

Report of the Study

Impact Assessment of Watershed Development Projects

(Selected districts of Madhya Pradesh)



Conducted by

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**Submitted to
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Impact Analysis of Watershed Projects: DPAP projects of MP

Section 1 introduction

1.1 Context: Watershed development programme is implemented on a large scale in the rural rain fed areas in the country with the objectives of addressing the concerns of environmental sustainability and sustainable production for livelihoods. A number of programmes are under implementation with financial, administrative and technical support of different agencies and institutions. There were also different guidelines for operationalising these various programmes and with the advent of the common guidelines issued in 2008, there is an attempt to bring the state funded projects under one common strategy and approach. Since the advent of watershed development as a strategy of rural development, Ministry of Rural Development (MoRD), Government Of India (GOI) is one of the key player and the largest implementer in terms of fund allocation and area coverage. Three main projects implemented by the MoRD are Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and Integrated Wasteland Development Programmes (IWDP). A common watershed approach was adopted in all these programmes since 1994. These projects are being planned and implemented by a Project Implementing Agency (PIA), either from the state government departments or voluntary agencies together with Community Based Organizations (CBOs), such as Watershed Associations (WA), Watershed Committee (WC), User Groups (UGs) and Self Help Groups (SHGs). The projects under MoRD had undergone certain revisions during the past years in terms of fund allocation, institutional arrangements, participatory mechanisms, measures for project sustainability etc.

These revisions were an outcome of periodic evaluations and studies assessing the impacts, processes and strategies of implementation with the objective of drawing experiences and learnings. The MoRD itself has undertaken one such countrywide evaluation of the projects sanctioned during the year 1995-98. In continuation of that, another countrywide evaluation is proposed for projects implemented during April 1, 1998 and March 31, 2002. National Institute for Rural Development (NIRD), Hyderabad is entrusted with the task of coordinating this effort through capable and experienced research organisations at state level to undertake the evaluations in different states.

Society for Promoting Participative Ecosystem Management (SOPPECOM), based at Pune, Maharashtra is also selected as a nodal research agency and entrusted with the responsibility of undertaking the survey in the states of Madhya Pradesh (DPAP scheme implemented in 11 districts from western region of the state) and Gujarat (DPAP, IWDP and DDP scheme in 8 districts). This impact assessment report is about Madhya Pradesh Projects under evaluation. The main objective of this evaluation is to find the impacts of watershed implementation on certain key indicators on biophysical aspects, production related components and socio economic issues. The impacts were assessed at the watershed and household level.

1.2 Agro-climatic situation and watershed projects in Madhya Pradesh:

Madhya Pradesh (hence forward MP) is a fairly larger geographical unit (almost 10% of the total area of the country) and is blessed with a fairly good natural resource base. It is upper catchments to 7 major river systems of central India. Forested area is quite good (28.14%) compared to the national average of about 22%, while the area under cultivation is (47.7%) almost same as that of the country (46.0%). The average annual rainfall of 1150mm is comparatively better than that of some of the arid and semi-arid regions of the country. The favorable rainfall, good forest coverage and undulating terrain in most part of the state makes it conducive to watershed-based development.

Table 1 Land use Pattern in MP

Land category	Area in 000ha (except for last column)
Forests	8655 (28.14)
Not available for cultivation	3237 (10.53)
Permanent pastures and Other grazing lands	1585 (5.15)
Land under miscellaneous tree groves (not included in NSA)	20 (0.07)
Cultivable wasteland	1201 (3.91)
Fallow land other than current fallows	575 (1.87)

Current fallows	818 (2.66)
Net area sown	14664 (47.68)
Gross area sown	17870 (58.10)
Total Reporting Area	30755 (100)
Average land holding	2.6 ha

The state is divided into 11 agro climatic units where the average annual rainfall ranges from 750 mm in Grid regions to 1623 mm in the Chatisgarh plains. Most of these regions are characterized by semi-arid or sub-humid climate. The present review had samples of watershed implemented in six of the agro-climatic regions as highlighted in the table below. Of the 11 districts from which the evaluation is undertaken 7 districts (Jhabua, Dhar, Ratlam, Badwani, Khargone, Khandwa and Shivpuri) falls in the semi arid climate while 4 districts (Betul, Raisen, Rajgarh and Guna) are in dry sub-humid condition.

Table 2 Agro-climatic Regions of MP and location of sample districts

Sr.no	Agro-climatic Region	Districts	Normal Rainfall (Area Weighted) (in mm)	Climate	Soils
1	Jhabua Hills	Jhabua	828	Semi-arid	Medium to deep black
2	Malwa Plateau	Indore, Dhar , Badwani , Ujjain, Ratlam , Dewas, Mandsaur, Neemach, Shajapur	916	Semi-arid	Medium to deep black
3	Nimar Plains	Khargone , Khandwa	820	Semi-arid	Medium to deep black
4	Vindhya Plateau	Rajgarh , Bhopal, Sehore, Vidisha, Guna , Raisen , Sagar, Damoh	1175	Dry-sub humid	Shallow to medium black
5	Central Narmada Valley	Harda, Hoshangabad, Narsimhapur, Jabalpur	1288	Dry-sub humid	Deep black
6	Satpura Plateau	Betul , Chindwara	1214	Dry-sub humid	Shallow to medium black
7	Grid Region	Gwalior, Bhind, Morena Sheopur,	749	Semi-Arid	Medium Black Alluvial

		Shivpuri			
8	Keymore Plateau	Panna, Satna, Seoni Umari, Katni, Rewa	1306	Sub-humid	Medium Black
9	Bundelkhand Region	Chattarpur, Datia, Tikamgarh	978	Dry, sub-humid	Mixed red and black
10	Northern Region of Chhattisgarh	Mandla, Dindori, Shahdol, Sidhi	1306	Sub-humid	Red & yellow
11	Chhattisgarh Plain	Balaghat	1623	Moist, Sub-humid	Medium to deep black and yellow

MP has a number of watershed development projects like DPAP, IWDP, DDP, NWDPR, RVP, MPRLP and DANIDA supported watersheds besides many small scale interventions by NGOs. However projects of MoRD (DPAP, IWDP, DDP watersheds under EAS, JRY etc) constitute the majority in the state. Perhaps it is the only state in the country to establish a special mission as early as 1994 known as Rajeev Gandhi Mission for Watershed Management (RGMWM) to coordinate and implement watershed projects supported through MoRD. The relatively high coverage of WDPs by RGMWM in the state is due to the fact that as many as 25 districts have been identified for DPAP and IWDP while EAS is also implemented in 15 districts. RGMWM watersheds according to an estimate covers 10.74% (3309305 ha) of the total geographical area of the state with Jabua, Ratlam, Dhar, Bhind, Kargone, Khandwa and Seoni having larger concentration of watersheds under RGMWM. In comparison to this, NWDPR has a coverage of 3.21 % of the states geographical area¹.

1.3 Watershed projects in this review: This impact assessment is of projects sanctioned under DPAP during the year 1998-2002. These projects are spread in 11 districts of the state and belong to three batches. Being DPAP all the projects are being managed by RGMWM through PIAs of Government Organisation (GO) and Non-Government Organisations (NGO). The projects are from three batches and mainly implemented

¹ Sen, Sucharita and Amita Shah 'Watershed Development Programmes in Madhya Pradesh: Present Scenario and Issues for Convergence' Technical Report, Gujarat Institute of Development Research, Ahmedabad , January 2007.

during 1999-2005. Being implemented under two sets of guidelines (1994 and the revised guideline of 2000) the project cost also vary in few cases.

