scope to increase agricultural productivity even for very small landholdings and the returns from forest based collection, marketing and processing activities. It should be possible to develop micro-enterprises for a proportion of households, although this process will be heavily constrained by limited entrepreneurial skills and market opportunities, and business support infrastructure.

Thus there is a need to adopt a two-track strategy to address the livelihoods issue in rural areas in the state. The first track seeks to enhance livelihoods through improved productivity of land, water and forest resources for poor people through Integrated Watershed and Community Forest Management. The second track seeks to promote enterprises that lead to value-addition of agricultural and forest produce as well as other micro-enterprises, providing employment and income opportunities to the rural poor.

3. Proposed Strategy

Agriculture & Livestock

Although improvements in agricultural productivity can be made, poor soil and water conditions and limited infrastructure mean that the scope for increased productivity is limited. This, together with small land holdings, means that poor households are unlikely to escape poverty through crops alone. Crop production may be one plank for livelihood improvement and possible exit from poverty, but will not be the only one, and is unlikely to be the main one. There is an imbalance between traditional low-input, low-risk cropping and newer ‘improved’ systems. Whilst the former provide a measure of food and livelihood security, i.e. protecting livelihoods, the latter involve higher input technologies and therefore higher degrees of risk. A balance will need to be struck so that the traditional is not sacrificed in the name of livelihood promotion. **This will involve the introduction of new technology only where levels of vulnerability allow, and where ways can be found to keep risks low.**

Aspects of contract agriculture and marketing need to be explored in partnership with private/corporate players. This may include the option of forward trading and spot marketing, which may be opened for the small and marginal farmers in collaboration with national commodity exchanges.

Livestock production offers some prospects, but remoteness from main consumer markets poses severe challenges for perishable products, and even if massive investments to improve infrastructure were made, these products are unlikely to be competitive with those produced in urban peripheries. Apart from some petty local trading, the main function of livestock is to act as “savings” and as a buffer against shocks and stresses, whether in the farm or domestic context.

Non-timber forest products (NTFPs) also offer some potential, but face problems of degraded resource base, illegal access by “outsiders”, low prices offered to collectors owing to market imperfections and low local value-added. NTFP products are crucial in meeting tribal

people's subsistence needs, including food security, providing a safety net in times of need and contributing to seasonal income. Tribal communities within MP tend to have a higher dependence on forest resources. With ownership of NTFPs by Gram Sabha as per the PESA and its reinforcement by the Scheduled Tribes (Recognition of forest rights) Act, and buoyant demand for many products, significant contributions to income can be earned by collectors, but they are typically forced to sell immediately on harvest at low prices when they have high-interest loans to repay to middlemen. Access to alternative credit and primary processing of products can significantly increase the income of collectors. The introduction of more sophisticated processing at local level is a priority for increasing income and reducing pressure to collect ever more quantities of unripe raw material.

A comprehensive, pro poor crop and livestock strategy needs to be devised which can accommodate differences in physical and social context. **Participatory varietal selection**, which has had a high rate of success in some parts of the state, appears to be among the most promising of these, which can be expanded to take in traditional crops. **Exploring ways of making seed supply chains more effective and producer-friendly is another.** In the **livestock sector, service providers** like Gopals is likely to be beneficial for developing a sustainable model.

Rural Non Farm Economy

There is a need for more effective policies to promote agricultural production and incomes, through a progressive shift from subsidised inputs and towards productive public investment e.g. in roads and water development, especially if this can be used to employ labour in the agricultural slack season. It is rarely that any given location can be characterised as predominantly either farming or Rural Non Farm Economy (RNFE) – in most contexts where farming is strong, so also will be the RNFE, and vice versa.

Steps are needed to rationalise the regulatory environment and so remove restrictions and reduce transaction costs where these arise in both agricultural and RNFE production and marketing systems. There is also a need to enhance awareness of and the capacity to implement policy. Public investment in power supply, transport and communications infrastructure would help to stimulate the RNFE (as well as agriculture and NTFP-related activities. Furthermore, where distances between producers and consumers are long, even with the best of infrastructure, products from remote areas are unlikely to be competitive with those produced close to major consumption centres. Promotion of the RNFE will, in addition, require the appropriate provision of credit, and capacity building among all concerned. Enterprise

development strategy needs to be developed and implemented, drawing on lessons from other projects such as DPIP and SGSY which may have taken these concepts somewhat further.