Table 3 profile of the sample

Sr.no	Name of the district	Batch	Year of sanction
1	Badwani	VI	2000
2	Betul	V & VII	1999 & 2000
3	Dhar	VI	1999
4	Guna	V	1999
5	Jhabua	V & VII	1999 & 2001
6	Khandwa	VI	2000
7	Khargone	VI	2000
8	Raisen	VI	2000
9	Rajgarh	V	1999
10	Ratlam	V & VI	1999 & 2000
11	Shivpuri	V & VI	1999 & 2000

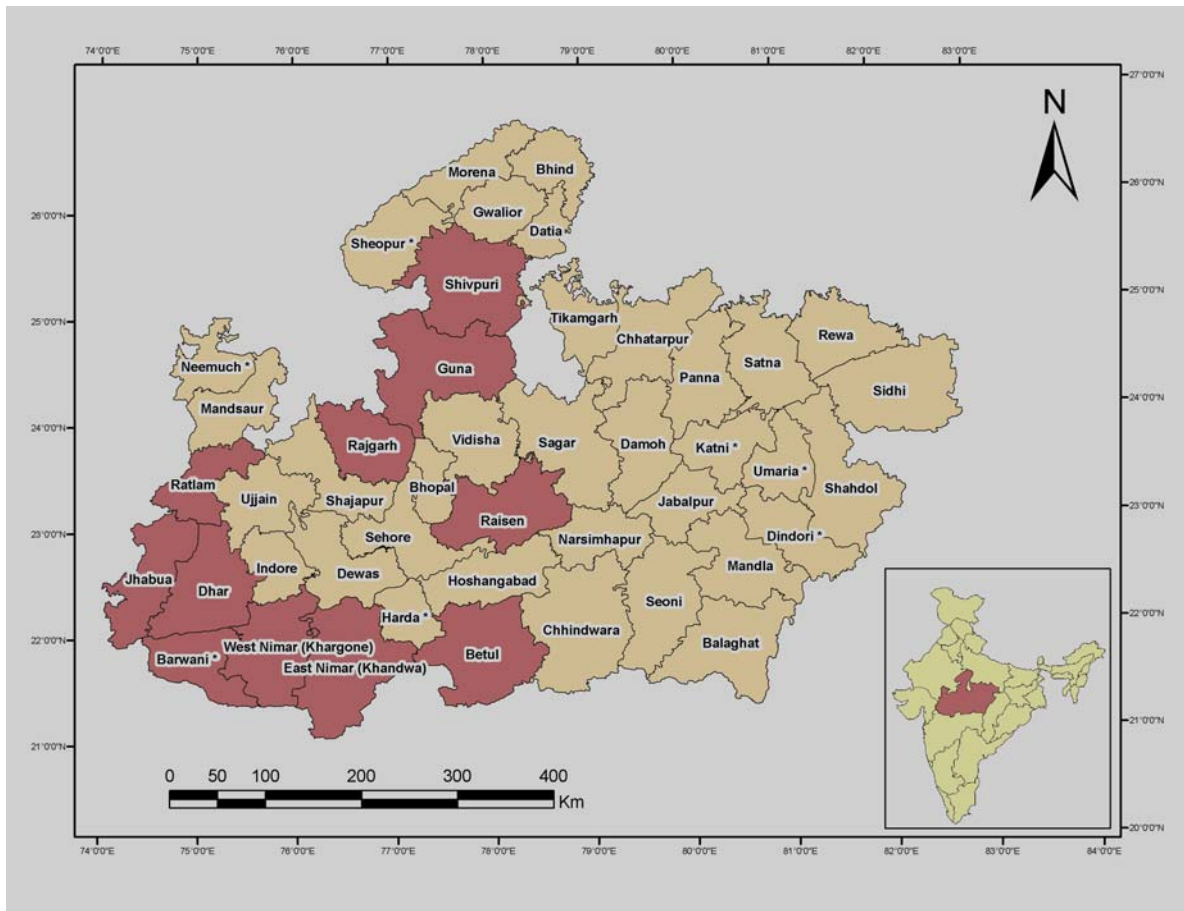


Figure 1 project districts selected for the study

Section 2

Methodology of impact review

2.1 Watershed sampling

It was decided that **5 watersheds** from **each batch** of all selected eleven districts would be reviewed as part of this impact study. We have 4 districts (Betul, Jhabua, Ratlam and Shivpuri) having two batches of projects during the period making 10 projects each from these districts (10X 4 districts = 40 samples) and 5 projects each from the remaining 7 districts (5X7 districts= 35 projects) which means the total **sample size of 75 micro watersheds** (*see annexure 1* for the list of sample micro watersheds). The total universe from which the samples drawn were **474 micro watersheds** implemented in 42 tahsils of this 11 districts. The sample selection was done in consultation with the District Watershed Development Unit (DWDU) through an initial visit to all the eleven districts². Samples were selected taking into consideration the objective of giving representation to different PIAs and geographical locations within the districts. Samples were selected from all the Tahsils where projects were implemented during the phase. During this visit other relevant secondary information about the projects were also collected, such as the type of PIA, expenditure, handing over report (Hastantar), project period, project location and information about CBOs which became very useful during the field survey to locate the local CBO members, location of structures etc. The initial visit also helped in explaining the objectives of the study to the respective officials and PIAs. In all the districts except Ratlam there were sufficient universe to do a random sampling, while in this district there were only 9 villages and ten micro watersheds altogether from both the batches as we had no other option but to select all those ten watersheds. A total of 42 Tahsil got included in the sampling process. We tried to give representation to the type of PIAs in the sample corresponding to their percentage in the universe.

² Even though we had detailed discussion about projects and its inclusion to be in the sample with DWDU, we would like to note that almost all the district officials kept objectivity in helping us select the projects

Table 4 Projects according to the type of PIA

Sr.no	District	Type of PIA	
		GO	NGO
1	Badwani	5 (100%)	0 -
2	Betul	10(100%)	0 -
3	Dhar	4 (80%)	1(20%)
4	Guna	5 (100%)	0 -
5	Jhabua	4 (40%)	6(60%)
6	Khandwa	5 (100%)	0 -
7	Khargone	5 (100%)	0 -
8	Raisen	3 (60%)	2 (40%)
9	Rajgarh	4 (80%)	1 (20%)
10	Ratlam	6 (60%)	4 (40%)
11	Shivpuri	10 (100%)	0 -
12	Total	61 (81.33%)	14 (18.67%)

As the above table shows there are only 14 projects in the sample that are being implemented by NGO PIAs. This is irrespective of the fact that guidelines of 1994 and 2000 recommend NGO involvement in project implementation. In six of the districts GOs were the only PIAs. Jhabua and Ratlam were the two districts with high NGO involvement.



Fig.2 Map of a 7th batch watershed Golai Khurd, District Betul

2.2 Data tools

The evaluation used three tools for data collection, they are

- a) Rapid Reconnaissance Survey Format which looks in to the gross improvements in watershed area in comparison to the beginning of the project. This could be called as change detection at the overall watershed level looking into the changes in biophysical, production(called as biological), economic and social factors due to watershed intervention. This tool has around 35 indicators/variables for all the four components and has a scoring system consisting of 100 marks. Each category/ factors have certain marks assigned to it (bio physical= 40, biological=25, economical=20 and social=15) which is further divided into a total of 35 indicators and have assigned scores according to the weightage given to each one of them.
- b) The second tool is known as the Present Profile of the Watershed Village and tries to gather data on land use, demography, infrastructure and facilities, biophysical condition of the watershed, usufructs and status of CBOs etc. It uses information gathered from primary survey and also from secondary sources such as Talati and GP records and census information.
- c) The third tool used for the study was a detailed Household Survey Format which looks into changes due to watershed programme and its impacts at household level. Ten broad indices/categories are captured through this tool. They are impact of soil conservation work, water harvesting structures, impact on employment generation, CPR status and its impact, diversification of livelihoods, changes in style of living, improvements in education and health, changes in expenditure and investments. Like the first tool this is also developed along a 100 mark scoring system with assigned marks to each indicator with in the broad category of the 10 indices mentioned above.



Fig 3 Focused group discussion in Biroti watershed, Khargone district

The first tool entirely and most of the second tool used Focused Group Discussion and visit to watershed works site (covering a sample of all major works undertaken as part of the project). In all the sample villages the research team (two members) undertook the data collection of schedule I and II and they after reaching a village conducted the site visit with CBO members, watershed secretary and some beneficiaries followed by a detailed FGD involving more people who were affected by the intervention. Some information pertaining to second tool was also collected from the land records of Talati, aganwadi records and rain gauge stations located at the nearby places.



Fig 4 Discussion with household head, Temala watershed, Badwani district

Selection of households (HH) for household survey was done in a purposive manner in the sense that sample HH were selected from the households that have their land in the watershed area where ever such selection could be possible. In certain cases we had to select some HH based on the conclusion drawn from discussions (with the villagers) that they have been benefited, like for example with increased water availability from the intervention even though the treatments/measures are not in private land or in close proximity to their owned lands. In order to give representation to different category of HH, few families had to be included even though they were not direct beneficiaries of the intervention in some instances. The study stipulated that forty households belonging to both small and marginal farmers (2 Ha and less-SMF) and large and medium farmers (above 2 ha- LMF) as representative of the watershed area be taken up for the household survey. Care was taken to include both categories of HHs and Household surveys were conducted through interview of the head of the household and of willing farmers. The field workers explained to them in detail about the study and its objective to make them comfortable to share the necessary information. In few cases where the field worker felt that the information given is not reliable, alternative options were sorted. On an average 44 households were interviewed from each micro watersheds (so that different categories

could get representation in the sample), with the exception of one watershed in Ratlam district³.