Migration

Circular migration, much of it seasonal, is now an integral part of the livelihood strategies pursued by a large number of poor people in Madhya Pradesh. Migration is generally driven by lack of sufficient local employment, land fragmentation, drought and better opportunities in other locations. Common migration streams within the State include those to intensive agricultural areas such as Malwa and Mahakoshal, to a few industrial pockets and mines; to urban centres for rickshaw pulling, and to brick kilns, mines and quarries for labouring. While the poor and unskilled appear to circulate closer to home, more skilled workers go farther for higher wages. Savings from migration vary widely by occupation, wage rates, expenses at the destination, and contracting/loan arrangements. This is clear is that most households would be worse off if they were depending solely on local employment.

There is a need to recognise the importance of migration as a livelihood strategy. Steps have already been initiated under NREGA to reduce distress migration by creating higher opportunities for wage employment and creating infrastructure leading to sustainable livelihoods. In case of migrations for better livelihood opportunities steps are needed to test and certify the skills of existing workers. There is a need to emphasise the importance of human resource development in addition to natural resources. The skills gap of workers needs to be bridged and new entrants to the labour force need to be trained in various vocations to enhance their skills and consequential employability. This is especially important for those who have limited access to land and other natural resource based activities.

Financial Services

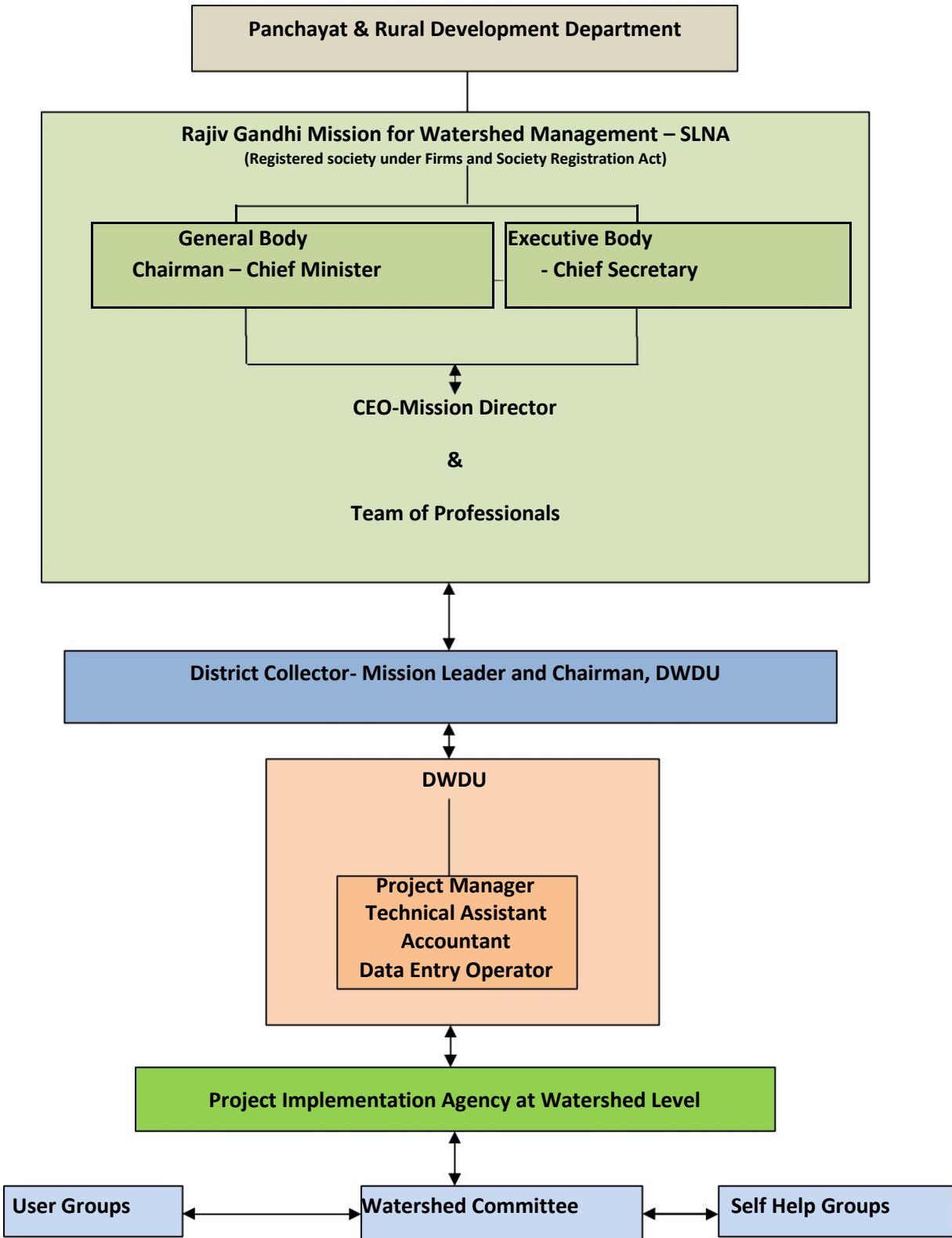
Financial services will be addressed more substantively. Whilst agriculture is the predominant activity for most households, livelihoods are typically a “diversified portfolio of subsistence activities”. Under these circumstances credit becomes an important part of the coping strategy. Other financial services such as savings, micro-insurance and money transfers would substitute for credit if available. Microfinance services for the poor also need to be contextualised against the need to build up the natural, human and infrastructural base, given the underdeveloped areas of the state.