Field staffs were given a detailed classroom and on-site training by senior members of the SOPPECOM before data gathering work began besides accompanying them always in the field.

2.3 Data entry and analytical framework

Data was entered in ACCESS so that errors could be minimized. Detailed reviews were taken on periodic basis to see errors and for correction. The data latter imported to SPSS.15 and also into Excel for analysis. Analysis was done as per the requirement of the coordinating institution, NIRD. Data of the first tool was analysed for grading the watersheds and also see the changes in key impact variables. Household data was analysed along district and also according to land ownership categories, irrigation status and other explanatory variables. The analytical scheme is given below (*see next page for analytical scheme*)

2.4 Research issues

Some word of caution is required while interpreting the data. One is external to the research i.e. the below normal/ average rainfall experienced in all the districts, except for Betul, Dhar and Khargone⁴ during the study year. In these three districts also, people were always talking about the drought kind situation even though data shows otherwise (*see annexure 2* for rainfall details in the sample districts). This situation had an impact on the response, especially those related to production and livelihoods, both at household and at community /watershed level. With lot of effort only people could relate to a normal situation they had in previous years and response was always with a rider 'if the rain was good'. One needs to take this into account while assessing the impacts. The

³ As mentioned earlier in one of the villages two micro watersheds were implemented and we had to consider it as two samples since the total projects/universe available in Ratlam was only 10 and the sample size was also 10. In that village we could not get more than 60 hh even though the required number should have been 80.

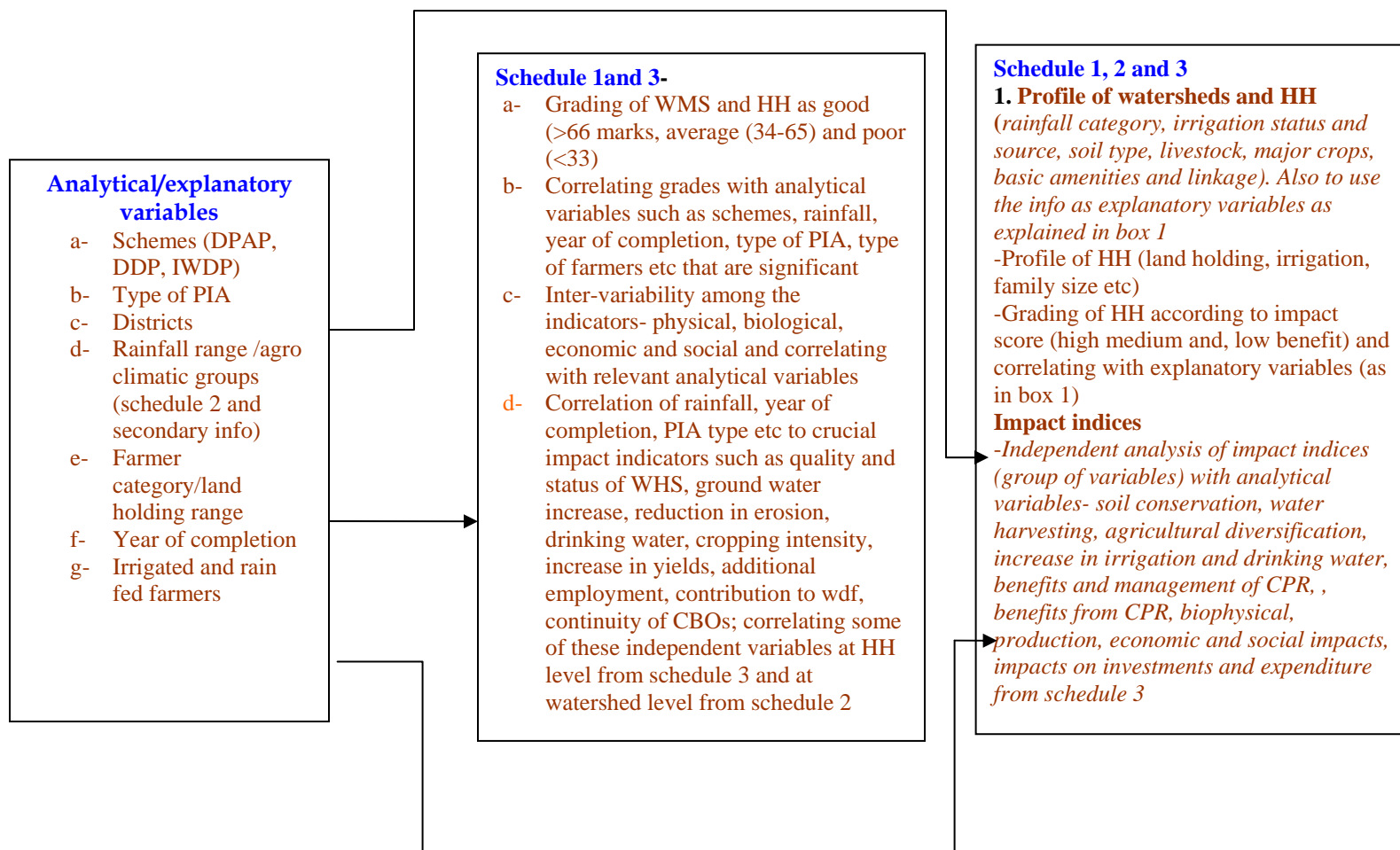
⁴MP Revenue Minister reporting in the state assembly that only 10 district in State receiving normal rainfall while 37 districts are reported as drought affected. All districts under our survey except for Betul , Dhar and Khargone fall in the later category. Ref: Visionmp.com news service. August 20, 2009

other problem which is often encountered in any kind of household survey was related to the tendency to under report even though evidence through causal observations and response of neighbors and community points otherwise.

Two other important issues were that the study did not look into landless category as a stakeholder nor we had some 'control' villages or HH so that attributing impacts as a cause of watershed development would have been more scientific

The analysis is done according to the requirement of the commissioned institution, hence in the report one could observe variables analysed as part of the tools (such as soil erosion reduction analysed at watershed and HH level and reported separately), even though it could have been reported under one heading.

Analytical framework



2.5 Some details about HH samples

Total household sample is 3300, an average of 44 households from each watershed. Some basic characteristics of the sample are that around 61.5 % of HH belongs to small and marginal farmers (SMF) who own less than 2 hectares of land as reflected in the table below. The rest are from the medium and large farmer (LMF) category. This is in commensurate with the general landholding pattern for the villages.

Table 5 HH sample according to landholding category

Name of the District		Type of farmers		Total
		LMF	SMF	
1	Badwani	70	151	221
		31.7%	68.3%	100.0%
2	Betul	220	240	460
		47.8%	52.2%	100.0%
3	Dhar	58	163	221
		26.2%	73.8%	100.0%
4	Guna	121	108	229
		52.8%	47.2%	100.0%
5	Jhabua	130	313	443
		29.3%	70.7%	100.0%
6	Khandwa	119	108	227
		52.4%	47.6%	100.0%
7	Khargone	90	117	207
		43.5%	56.5%	100.0%
8	Raisen	122	109	231
		52.8%	47.2%	100.0%
9	Rajgarh	29	198	227
		12.8%	87.2%	100.0%
10	Ratlam	129	248	377
		34.2%	65.8%	100.0%
11	Shivpuri	184	273	457
		40.3%	59.7%	100.0%
Total		1272	2028	3300
		38.5%	61.5%	100.0%

The percentage of HH in the total sample where NGO PIA implemented projects is only 14% as the number of projects was less in this category. We also tried to understand the breakup of the sample according to irrigation access and the source of irrigation, even though irrigation and rain fed categories were not part of the sampling selection

procedure. It is surprising to note that large majority of HH are irrigated, even though all are seasonal and in most cases irrigating small parts of the holding. Number of non-irrigated HH is higher in case of small and marginal category. The main reason for the predominance of irrigated HH in the sample is mainly because the selection of HH was done purposively of those who owns land in the treated/demarcated micro watershed where ever that was possible and conservation measures were mainly on the drainage course hence they being adjacent or in close proximity to the drainage course⁵ and conservation measures. In most cases the probability is that farmers near to the drainage course own wells.

Table 6 Distribution of HH according to irrigated/ rain fed farmers

Type of farmers	Type of land		Total
	Irrigated HH	Rainfed HH	
LMF	1154	118	1272
	90.7%	9.3%	100.0%
SMF	1607	421	2028
	79.2%	20.8%	100.0%
Total	2761	539	3300
	83.7%	16.3%	100.0%

We also tried to understand the source of irrigation with the objective that the type of irrigation source have an impact on the long term sustainability and many studies showing that watershed development accelerate the growth of bore well and exploitation of ground water from deep aquifers. However our information show that still most of the farmers are dependent on shallow dug well for irrigation and it is mainly used for protective and seasonal irrigation. While a comparatively higher number of farmers from LMF use wells as a source of irrigation the dependence of SMF on common water sources are higher as the data below suggest. However one could not see a major difference in the ownership or dependence on bore well among these categories.