Although good steps have been taken in almost all parts of the state in terms of forming or reviving self-help groups, but the credit flow is still small. There is a need to look at expanding savings and insurance. There are three main constraints in the provision of financial services:

(a) inappropriate products and procedures for poor people (b) inadequate outreach of distribution channels and (c) unpredictable distorted financial behaviour among the target group. An appropriate strategy might be to build and support a culture of savings, develop a closer understanding of needs, and assess local institutional capacity. Where capacity is strong, it may be possible to build a community based financial structure.

CHAPTER - IX

9.0 INSTITUTIONAL ARRANGEMENT



9.1 SLNA

In Madhya Pradesh Rajiv Gandhi Mission for Watershed Management is notified as SLNA. The RGMWM has its General Body and Executive Body as per the provision of Firms and Society Registration Act. The membership of General Body and Executive Body of RGMWM is in accordance with the Common Watershed Guidelines- 2008. Hon'ble Chief Minister is Chairman of General Body and Chief Secretary, Government of Madhya Pradesh is Chairman of Executive Body of the RGMWM. The other details are as given below :-

Table – SPSP 26 and 27 : Details of SLNA

1	2	3	4
Date of Notification	Type of SLNA [#]	Date of MoU with DoLR	Total no. of members of SLNA
1950/1898/22/V-5/estt. dated 08/10/2008	Registered society under Firms and Society Registration Act.	-	15 - 20

5		6					
Chairperson of Executive Committee		CEO					
Name	Designation [#]	Name	Designation	Date of Appointment	Nature of appointment	Tenure (No. of years)	Contact Ph. No./ Fax/ E-mail
Shri Rakesh Sahni	Chief Secretary	Shri Umakant Umrao	Director	June-09	IAS	3 months	0755-2553171

In Madhya Pradesh Rajiv Gandhi Mission for Watershed Management (RGMWM) has already been the nodal agency at state level under Rural Development Department for implementation of DPAP & IWDP watershed projects since 1995. Thus the RGMWM has its state level office with basic institutional arrangement, which will be strengthened by appointing multi-disciplinary team of professional experts and other requisite staff, so as to perform the function of SLNA.

The state office of RGMWM has its MIS cell headed by a Programmer. At present MIS cell of RGMWM is doing online entry at state level as directed by Gol-DoLR. The MIS cell of RGMWM will be strengthening to function as SLDC.

Table-SPSP 28: Details of functionaries in the SLNA funded by DoLR- Nil

Table-SPSP 29 : Details of State Level Data Cell (SLDC) functionaries – Nil

9.2 DISTRICT LEVEL WATERSHED UNITS

At present the RGMWM is operating through a "watershed cell" at the level of Zila Panchayat in each district. These watershed cell have been constituted by appointing 1 Project Officer or Project Coordinator or Asst. Project Officer and 1 Office Assistant. Therefore existing Watershed Cell will be strengthening for setting up of DWDU as directed by Gol-DoLR. The appointments in DWDUs will be done and their Bank Account will be opened after budget estimate for constituting DWDU is approved by Gol-DoLR. **It is proposed to establish DWDU in all the 50 districts of Madhya Pradesh.** The MIS cell of RGMWM at state level is already collecting on-line information from Watershed Cell/Proposed DWDU of ZPs.

Table-SPSP 30: Details of functionaries in the DWDU funded by DoLR- Nil

6. PIA AND WDT

- 7.** For each of the selected cluster of micro watersheds a Project Implementation Agency (PIA) will be appointed from government line department. A team of subject matter specialists appointed on contract may also be designated as PIA. Each PIA will have one Project Officer. The Project Officer will be assisted by a multidisciplinary watershed development team (WDT) consisting of different subject matter specialists (Irrigation, Public Health Engineering, Forest, Agriculture, Horticulture, Sericulture, Animal Husbandry etc.), drawn either from various line department of Government or Non Government Organisations (NGO's).