⁵ In quite a few cases HH also refused to participate in the interview saying that they do not own any land in the area where work was done and have not benefited

Table 7 Irrigation source

Type of irrigation source		Number of HH	Percent
1	Kua (dug well)	1834	55.6
2	Nahar (canal)	112	3.4
3	Nala (drainage)	105	3.2
4	Other	28	.8
5	River	302	9.2
6	Stop Dam	3	.1
7	Talab (Tank)	263	8.0
8	Bore well	114	3.5
9	Dry well ⁶ (rain fed)	5	.2
10	No source (rain fed)	534	16.2
11	Total	3300	100.0

Table 8 Irrigation source according to HH category

Source of irrigation		Type of farmers		Total
		LMF	SMF	
1	Kua (Dug well)	826	1008	1834
		71.58%	62.73%	66.43%
2	Nahar (canal)	39	73	112
		3.38%	4.54%	4.06%
3	Nala (drainage)	44	61	105
		3.81%	3.80%	3.80%
4	River	94	208	302
		8.15%	12.94%	10.94%
5	Stop Dam	2	1	3
		0.17%	0.06%	0.11%
6	Talab (tank)	86	177	263
		7.45%	11.01%	9.63%
7	Bore well	58	56	114
		5.03%	3.48%	4.13%
8	Other	5	23	28
		0.43%	1.43%	1.01%
Total		1154	1607	2761
		100%	100%	100%

⁶ Five households (all from marginal category) reported drying up of their wells after watershed development and new bore wells coming in the near vicinity hence one could see a difference in the number of rain fed farmers in comparison to the information given in the earlier table

Section 3

Major Findings

3.1 Findings at watershed level

Analyzing the overall impact of the watershed intervention on biophysical, biological (production), economic and social factors, it was found that of this total four contributing factors, the social factors have the lowest significance in the overall score while the biophysical have the highest contribution. Economic and biological factors come something in between (result of t test). In the watershed context the biophysical aspects such as status of structures, increase in groundwater, reduction in soil erosion, increased stream flow duration etc have a direct impact on the production aspects (vegetation, crops, livestock etc). These impacts could be an outcome of the extent of impacts on the former i.e. the impacts of conservation on biophysical aspects. Hence we tried to see the correlation between the biophysical and biological (production) aspects and found a strong/significant correlation (Pearson correlation) among the two at 0.01 level.

The overall marks scored by each of the watersheds were tabulated (*see annexure 3* for overall scenario and break up according to four impact categories) and we could see that 42.67 % of watersheds score above 50 marks and around 70 percent of watersheds get above 40% of marks The marks scored by each watershed is graded on a scale ‘good (66 marks and above), average (33 to 65) and poor (below 33) as required by NIRD and the following picture emerges

Table 9 Distributions of good, average and poor watersheds across districts

Sr.no	Name of the District	Score category			Total
		Average	Good	Poor	
1	Badwani	4	0	1	5
		80.0%	0%	20.0%	100.0%
2	Betul	8	0	2	10
		80.0%	0%	20.0%	100.0%
3	Dhar	5	0	0	5
		100.0%	0%	0%	100.0%
4	Guna	2	0	3	5
		40.0%	0%	60.0%	100.0%

5	Jhabua	9	0	1	10
		90.0%	0%	10.0%	100.0%
6	Khandwa	4	1	0	5
		80.0%	20.0%	0%	100.0%
7	Khargone	3	0	2	5
		60.0%	.0%	40.0%	100.0%
8	Raisen	5	0	0	5
		100.0%	.0%	0%	100.0%
9	Rajgarh	1	0	4	5
		20.0%	0%	80.0%	100.0%
10	Ratlam	9	0	1	10
		90.0%	0%	10.0%	100.0%
11	Shivpuri	9	0	1	10
		90.0%	0%	10.0%	100.0%
Total %		59	1	15	75
		78.7%	1.3%	20.0%	100.0%

Rajgarh is the worst performing district followed by Guna. Both these districts are bordering Rajasthan and characterized by poor soil quality, low soil depth, high erosion and very poor vegetative cover. The rainfall in these districts was quite below the normal. The soil is shallow and the climate is dry. These aspects may have an impact on the perception of the people. The field observation of the investigators also match the perception as almost all five watersheds in Rajgarh were noted as 'poor' in the overall comment of the investigators as they found the quality of work poor and the benefits very few. In Rajgarh the basic infrastructure was lacking in terms of connectivity, electricity etc. Farmers were unable to take the benefit (such as lifting water for irrigation) even in few places where water harvesting structures were able to impound water. Conservation measures were mainly in terms of a couple of check dams in the main drainage covering 2-3 villages with in one micro watershed and far away from the cultivable lands. Area treatment was far and few

We also tried to see the performance according to the PIA and year of implementation

Table 10 Project Implementing Agency and the Watershed Grade

Type of PIA	Score category			Total
	Average	Good	Poor	Average
GO	47	1	13	61
	77.0%	1.6%	21.3%	100.0%
	12	0	2	14

NGO	85.7%	0%	14.3%	100.0%
Total	59	1	15	75
	78.7%	1.3%	20.0%	100.0%

Table 11 Project period and Watershed Grade

Project Year	Score category			Total
	Average	Good	Poor	
1999-2003	26	0	10	36
	72.2%	0%	27.8%	100.0%
2000-04	28	1	5	34
	82.4%	2.9%	14.7%	100.0%
2001-05	5	0	0	5
	100.0%	0%	0%	100.0%
Total	59	1	15	75
	78.7%	1.3%	20.0%	100.0%

One could observe a slight variation in favor of NGO PIAs (as found in many studies) while projects that are of recent completion are found to perform better. This is mainly because of the better status of measures, more emphasis on in-situ conservation and higher investments in projects since the year 2000. People also have good appreciation of the recent works as it has not faded from their memory yet.

We also tried to analyse the data on some of the crucial variables of biophysical, biological (production) economical and social factors to see the impact of each component in the overall score received by watersheds (*see annexure 3* for details on four factors). It is done through a t test as mentioned earlier which shows the low significance of social factors. In order to get a detailed picture we analyzed the data of each factor in relation to its total marks assigned (% to total of each factor) and found that while 69.33 % of watersheds (52 watersheds) got more than 50 % marks for physical factors only 9.33 % (7 watersheds) score above 50 % for social factors. This is found to be a main factor besides livestock related variables in impacting the overall score of watersheds. Biophysical factors are followed by economic and biological in their relative significance. Economic factors score highly due to the variables such as additional employment created and increase in per capita expenditure.

3.2 Analysis of individual variables: impacts at watershed level

Quality and current status of structures play a crucial in generating impacts in a post project scenario. It helps us in deriving conclusions regarding the nature of project implementation and about systems and procedures put in place for maintenance and management of the structures. Information regarding these aspects was drawn through a site assessment of a sample of all major structures created as part of watershed and through discussion with CBOs and beneficiaries. Conclusions were drawn on the basis of what category majority of the structures is in a given watershed.

Table12 Quality of water harvesting structures

Name of the District		Grading of WS according to Quality of water harvesting structures				Total
		Poor	Satisfactory	Good	Very good	
1	Badwani	1	0	4	0	5
		20.0%	0%	80.0%	0%	100.0%
2	Betul	0	9	1	0	10
		0%	90.0%	10.0%	0%	100.0%
3	Dhar	0	1	3	1	5
		0%	20.0%	60.0%	20.0%	100.0%
4	Guna	0	2	3	0	5
		0%	40.0%	60.0%	0%	100.0%
5	Jhabua	0	4	5	1	10
		.0%	40.0%	50.0%	10.0%	100.0%
6	Khandwa	0	1	3	1	5
		0%	20.0%	60.0%	20.0%	100.0%
7	Khargone	0	2	3	0	5
		0%	40.0%	60.0%	0%	100.0%
8	Raisen	0	2	3	0	5
		0%	40.0%	60.0%	0%	100.0%
9	Rajgarh	1	4	0	0	5
		20.0%	80.0%	.0%	.0%	100.0%
10	Ratlam	0	6	3	1	10
		0%	60.0%	30.0%	10.0%	100.0%
11	Shivpuri	0	4	6	0	10
		0%	40.0%	60.0%	0%	100.0%
Total		2	35	34	4	75
		2.7%	46.7%	45.3%	5.3%	100.0%



Fig 5 stop dam in Karwani watershed in Khandwa district

Since more than 90% of watersheds have structures that are either ‘good’ or ‘satisfactory’ we could conclude that the quality of construction in terms of selecting technically appropriate site, technical specificity of construction (wing wall, apron, pitching and core wall in case of earthen structures, spill way, inlet and outlet etc), quality of material used and supervision, community consultation, functionality of the structures etc are good. The quality of structures and the overall performance of the watershed go hand in hand as the data shows- almost all watersheds that reported good impacts have majority of structures that are also in good condition.

Table 13 PIA wise variations in Quality of water harvesting structures

Type of PIA	Grading of WS according to Quality of water harvesting structures				Total
	Poor	Satisfactory	Good	Very good	
GO	2	30	27	2	61
	3.3%	49.2%	44.3%	3.3%	100.0%
NGO	0	5	7	2	14
	.0%	35.7%	50.0%	14.3%	100.0%
Total	2	35	34	4	75
	2.7%	46.7%	45.3%	5.3%	100.0%

Current status of the structures reflects the operation and management and functionality of the CBOs that are expected to maintain and manage these. Poor status of structures (both structural and management problems) in almost 93% of the watersheds is a major concern as far as sustainability of assets and future impacts are concerned. This shows that conventional thinking on asset management may not work in the post project phase and some out of box solutions are required. If we analyze the information along PIA we find that structural problems of WHS are less in case of NGO PIAs

Table 14 District wise distribution of watersheds according to current status of water harvesting structure

Name of the District		WS with Status of water harvesting structure			Total
		Partially damaged	Silted	Intact	
1	Badwani	0	4	1	5
		.0%	80.0%	20.0%	100.0%
2	Betul	6	4	0	10
		60.0%	40.0%	.0%	100.0%
3	Dhar	0	5	0	5
		.0%	100.0%	.0%	100.0%
4	Guna	2	3	0	5
		40.0%	60.0%	.0%	100.0%
5	Jhabua	1	7	2	10
		10.0%	70.0%	20.0%	100.0%
6	Khandwa	0	4	1	5
		.0%	80.0%	20.0%	100.0%
7	Khargone	1	4	0	5
		20.0%	80.0%	.0%	100.0%
8	Raisen	2	3	0	5
		40.0%	60.0%	.0%	100.0%
9	Rajgarh	5	0	0	5
		100.0%	.0%	.0%	100.0%
10	Ratlam	1	8	1	10
		10.0%	80.0%	10.0%	100.0%
11	Shivpuri	3	7	0	10
		30.0%	70.0%	.0%	100.0%
Total		21	49	5	75
		28.0%	65.3%	6.7%	100.0%



Fig 6 bridge modified as WHS in Ukhalda watershed in Dhar District

Table 15 PIA wise distribution of Status of water harvesting structure

Type of PIA	WS with Status of water harvesting structure			Total
	Partially damaged	Silted	Intact	
GO	19	39	3	61
	31.1%	63.9%	4.9%	100.0%
NGO	2	10	2	14
	14.3%	71.4%	14.3%	100.0%
Total	21	49	5	75
	28.0%	65.3%	6.7%	100.0%

In this section we have tried to analyze two crucial impact variables as far as conventional watershed projects are concerned i.e. impact on ground water regime in terms of increase in water level in wells and reduction in soil erosion. Other issues like increased time of stream flow, increase in vegetative cover etc are also part of the study but in the disaggregated analysis we focus on these two issues. The data is based on ‘point observations’ of certain wells (upper and lower locations) and erosion control structures and focused discussion with of well/land owners and the CBO/community members. In some places well monitoring data was also available but the conclusion is

drawn on the basis of the former method. As the table below shows almost all watersheds report some kind of increase in water level and as mentioned earlier the specter drought was impacting the observations. Not much variation could be found in case of PIA and year of implementation.

Table 16 District wise distributions of WS with Ground water Increase

Name of the District		Ground water Increase (in mtrs)				Total
		No increase	Less than one	One to two	More than two	
1	Badwani	1	1	2	1	5
		20.0%	20.0%	40.0%	20.0%	100.0%
2	Betul	0	4	6	0	10
		0%	40.0%	60.0%	0%	100.0%
3	Dhar	0	1	2	2	5
		0%	20.0%	40.0%	40.0%	100.0%
4	Guna	0	3	2	0	5
		0%	60.0%	40.0%	0%	100.0%
5	Jhabua	0	3	2	5	10
		0%	30.0%	20.0%	50.0%	100.0%
6	Khandwa	0	1	4	0	5
		0%	20.0%	80.0%	0%	100.0%
7	Khargone	1	1	2	1	5
		20.0%	20.0%	40.0%	20.0%	100.0%
8	Raisen	0	0	5	0	5
		0%	.0%	100.0%	0%	100.0%
9	Rajgarh	0	5	0	0	5
		0%	100.0%	0%	0%	100.0%
10	Ratlam	0	2	7	1	10
		0%	20.0%	70.0%	10.0%	100.0%
11	Shivpuri	0	7	3	0	10
		0%	70.0%	30.0%	0%	100.0%
Total		2	28	35	10	75
		2.7%	37.3%	46.7%	13.3%	100.0%



Fig 7 well in the month of December in Avliya watershed, Khargone district

A crucial objective of watershed conservation measures is to control soil erosion and improve the soil moisture regime. In a majority of watersheds in the sample some area treatment and erosion control measures were undertaken which included farm bunds/peripheral bunds, gully control measures and in some instances contour trenches and plantation. However there were exceptions to this as in some watersheds only measures undertaken were water-harvesting structures in the main drainage course. In watersheds where area treatments are undertaken the community/beneficiaries report reduction in soil erosion as compared to pre watershed situation. For both these indicators and some other crucial indicators there was option to report in negative like ‘soil erosion increased’ or ‘water level decreased’ but no watershed has reported negative impacts.

Table 17 District wise distributions of watersheds with extent of Soil Erosion Reduction

Name of the District		Soil Erosion Reduction			Total
		Less than 25%	25-50%	More than 50%	
1	Badwani	1	2	2	5
		20.0%	40.0%	40.0%	100.0%
2	Betul	7	2	1	10
		70.0%	20.0%	10.0%	100.0%
3	Dhar	1	4	0	5

		20.0%	80.0%	0%	100.0%
4	Guna	1	3	1	5
		20.0%	60.0%	20.0%	100.0%
5	Jhabua	0	8	2	10
		.0%	80.0%	20.0%	100.0%
6	Khandwa	0	3	2	5
		0%	60.0%	40.0%	100.0%
7	Khargone	0	4	1	5
		0%	80.0%	20.0%	100.0%
8	Raisen	1	3	1	5
		20.0%	60.0%	20.0%	100.0%
9	Rajgarh	5	0	0	5
		100.0%	0%	0%	100.0%
10	Ratlam	3	5	2	10
		30.0%	50.0%	20.0%	100.0%
11	Shivpuri	3	7	0	10
		30.0%	70.0%	0%	100.0%
Total		22	41	12	75
		29.3%	54.7%	16.0%	100.0%

In order to understand whether there is some difference in this variable according to the type of PIAs (as some studies show that NGO PIAs give some stress on area based conservation as compared to GO PIAs) we analysed the data along that and the following picture emerges which corroborates the conclusion to an extent. Field observations also support the conclusion.

Table 18 PIA wise distribution of WS with the extent of Reduction Soil Erosion

Type of PIA	Extent of Soil Erosion Reduction			Total
	Less than 25%	25-50%	More than 50%	
GO	20	32	9	61
	32.8%	52.5%	14.8%	100.0%
NGO	2	9	3	14
	14.3%	64.3%	21.4%	100.0%
Total	22	41	12	75
	29.3%	54.7%	16.0%	100.0%

Impact on biophysical aspects most often results in improvement in productivity (watershed induced productivity impacts) and in order to understand that we have taken a

couple of variables such as cropping intensity, increase in productivity of crops and livestock. The data is basically based on experiences and perception of the farmers and reflects the average scenario in the watershed

Table 19 District wise distribution of watersheds reporting change In Cropping Intensity