9.5 INSTITUTIONAL ARRANGEMENT AT VILLAGE LEVEL

At village level community will be organised into groups to establish participative structures, with common problems and concerns, which can act as vehicle for resource support, community action and conflict resolution. These groups will be established to enable the community to organise itself to manage the entire process of watershed management. The groups will carry out various activities from planning of watershed management activities, its execution and maintenance. They will also decide on the modalities for group functioning, distribution of any incomes/resources and conflict resolution. The following groups are proposed to be established :-

- User Group** - The groups of landowners who will have direct effect of watershed management activities. For each of the identified watershed development activity like soil conservation, water conservation, horticulture, fodder development etc. on private land, community land and government land, such groups will be constituted.
- Self Help Group** - These will be groups of individuals who may not be holding land and may not get benefit directly from the watershed development works. Such individuals who wish to act collectively and are willing to organise themselves will be organised into SHGs and linked with income generating activities with well defined forward and backward linkages to sustain their livelihood.
- Women's Group** - Women as a distinct group form a priority area for the programme as land and water related issues affect them the most. Therefore women's self help groups in all programme villages will also be promoted.
- Watershed Committee** - This is the body, which will act as the Executive committee to manage the day-to-day affairs of the watershed at village level and facilitate the participation of the entire village community. It will have representation from all user groups, self help groups, women and representatives of the PIA's. One full time Secretary will be appointed with each Watershed Committee to assist in their responsibilities.

CHAPTER - X

8. CAPACITY BUILDING

a. Stake holders and capacity building requirements

S.No	Project Stakeholder	Critical capacity gaps
1	Target community	Need & techniques for soil and water conservation, improved agricultural practices, sustainable livelihood opportunities,
2	GPs	Need & techniques for soil and water conservation, Coordination with Watershed Committees, Convergence with other schemes & programmes.
3	Watershed Committees	Need, objectives & techniques for soil and water conservation, Responsibilities & Functions of WC, Preparation of Action Plan, Maintenance of bank accounts and Records, Execution, supervision and maintenance of physical works, Maintenance of Development fund, Post-project issues, Coordination with Gram Panchayats, Convergence with other schemes & programmes,
4	SHGs	Need, objectives & techniques for soil and water conservation, Maintenance of bank accounts and Records, sustainable livelihood opportunities, Micro-credits, Establishment of Micro enterprise, Convergence with other schemes & programmes.
5	UGs	Need , objectives & techniques for soil and water conservation, Responsibilities and Functions of UGs, Supervision and maintenance of structures, Benefit sharing mechanism,
6	WDTs	Need, objectives & techniques for soil and water conservation, Responsibilities and Functions of WDT, Net Planning, Preparation of Action Plan, Execution, supervision and maintenance of physical works, Training and facilitation skills, Training need analysis, Awareness generation techniques, Group formation & their empowerment, Improved Agricultural techniques, Sustainable livelihood opportunities, Micro credits and Micro enterprises, Assessment of project outputs as per Action plan, Coordination with Gram Panchayats, Convergence with other schemes & programmes,

S.No	Project Stakeholder	Critical capacity gaps
7	PIAs	Need, objectives & techniques for soil and water conservation, Responsibilities and Functions of PIA, Preparation of Action Plan, Execution, supervision and maintenance of physical works, Maintenance of Fund, Bank Accounts and Records, Training and facilitation skills, Training need analysis, Awareness generation techniques, Improved Agricultural techniques, Sustainable livelihood opportunities, Micro credits and Micro enterprises, Assessment of project outputs as per Action plan, Coordination with Gram Panchayats, Convergence with other schemes & programmes
8	DRDA/ZP cell	Need, objectives & techniques for soil and water conservation, Responsibilities and Functions of DRDA, Preparation of Action Plan, Execution & supervision of project activities, Maintenance of Fund & Records, Training need analysis, Maintenance of MIS, Documentation
9	SLNA	Planning, Monitoring, Evaluation and Documentation of Watershed Projects, Behavior Change Communication,

g. Strategies for capacity building (Briefly describe about strategies for capacity building)

Planning and execution of CB Action Plan: There will be a well defined process of developing action plans for capacity building. Training Need Assessment for Project Stakeholders will be carried out in coordination with SLNA. The CB inputs will be consistent with project cycle and sporadic in time line. Adequate professional inputs for – needs assessment, planning, sourcing the resource persons/ organization, delivery of capacity building inputs and follow up will be ensured.

Relevance of Content : There will be uniform content and methodology of capacity building events.

Listing out training requirements of clienteles at state, district, sub-district and watershed level. Analysis of training modules followed by various training institutions/organisations at these levels. Identifying major areas matching the training requirements of various clienteles. Identification of subjects/topics to be covered under these major areas. Developing effective and need based modules in consultation with SLNA.

4. Pool of resource Person/Organisations : Pool of resource person and resource organization will be developed alongwith the Institutional linkages and arrangements for CB. Support from line department will also be ensured.