Name of the District		Change In Cropping Intensity				Total
		Less than 100%	100%	100-120%	More than 120%	
1	Badwani	0	1	0	4	5
		0%	20.0%	0%	80.0%	100.0%
2	Betul	0	3	2	5	10
		0%	30.0%	20.0%	50.0%	100.0%
3	Dhar	0	0	1	4	5
		0%	0%	20.0%	80.0%	100.0%
4	Guna	0	2	1	2	5
		0%	40.0%	20.0%	40.0%	100.0%
5	Jhabua	0	0	5	5	10
		0%	.0%	50.0%	50.0%	100.0%
6	Khandwa	0	0	2	3	5
		0%	0%	40.0%	60.0%	100.0%
7	Khargone	0	2	0	3	5
		0%	40.0%	0%	60.0%	100.0%
8	Raisen	0	0	1	4	5
		0%	0%	20.0%	80.0%	100.0%
9	Rajgarh	0	2	3	0	5
		0%	40.0%	60.0%	0%	100.0%
10	Ratlam	1	3	5	1	10
		10.0%	30.0%	50.0%	10.0%	100.0%
11	Shivpuri	0	1	6	3	10
		0%	10.0%	60.0%	30.0%	100.0%
Total		1	14	26	34	75
		1.3%	18.7%	34.7%	45.3%	100.0%

Almost 80% of watersheds reports cropping intensity improvement above 100% consistent with the changes reported in biophysical aspects like ground water improvement, soil erosion reduction etc. In order to understand the perception of farmers regarding productivity of different crop category the study looked into all major crop categories but we analyze hear two components namely change in production of cereals and cash crops



Fig 8 Rabi crop (wheat) in Jamnya watershed, Khandwa district

Table 20 District wise distribution of watersheds with Increase in Yields - Cereals

Name of the District		Increase in Yields - Cereals				Total
		No change	Less than 50%	50-100%	More than 100%	
1	Badwani	1	1	3	0	5
		20.0%	20.0%	60.0%	0%	100.0%
2	Betul	0	7	3	0	10
		0%	70.0%	30.0%	0%	100.0%
3	Dhar	0	2	3	0	5
		0%	40.0%	60.0%	0%	100.0%
4	Guna	0	3	2	0	5
		0%	60.0%	40.0%	0%	100.0%
5	Jhabua	0	6	4	0	10
		0%	60.0%	40.0%	0%	100.0%
6	Khandwa	0	4	1	0	5
		0%	80.0%	20.0%	0%	100.0%
7	Khargone	0	4	0	1	5
		0%	80.0%	0%	20.0%	100.0%
8	Raisen	0	1	3	1	5
		0%	20.0%	60.0%	20.0%	100.0%
9	Rajgarh	0	4	1	0	5
		0%	80.0%	20.0%	0%	100.0%
10	Ratlam	0	6	4	0	10
		0%	60.0%	40.0%	0%	100.0%

11	Shivpuri	1	9	0	0	10
		10.0%	90.0%	0%	0%	100.0%
Total		2	47	24	2	75
		2.7%	62.7%	32.0%	2.7%	100.0%

Table 21 District wise distribution of watersheds with Increase in Yields – Cash crops

Name of the District		Increase in Yield -Cash Crop				Total
		No change	Less than 25%	25-50%	More than 50%	
1	Badwani	1	1	1	2	5
		20.0%	20.0%	20.0%	40.0%	100.0%
2	Betul	3	4	3	0	10
		30.0%	40.0%	30.0%	0%	100.0%
3	Dhar	0	1	2	2	5
		0%	20.0%	40.0%	40.0%	100.0%
4	Guna	0	4	1	0	5
		0%	80.0%	20.0%	0%	100.0%
5	Jhabua	2	3	3	2	10
		20.0%	30.0%	30.0%	20.0%	100.0%
6	Khandwa	0	3	1	1	5
		0%	60.0%	20.0%	20.0%	100.0%
7	Khargone	0	2	3	0	5
		0%	40.0%	60.0%	0%	100.0%
8	Raisen	0	4	1	0	5
		0%	80.0%	20.0%	0%	100.0%
9	Rajgarh	3	2	0	0	5
		60.0%	40.0%	0%	0%	100.0%
10	Ratlam	0	5	4	1	10
		0%	50.0%	40.0%	10.0%	100.0%
11	Shivpuri	1	8	1	0	10
		10.0%	80.0%	10.0%	0%	100.0%
Total		10	37	20	8	75
		13.3%	49.3%	26.7%	10.7%	100.0%

Cotton mainly formed the cash crop in most of the watersheds. Predominantly tribal inhabited watersheds in Betul and Rajgarh districts report no change in cash crop production as there are no cash crops cultivated in these watersheds and what we observed was subsistence farming. However in most of the watersheds the increase reported is insignificant and mainly attributed by the respondents' to lack of rain.

Table 22 District wise distribution of watersheds – impact on livestock (milk production)

Name of the District		Increase in Livestock production -Milk				Total
		No change	Less than 50%	50-100 %	Decreased	
1	Badwani	1	3	0	1	5
		20.0%	60.0%	0%	20.0%	100.0%
2	Betul	3	2	3	2	10
		30.0%	20.0%	30.0%	20.0%	100.0%
3	Dhar	3	0	1	1	5
		60.0%	0%	20.0%	20.0%	100.0%
4	Guna	0	1	0	4	5
		0%	20.0%	0%	80.0%	100.0%
5	Jhabua	7	1	1	1	10
		70.0%	10.0%	10.0%	10.0%	100.0%
6	Khandwa	1	4	0	0	5
		20.0%	80.0%	0%	.0%	100.0%
7	Khargone	3	1	0	1	5
		60.0%	20.0%	0%	20.0%	100.0%
8	Raisen	0	1	1	3	5
		0%	20.0%	20.0%	60.0%	100.0%
9	Rajgarh	0	1	0	4	5
		0%	20.0%	0%	80.0%	100.0%
10	Ratlam	3	4	1	2	10
		30.0%	40.0%	10.0%	20.0%	100.0%
11	Shivpuri	2	5	0	3	10
		20.0%	50.0%	.0%	30.0%	100.0%
Total		23	23	7	22	75
		30.7%	30.7%	9.3%	29.3%	100%

Increase in milk production is often highlighted as a major impact of watershed intervention. It is assumed that increased availability of water and fodder as a result of watershed conservation leads to better livestock development. Some studies also show that the composition of the herd changes and large ruminants/milch animals gets priority as compared to small ruminants. However the present data and also the field evidence show that there was very little impact on livestock especially in the ‘milk route’ aspect of livestock development. Most of the watersheds show hardly any change or reports negative growth in milk production. A few factors could explain this. The lack of availability of basic facilities in the area such as market, services and other support mechanisms like dairy cooperatives are cited as one reason while in quite a few of the

adivasi watersheds people also reported a lack of interest in marketing of milk and taking it up as a economic activity. The heard is mainly local breeds with low productivity and there was no conscious attempt as part of watershed or from outside to develop or support livestock based livelihoods





Fig 9&10 Livestock composition, Kodaroti and Amhara watersheds of Betul and Shivpuri districts

Watershed development is expected to increase the labour opportunities as a result of increased productivity and diversification of livelihoods. In order to understand that, we analysed the indicator on additional employment created as an outcome of watershed intervention. The result shows 95% of watersheds reporting an increase in availability of labour with watersheds from Khargone, Raisen and Khandwa reporting high increase. At the same time a high rate of migration is reported from Rajgarh watersheds as seen from table 24.

Table 23 Watersheds reporting increase in labour opportunity

Name of the District		Additional Employment as labour days /year				Total
		Nil	<20	20-40	>40	
1	Badwani	1	0	2	2	5
		20.0%	0%	40.0%	40.0%	100.0%
2	Betul	0	5	3	2	10
		0%	50.0%	30.0%	20.0%	100.0%
3	Dhar	0	1	1	3	5
		0%	20.0%	20.0%	60.0%	100.0%
4	Guna	0	3	0	2	5

		0%	60.0%	0%	40.0%	100.0%
5	Khandwa	0	1	0	4	5
		0%	20.0%	0%	80.0%	100.0%
6	Khargone	0	0	1	4	5
		0%	0%	20.0%	80.0%	100.0%
7	Raisen	0	0	1	4	5
		0%	0%	20.0%	80.0%	100.0%
8	Rajgarh	1	3	1	0	5
		20.0%	60.0%	20.0%	0%	100.0%
9	Ratlam	1	4	3	2	10
		10.0%	40.0%	30.0%	20.0%	100.0%
10	Shivpuri	1	2	6	1	10
		10.0%	20.0%	60.0%	10.0%	100.0%
11	Jhabua	0	2	6	2	10
		0%	20.0%	60.0%	20.0%	100.0%
Total		4	21	24	26	75
		5.3%	28.0%	32.0%	34.7%	100.0%