- 3) Partnership with Training Institutes & NGOs : SLNA will carry out CB program in partnership with training institutes and NGOs like-SIRD,WALMI, Administrative Staff Training Institute, State Agricultural Training Institutes, Engineering Staff Training Institute, State Cooperative Training Institutes
- 4) Sensitization of Policy makers, Panchayat Samities, CEOs etc : Project Director / Project Officer, State trainers and resource persons , MLAs ,Heads of line department, Chairman DRDA/ Collector , Chairman/ Vice Chairman (Zilla Panchayat) , will be sensitized for key components in Common Guidelines and to ensure supportive & enabling environment.
- 5) Monitoring for quality trainings : A mechanism for continuous Assessment and monitoring of CB program will be developed to identify gaps and propose corrective actions.

c) Indicate capacity building programme to be taken up:

Following CB programmes will be taken up –

- Sensitisation Programme
- Orientation Program
- Skill Development
- Foundation Program
- TOT
- Awareness Generation
- Specialized training program

e) Indicate institutional arrangements made for capacity building at State level, District level, Block level and Village level:

Qualified professional staff to carry out CB activities is already on board at State level. Additional supportive staff for the same will be appointed as operational guidelines are received. At District level there would be Master Trainers who will in turn organize CB activities for stakeholders at block and project level in cascading mode with the support of NGOs and training institutes. At District level CB activities will be carried out at KVK, Regional Centers of Agriculture dept. Village level trainings would be conducted in Village itself.

f) Training manuals developed for training programme and field training proposed:

Technical training manual have been already developed by SLNA. Other relevant manual would be developed as the operational guidelines are received.

SPSP 31 : List of Training Institutes[@] identified for Capacity Building at State level

1	2	3	4	5	6	7
S.	Name of the Training	Full Address with contact no.,	Name &	Type of	Area(s) of	Accreditation

No.	Institute	website & e-mail	Designation of the Head of Institute	Institute #	specialization ↗	details
1.	Water and Land Management Institute	Kaliasout Dam, P.O. box no. Ravi Shankar Nagar, Bhopal	Shri Umakant Umrao, Director	State Govt.	Water and Land management	
2.	State Institute of Rural Development	Adhartal, Jabalpur	Director	State Govt.	Rural Development	
3.	Indian Institute of Forest Management	Nehru Nagar, Bhopal	Director	Central Govt.	Forestry and Rural Development	
4.	GVT, Ratlam (Gramin Vikas Trust)	49-50, Red Rose house, Nehru place New Delhi		NGO	Watershed Management and livelihood support activities	
5.	AKRSP, Khandwa (Aga Khan Rural Support Programme)	9 th -10 th floor corporate house, opposite Dinesh Hall Off-Ashram Road, Ahmadabad _ 380009 (Gujrat)		NGO	Watershed Management and livelihood support activities	
6.	ACT, Jabalpur (Action for Community Transformation)	Jabalpur		NGO	Watershed Management and livelihood support activities	
7.	NCHSE, Bhopal (National Centre for Human settlements and Environment)	E-5/A,Girish kunj Indore Shahpura Colony, Bhopal	State Bank of Shri M.N.Buch Branch, Arera	NGO	Remote Sensing, Watershed Management and livelihood support activities	

1	2	3	4	5	6	7
S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute#	Type of Institute#	Area(s) of specialization \$	Accreditation details
8.	ASA, Bhopal (Action for Social Advancements)	E-5/A, Girish Kunj State Bank of Indore , Shahpura Branch, Arera Colony Bhopal.	Shri Ashish Mandal	NGO	Watershed Management and livelihood support activities	
9.	BYPASS, Bhopal (Bhopal Yuva Paryavaraqn Shikshan And Samajik Sansthan)	83, Paraspur Colony, Chunabhati, Bhopal	Shri Vivek	NGO	Watershed Management and livelihood support activities	
10.	CARD, Bhopal (Centre for Advanced Research and Development)	E-7/ 803, Arera Colony, Near 12 No. Stop, Bhopal	Shri Vivek Sharma	NGO	Watershed Management and livelihood support activities	
11.	Vibhavari , Dewas	45, Kalani Bagh, A.B Road , Dewas	Shri Sunil Chaturvedi	NGO	Watershed Management and livelihood support activities	
12.	Anupama Education Society, Satna	Barhut Nagar, Satna		NGO	Watershed Management and livelihood support activities	

1	2	3	4	5	6	7
S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute#	Area(s) of specialization\$	specialization\$
13.	N.M.Sadguru Water Development Foundation, Dahod	NM Sadguru Water and Development Foundation, C/O Raju Prajapti Hari Nagar Tehsil. Thandla, Distt Jhabua		NGO	Watershed Management and livelihood support activities	
14.	Foundation for Development Research and Action, 26,Balbir Road Dehradun-248001 (Regional Office: MX-39,E-7, Arera Colony ,Bhopal)	189, Rajapur Road, Dehradun Official Address: 189, Rajapur Road, Dehradun local office : Mx-39, E-7 Arera Colony, Bhopal		NGO	Watershed Management and livelihood support activities	

f) Information, Education and Communication (IEC) activities

A comprehensive plan is formulated for IEC activities with special reference to objective of the watershed projects, provision made under the scheme, proposed watershed development activities, its construction and maintenance etc. The proposed plan for awareness generation will have following components:-

- District level, block level and village level sammelan
- Publicity though publicity van, print media and local cable network
- Display of posters at village level
- Display of hoardings
- Conducting Gram Sabha at village level
- Exposure visits and training
- Wall printing
- Through printing materials (Activity calendar, pamphlet etc.)

CHAPTER - XI

9. Monitoring and Evaluation (M & E)

a. Performance monitoring of projects :

Performance monitoring of watershed projects has always been very challenging. An introductory workshop has already been organised in May 08 to define the performance indicators and design tools in line with the Common Guidelines. Regular performance monitoring will be carried out at each stage of the project. Following plan has been proposed to ensure performance monitoring in the State:

Appointment of qualified staff for monitoring at SLNA and DWDU

Define Performance Indicators

Design tools for Base line Survey and Performance Assessment

Periodical monitoring by SLNA, DWDU, PIA, WDT

Identification and nominations of Monitoring agencies to carry out Performance Monitoring

Annual Performance Monitoring by external Monitoring agencies

Regular feedback mechanism at SLNA to support project teams to take timely corrective actions

Assessment of Quarterly reports to identify gaps and ensure the progress in accordance with the outputs defined in the Action Plan

GIS / Web Based On-line Monitoring

h. Institutional performance monitoring :

Performance of Institutions formed at various levels under IWMP will be regularly assessed by WDT, PIA, DWDU and SLNA . Specific indicators are being developed to ensure Institutional performance as per Action Plan. Periodical assessment of Institutions would also be carried out by Monitoring agencies / NGOs to suggest corrective actions for their strengthening.

i. Internal learning :

Capacity of WDT / WC will be built to make systematic efforts to learn from the field experiences as also from the feedback of independent sources.

5. Systematic analysis of monitoring data on a regular basis by internal team and will be carried out and same will be shared with project authorities / policy makers.

- Services of independent academic and voluntary organisations will be engaged by DWDU, for taking up research and action research projects.

Pilots on new themes and innovative models will be initiated.

Regular and periodical sharing, reflective and learning events will be organised to learn from field experiences, monitoring exercises and academic/research studies. These events will be organised at state and district level. This will ensure internal learning of DWDU and Project Team.

5) Evaluation :

Concurrent Evaluations will be carried out by SLNA panel of evaluators. Each evaluation will include physical, financial and social audit of the work done. The concurrent and Post-Project evaluation would be conducted to assess the status of watershed related interventions as per the specific guidelines on evaluation issued by GOI.

6) Indicate institutional arrangements made for M & E at State level, District level, Block level and Village level:

There will be an exclusive qualified Task Manager for Monitoring & Evaluation supported by subsidiary staff at SLNA for performing all Monitoring and Evaluation tasks at State level. DWDU will also be equipped with the professional staff to carry out regular and effective monitoring and evaluation of the watershed projects in the respective districts. At Block and Village level, capacity of PIA, WDT and WC will be built to carry out regular monitoring and evaluation of their project. Services of independent academic and voluntary organisation will be taken by the SLNA/DWDU for taking up research and action research projects.

Monitoring and evaluation may be carried out w.r.t. following indicators :-

- Constitution of DWDU
- Constitution of PIA

- Whether the User Groups for soil and water conservation, plantation and fodder development activities constituted or not? Are they aware about the activities implemented for them?
- Whether the Self Help Groups constituted or not? What kind of income generating activities selected for them? Whether they have been given any loan from revolving fund or not?. Are they aware about the activities selected for them?
- Whether the Women Thrift and Credit Groups constituted or not? Are they doing regular savings and mobilising the resources on credit? Have they been linked with income generating activities?
- Whether the Watershed Committees constituted or not? Are they aware about their role in post project period.
- Whether the Watershed Committees has opened Project Fund Account and Development Fund Account or not?
- Whether the above mentioned community groups are trained or not for their envisaged role in the Watershed Development Project?
- DPR preparation and net planning
- Convergence with other schemes.
- Whether the works executed and monitored by Watershed Committee or not?
- Whether the works executed under the supervision and technical guidance of PIA or not?
- Whether the local people could get wage employment or not?
- Whether the works executed as per approved action plan and in accordance with the concept of "ridge to valley" or not?
- Efficiency, quality and technical feasibility of executed soil and water conservation works.
- Assessment of plantation. Protection of plantation - Methodology used for protection, people's participation, social fencing and use of the concept of the Joint forest management if any, may be described in detail.
- Physical and financial progress against the targets as per approved DPR.
- Usufructs sharing and its mechanism.
- Proper utilisation of funds. Whether expenditure incurred within the permissible limit of the guidelines and in accordance with the approved cost as per the action plan.