Table 24 Seasonal migration reported in watersheds

Name of the District		Seasonal Migration (% to working population)				Total
		<10%	10-25 %	25-50 %	>50%	
1	Badwani	4	0	1	0	5
		80.0%	0%	20.0%	0%	100.0%
2	Betul	8	1	1	0	10
		80.0%	10.0%	10.0%	0%	100.0%
3	Dhar	4	1	0	0	5
		80.0%	20.0%	0%	0%	100.0%
4	Guna	5	0	0	0	5
		100.0%	0%	0%	0%	100.0%
5	Khandwa	4	1	0	0	5
		80.0%	20.0%	0%	0%	100.0%
6	Khargone	2	3	0	0	5
		40.0%	60.0%	0%	0%	100.0%
7	Raisen	5	0	0	0	5
		100.0%	0%	0%	0%	100.0%
8	Rajgarh	0	1	1	3	5
		0%	20.0%	20.0%	60.0%	100.0%
9	Ratlam	7	3	0	0	10
		70.0%	30.0%	0%	0%	100.0%
10	Shivpuri	6	3	0	1	10
		60.0%	30.0%	0%	10.0%	100.0%
11	Jhabua	5	4	1	0	10
		50.0%	40.0%	10.0%	0%	100.0%
Total		50	17	4	4	75
		66.7%	22.7%	5.3%	5.3%	100.0%

In order to understand some crucial aspects related to institutional mechanisms we looked into some variables related to social aspects. As mentioned earlier in the overall ‘score,’ the contribution of social components was very minimal. Since some of the social indicators/variables have relevance to sustainability and equity we make an attempt to understand its status. These variables include current functioning of CBOs, method practiced for contribution in WDF and maintenance of assets including CPR etc

Watershed guidelines stipulate that beneficiaries contributes part of the cost as ‘sharmdan’ and that to be build into a Watershed Development Fund (WDF) for future maintenance and repair of assets. But many studies show that in most instances this is realized through cutting the wages of labor engaged in watershed work often referred as the opportunity cost of getting labour with in the village for the workers and landless population or as poor subsidizing the benefits for the rich and landholders. We tried to understand this in the sample watersheds. We could see that wage cut/ reduction was practiced in majority of the watersheds coupled with a mix of beneficiary contribution.

Table 25 Method adopted for Contribution to WDF

Name of the District		Contribution to WDF				Total
		Full wage-cut from labour	Cash partially taken from labour	Cash partially paid by beneficiary	Contribution as per norms	
1	Badwani	0	5	0	0	5
		0%	100.0%	0%	0%	100.0%
2	Betul	0	10	0	0	10
		0%	100.0%	0%	0%	100.0%
3	Dhar	0	5	0	0	5
		0%	100.0%	0%	0%	100.0%
4	Guna	0	3	2	0	5
		0%	60.0%	40.0%	0%	100.0%
5	Jhabua	0	5	3	2	10
		0%	50.0%	30.0%	20.0%	100.0%
6	Khandwa	0	5	0	0	5
		0%	100.0%	0%	0%	100.0%
7	Khargone	0	5	0	0	5
		0%	100.0%	0%	0%	100.0%
8	Raisen	0	3	2	0	5
		0%	60.0%	40.0%	0%	100.0%

9	Rajgarh	0	5	0	0	5
		0%	100.0%	0%	0%	100.0%
10	Ratlam	1	6	1	2	10
		10.0%	60.0%	10.0%	20.0%	100.0%
11	Shivpuri	0	5	4	1	10
		0%	50.0%	40.0%	10.0%	100.0%
Total		1	57	12	5	75
		1.3%	76.0%	16.0%	6.7%	100.0%

We also tried to understand the status of WDF during the FGD and realized that in quite a few watersheds the money is exhausted and in some places it is still with the district administration. In few places it is in the bank and not yet used for any repair work even though the need is felt. We looked into the PIA as a factor to see whether there are some changes in the method of WDF contribution assuming that NGO PIAs might have been more sensitive on the issue of wage cut and chartered different path.

Table 26 PIA and method of contribution to WDF

Type of PIA	Contribution to WDF				Total
	Fully wage-cut from labour	Cash partially taken from labour	Cash partially paid by beneficiary	Contribution as per norms	
GO	1	49	9	2	61
	1.6%	80.3%	14.8%	3.3%	100.0%
NGO	0	8	3	3	14
	0%	57.1%	21.4%	21.4%	100.0%
Total	1	57	12	5	75
	1.3%	76.0%	16.0%	6.7%	100.0%

A major concern of watershed development is the continuity of the CBOs that were organized as part of the project and its non-functionality with the withdrawal of the PIA. In majority of cases in our sample watersheds, the CBOs have ceased to exist after the project. In most of the watersheds only the chairman and secretary of the watershed committee are known (however they are known to everybody and very easy to locate as our field experience shows). UGs were only in paper and most cases we found that SHGs were not even formed. The chairman and secretary of the WC are popular and generally from the well to do family and dominant caste groups. In few cases this was not the case,

the committee was forced to be reorganized in a later stage as evident during our interaction. The members also have undergone social mobility in terms of becoming members of PRI or engaged in other works like NREGA etc as we observed. In terms of PIA one could observe a slight advantage for NGOs in ‘continuity of CBOs’ and according to the age of the project we could see that older the project higher the non-functionality

Table 27 Current functionality of CBOs

Name of the District		Functional CBOs			Total
		All dysfunctional	Less than 50% functional	50-100% functional	
1	Badwani	5	0	0	5
		100.0%	0%	0%	100.0%
2	Betul	7	3	0	10
		70.0%	30.0%	0%	100.0%
3	Dhar	1	3	1	5
		20.0%	60.0%	20.0%	100.0%
4	Guna	4	1	0	5
		80.0%	20.0%	0%	100.0%
5	Jhabua	5	2	3	10
		50.0%	20.0%	30.0%	100.0%
6	Khandwa	3	1	1	5
		60.0%	20.0%	20.0%	100.0%
7	Khargone	4	1	0	5
		80.0%	20.0%	0%	100.0%
8	Raisen	1	2	2	5
		20.0%	40.0%	40.0%	100.0%
9	Rajgarh	5	0	0	5
		100.0%	0%	0%	100.0%
10	Ratlam	7	2	1	10
		70.0%	20.0%	10.0%	100.0%
11	Shivpuri	10	0	0	10
		100.0%	0%	0%	100.0%
Total		52	15	8	75
		69.3%	20.0%	10.7%	100.0%



Fig11 public display of work done under watershed development in Kharkali watershed , Khandwa district

Table 28 PIA and current functioning of CBOs

Type of PIA	Functional CBOs			Total
	All dysfunctional	Less than 50% functional	50-100% functional	
GO	44	12	5	61
	72.1%	19.7%	8.2%	100.0%
NGO	8	3	3	14
	57.1%	21.4%	21.4%	100.0%
Total	52	15	8	75
	69.3%	20.0%	10.7%	100.0%

Table 29 Project period and current functioning of CBOs

Project period	Functional CBOs			Total
	All dysfunctional	Less than 50% functional	50-100% functional	
1999 -2003	28	5	3	36
	77.8%	13.9%	8.3%	100.0%
2000-04	22	9	3	34
	64.7%	26.5%	8.8%	100.0%
2001-05	2	1	2	5
	40.0%	20.0%	40.0%	100.0%
Total	52	15	8	75
	69.3%	20.0%	10.7%	100.0%

Maintenance of assets created as part of intervention and maintenance and management of Common Pool Resources (CPR) play a crucial role in environmental sustainability and equity including benefits to the resource poor in the watershed.

Table 30 Maintenance of CPR

Name of the District		Maintenance of CPR		Total
		No	Yes	No
1	Badwani	5	0	5
		100.0%	0%	100.0%
2	Betul	6	4	10
		60.0%	40.0%	100.0%
3	Dhar	5	0	5
		100.0%	0%	100.0%
4	Guna	3	2	5
		60.0%	40.0%	100.0%
5	Jhabua	4	6	10
		40.0%	60.0%	100.0%
6	Khandwa	4	1	5
		80.0%	20.0%	100.0%
7	Khargone	5	0	5
		100.0%	0%	100.0%
8	Raisen	5	0	5
		100.0%	0%	100.0%
9	Rajgarh	5	0	5
		100.0%	0%	100.0%

10	Ratlam	2	8	10
		20.0%	80.0%	100.0%
11	Shivpuri	10	0	10
		100.0%	0%	100.0%
Total		54	21	75
		72.0%	28.0%	100.0%

Table 31 PIA and maintenance of CPR

Type of PIA	Maintenance of CPR		Total
	No	Yes	No
GO	47	14	61
	77.0%	23.0%	100.0%
NGO	7	7	14
	50.0%	50.0%	100.0%
Total	54	21	75
	72.0%	28.0%	100.0%

We also looked into whether there is any mechanism in benefits sharing as part of the watershed and found that in around 32 % (24 watersheds) has some system mainly on sharing of fodder from common lands and in a couple of places there were some mechanism for the use of surface water.