- Maintenance of the prescribed records at PIA level and Watershed Committee level specially Cash Book, Voucher Folder, Cheque Book, Cheque Register, Measurement Book, and Work Register. Are these registers/records are verified in time by competent authority? Status of yearly Audit.
- Contribution (Shramadan/Cash/Kind) collected and deposited in Watershed Development Fund Account in cash. What is the status of operation of Watershed Development Fund Account.
- Status of implementation of income generating activities identified for Self Help Groups. Are these groups really active and implementing the selected activity efficiently.
- Status of Women thrift and Credit Groups. Do they feel any sort of self-reliance?
- What role the women are playing in the post project period?
- Overall role and involvement of Watershed Committees in post project activities.
- Status of maintenance of structures in post project period.
- Shift to water efficient crops in post project period
- Impact assessment
- Adoption of Improved/Modern agriculture practices in post project period.
- Appropriate land use in post project period.
- Credit linkages in post project period.
- Sharing mechanism of benefits in post project period.

Table-SPSP 33: List of Institutes[®] identified for M & E at State level

1	2	3	4	5	6	7
S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute [#]	Area(s) of specialization [?]	Accreditation details
1.	Foundation for Development Research	MX-39, E-7 Arera Colony, Bhopal-462016		NGO	Watershed Management and livelihood support activities	

	& Action (FDRA)					
2.	Center for Advance Research &Action (CARD)	E-7/803,Arera Colony, Bhopal-462 016		NGO	Watershed Management and livelihood support activities	
3.	Vikash Samiti,	188, Panchasheel Colony, Chhindwara		NGO	Watershed Management and livelihood support activities	
4.	Gram Vigyan Paryavarhan Sansthan	1338, Vinoba Nagar, Adhartal, Jabalpur (M.P.)		NGO	Watershed Management and livelihood support activities	
5.	Eco Development Solution Society,	B-76, Priyadarshini Housing Society, Bag Mugalia, Hob' Road, Bhopal		NGO	Watershed Management and livelihood support activities	
6.	ANaRDe Foundation,	4,Vani Vilas, Jhalawar Road, Kota- 7, (Raj)		NGO	Watershed Management and livelihood support activities	
7.	Vimarsh,	HX-13, E-7, Arera Colony, BPL-462016		NGO	Watershed Management and livelihood support activities	
8.	SIRD,	M-6 Adhartal, Jabalpur		State Govt.	Rural Development	
9.	WALMI,	Near Kaliasot Dam, Kolar Road, Ravi Shanker Nagar, Bhopal		State Govt.	Water and Land management	

1	2	3	4	5	6	7
S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute#	Area(s) of specialization\$	Accreditation details
10.	Aga Khan Rural Support Programme, Behind Govt. Primary School, Near Central Warehouse Corporation,	Anandnagar, Khandwa-450001		NGO	Watershed Management and livelihood support activities	
11.	BAIF	E-7/65, Arera Colony, LLR Society, Bhopal		NGO	Watershed Management and livelihood support activities	
12.	Energy Environment & Development Society (EEDS),	R -12, GTB Complex, II nd Floor, New Market, Bhopal		NGO	Watershed Management and livelihood support activities	
13.	Samarthan	36, Green Avenue, Behind Sagar Campus, Chunna Bhatti, Bhopal-462016		NGO	Watershed Management and livelihood support activities	
14.	Gramin Vikash Trust (GVT),	E-7/10,Lala Lajpat Rai Society, Arera Colony, Bhopal-462016		NGO	Watershed Management and livelihood support activities	
15.	Development Alternatives,	1087,Civil Lines,Jhansi-284001/Taragram , Orchha Tigela, Orchha, Tikamgarh - 472246		NGO	Watershed Management and livelihood support activities	
16.	BYPASS Sansthan,	83,Paraspar Colony (Near Ram Mandir), Chuna Bhatti, Kolar Road, Bhopal- 462016		NGO	Watershed Management and livelihood support activities	

1	2	3	4	5	6	7
S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute#	Area(s) of specialization\$	Accreditation details
17.	Mahatma Gandhi Gramodya Viswavidhyalaya,	Chitrakoot, Satna		NGO	Watershed Management and livelihood support activities	
18.	Indian Resource Information Management & Technology Ltd.,	E-4/321,Arera Colony, Bhopal-16		NGO	Watershed Management and livelihood support activities	
19.	ASA (Action for social advancement)	E-5/A,Girish Kung , Arera colony ,Bhopal-462016		NGO	Watershed Management and livelihood support activities	
20.	NM Sadguru Water and Development Foundation	Adalat Road,Chaumahla ,District-Jhalawar-326515 Rajasthan		NGO	Watershed Management and livelihood support activities	
21.	Dr. Yaseen Khan, Senior Scientist,	Madhya Pradesh Vigyan Sabha Village – Koluwa Khurd Raisen Road Bhopal		Individual	Watershed Management	
22.	Mr. S.R. Thareja,	397 - C, Danish Kunj, Kolar Road, Bhopal - 462042		Individual	Watershed Management	
23.	Mr. V.M. Saxsena	191, Rachan Nager,Bhopal-23		Individual	Watershed Management	

1	2	3	4	5	6	7
S. No.	Name of the Training Institute	Full Address with contact no., website & e-mail	Name & Designation of the Head of Institute	Type of Institute#	Area(s) of speciali-zation\$	Accreditation details
24.	Mr. N.S. Dhama	10-C,Shiekh Sarai Phase- I S.F.S. Flats, Category – I New Delhi - 110 017		Individual	Watershed Management	
25.	Mr. L.K. Chaubey	C/104, Sevaye South City Complex, E-8 Shahpura Bhopal		Individual	Watershed Management and forestry	

CHAPTER – XII

12.0 EXPECTED OUTCOMES

The expected outcomes due to implementation of Watershed Management Projects may be listed as given below :-

10. Increased availability of surface water and ground water
11. Increased irrigation potential
12. Increased availability of soil moisture
13. Productive use of culturable wastelands
14. Decrease in the area of fallow land
15. Increase in agriculture productivity
16. Increased livelihood opportunities
17. Increased involvement of community in the process of natural resource management specially distribution of benefits
18. Sustained management and maintenance of created assets
19. Increased income level

Table-SPSP 34: Expected/Estimated Outcomes

1	3	4	5	6	7
S. No.	Item	Unit	Pre-project Status	Expected Post- project Status	Remarks
1	Status of water table	Meter	Madhya Pradesh is a hard rock terrain. Shallow weathered and fractured unconfined aquifers are characteristics of the area. Impact assessment of Watershed Projects in such areas is showing an increase of 2 to 4 meter in water table. Similar status of improvement may be expected due to implementation of IWMP.		
2	Ground water structures repaired/ rejuvenated	No.	Due to ground water recharge atleast 65% to 70% dugwells/tubewells which have been dried may be rejuvenated. The expected number would be around 9000 structures in proposed area.		

1	3	4	5	6	7
S. No.	Item	Unit	Pre-project Status	Expected Post- project Status	Remarks
3	Quality of drinking water		The contamination due to chemical fertilizer or fluoride may get diluted due to ground water recharge.		
4	Availability of drinking water	Months in a year	The availability of drinking water dwindles in summer season.	Implementation of projects would ensure the availability of drinking water during the whole year.	
5	Increase in irrigation potential	Ha.	21,550	2,21,400	
6	Change in cropping/ land use pattern	Percentage	Decrease in fallow land – 25% Decrease in unculturable wasteland – 25% Decrease in area having degraded vegetative cover – 10%		
7	Area under agricultural crop				
	i Area under single crop	Percentage	20% decrease		
	ii Area under double crop	Percentage	30% increase		
	iii Area under multiple crop				
8	Increase in area under vegetation	Percentage	10% increase		

1	3	4	5	6	7
S. No.	Item	Unit	Pre-project Status	Expected Post-project Status	Remarks
9	Increase in area under horticulture	Percentage	10% to 15% increase		
10	Increase in area under fuel & fodder	Percentage	30% increase		
11	Increase in milk production	Lt/day Per capita	2 – 3	5 - 6	
12	No. of SHGs	No.	Atleast 4450 additional SHGs would be constituted and linked with livelihood support activities.		
13	Increase in no. of livelihoods	No.	Atleast 46000 households will get the benefit of increased availability of livelihood opportunities.		
14	Increase in income	Percentage	10% - 15% increase in per capita income is projected		
15	SHG Federations formed		For all the projects in a districts SHGs federations would be formed		
16	Credit linkage with banks	Percentage	Atleast 50% to 60% SHGs would be linked with banks for credit.		
17	Resource use agreements		All the User Groups will have to signed an agreement with WC regarding utilization of resources and maintenance of assets. Similar arrangements will also be made for the groups constituted for natural resource management activities on community/govt. land specially plantation.		