3.3 Findings at house hold level

In this section we look into the findings from household survey. A total of 3300 households were surveyed and the information was processed according to the requirement as already mentioned. As in the case of watershed level impacts, the impacts reported at household level are also categorized according to the marks (on a 100 marks scale) each household received. This information is analysed at the level of district and across the farmer categories i.e. land holding and irrigated/rain fed farmers. As mentioned in the methodology section, the total score of 100 is divided in to ten broad categories (like impacts of soil conservation and water harvesting, agriculture diversification, CPR, investments etc) depending on the importance of each component in the overall schema. Hence we also tried to understand the contribution of some of these important categories in the overall score the households have received. We also look into

some crucial individual variables from these categories as done in the case of watershed level impacts

Table 32 District wise distribution of HH according to grade category

Sr.no	Name of the district	Score category			Total
		Less than 33	33-65	Above 65	
1	Badwani	92 (41.6%)	129 (58.4%)	0	221 (100%)
2	Betul	193(42.0%)	267 (58%)	0	460 (100%)
3	Dhar	83 (37.6%)	138 (62.4%)	0	221 (100%)
4	Guna	125 (54.6%)	104 (55.4%)	0	229 (100%)
5	Khnadwa	56 (24.7%)	171 (74.3%)	0	227 (100%)
6	Khargone	58 (28.0%)	149 (78%)	0	207 (100%)
7	Raisen	69 (29.9%)	162 (70.1%)	0	231 (100%)
8	Rajgarh	199 (87.7%)	28 (12.3%)	0	227 (100%)
9	Ratlam	175 (46.4%)	195 (51.7%)	7 (1.9%)	377 (100%)
10	Shivpuri	237 (51.9%)	220 (48.1%)	0	457 (100%)
11	Jhabua	130 (29.3%)	313 (70.7%)	0	443 (100%)
	Total	1417 (42.94%)	1876 (56.85%)	7 (0.21%)	3300 (100%) (100%)

Table 33 District wise distribution of HH (grade category) according to type of HH

District	Type of HH	Grade category			Total
		Less than 33	34-65	above 65	
Badwani	LMF	21	49	0	70
		30.0%	70.0%	0%	100.0%
	SMF	71	80	0	151
		47.0%	53.0%	0%	100.0%
	Total	92	129	0	221
		41.6%	58.4%	0%	100.0%
Betul	LMF	75	145	0	220
		34.1%	65.9%	0%	100.0%
	SMF	118	122	0	240
		49.2%	50.8%	0%	100.0%
	Total	193	267	0	460

		42.0%	58.0%	0%	100.0%
Dhar	LMF	24	34	0	58
		41.4%	58.6%	0%	100.0%
	SMF	59	104	0	163
		36.2%	63.8%	0%	100.0%
	Total	83	138	0	221
		37.6%	62.4%	0%	100.0%
Guna	LMF	51	70	0	121
		42.1%	57.9%	0%	100.0%
	SMF	74	34	0	108
		68.5%	31.5%	0%	100.0%
	Total	125	104	0	229
		54.6%	45.4%	0%	100.0%
Khandwa	LMF	23	96	0	119
		19.3%	80.7%	0%	100.0%
	SMF	33	75	0	108
		30.6%	69.4%	0%	100.0%
	Total	56	171	0	227
		24.7%	75.3%	0%	100.0%
Khargone	LMF	20	70	0	90
		22.2%	77.8%	0%	100.0%
	SMF	38	79	0	117
		32.5%	67.5%	0%	100.0%
	Total	58	149	0	207
		28.0%	72.0%	0%	100.0%
Raisen	LMF	26	96	0	122
		21.3%	78.7%	0%	100.0%
	SMF	43	66	0	109
		39.4%	60.6%	0%	100.0%
	Total	69	162	0	231
		29.9%	70.1%	0%	100.0%
Rajgarh	LMF	18	11	0	29
		62.1%	37.9%	0%	100.0%
	SMF	181	17	0	198
		91.4%	8.6%	0%	100.0%
	Total	199	28	0	227
		87.7%	12.3%	0%	100.0%
Ratlam	LMF	45	79	5	129
		34.9%	61.2%	3.9%	100.0%
	SMF	130	116	2	248
		52.4%	46.8%	.8%	100.0%
	Total	175	195	7	377

		46.4%	51.7%	1.9%	100.0%
Shivpuri	LMF	67	117	0	184
		36.4%	63.6%	0%	100.0%
	SMF	170	103	0	273
		62.3%	37.7%	0%	100.0%
	Total	237	220	0	457
		51.9%	48.1%	0%	100.0%
Jhabua	LMF	27	103	0	130
		20.8%	79.2%	0%	100.0%
	SMF	103	210	0	313
		32.9%	67.1%	0%	100.0%
	Total	130	313	0	443
		29.3%	70.7%	0%	100.0%
Districts total	LMF	397	870	5	1272
		31.21%	68.40%	0.39%	100%
	SMF	1020	1006	2	2028
		50.30	49.60%	0.10	100%
	Total	1417	1876	7	3300
		42.94%	56.85%	0.21%	100%

The above tables shows that around 57% of households score above 34 marks out of 100 which means they are in the ‘**average**’ category. All 7 households that come in the very good category is from one watershed in Ratlam (Janpara) and these farmers have access to water year around from the river passing through the village. If we further analyse the data we find that maximum HH who are in the poor category are from Rajgarh, which supports our watershed level findings. While Khandwa, Khargone, Dhar, Raisen, Jhabua perform better, other districts have many HH in the lower score. If we look into the farmer categories the LMF category have benefited more (68.40% HH in the range of 34-65 marks) as compared to SMF which constitute only 49.60%. We could conclude that the overall benefit is more for the large land holders and the skewedness is more pronounced in districts that otherwise also have a low performance such as Rajgarh, Shivpuri and Guna. *It means when the benefits are higher it is more or less evenly distributed while it is low it is more in favour of the better off.*

We also tried to understand the impact difference at HH along irrigated and rainfed categories and as the data shows *majority of the farmers from the rain fed category have benefited very little from the watershed intervention.* Only

16.88% of rain fed farmers comes in the 'average' category of 34-65 marks while it is 64.91% in case irrigated farmers. For a detailed watershed level analysis of HH please see annexure 3.1

Table 34 District wise distribution of HH (grade category) according to type of farmer

District	Type of farmer	Grade category			Total
		Less than 33	34-65	>65	
Badwani	Irrigated	72	0%	0	199
		36.2%	63.8%	0%	100.0%
	Rainfed	20	2	0	22
		90.9%	9.1%	0%	100.0%
	Total	92	129	0	221
		41.6%	58.4%	0%	100.0%
Betul	Irrigated	133	257	0	390
		34.1%	65.9%	0%	100.0%
	Rainfed	60	10	0	70
		85.7%	14.3%	0%	100.0%
	Total	193	267	0	460
		42.0%	58.0%	0%	100.0%
Dhar	Irrigated	64	137	0	201
		31.8%	68.2%	0%	100.0%
	Rainfed	19	1	0	20
		95.0%	5.0%	0%	100.0%
	Total	83	138	0	221
		37.6%	62.4%	0%	100.0%
Guna	Irrigated	82	103	0	185
		44.3%	55.7%	0%	100.0%
	Rainfed	43	1	0	44
		97.7%	2.3%	0%	100.0%
	Total	125	104	0	229
		54.6%	45.4%	0%	100.0%
Khandwa	Irrigated	28	162	0	190
		14.7%	85.3%	0%	100.0%
	Rainfed	28	9	0	37
		75.7%	24.3%	0%	100.0%
	Total	56	171	0	227
		24.7%	75.3%	0%	100.0%
Khargone	Irrigated	41	146	0	187
		21.9%	78.1%	0%	100.0%
	Rainfed	17	3	0	20
		85.0%	15.0%	0%	100.0%

	Total	58	149	0	207
		28.0%	72.0%	0%	100.0%
Raisen	Irrigated	51	158	0	209
		24.4%	75.6%	0%	100.0%
	Rainfed	18	4	0	22
		81.8%	18.2%	0%	100.0%
	Total	69	162	0	231
		29.9%	70.1%	0%	100.0%
Rajgarh	Irrigated	165	28	0	193
		85.5%	14.5%	0%	100.0%
	Rainfed	34	0	0	34
		100.0%	.0%	0%	100.0%
	Total	199	28	0	227
		87.7%	12.3%	0%	100.0%
Ratlam	Irrigated	111	181	7	299
		37.1%	60.5%	2.3%	100.0%
	Rainfed	64	14	0	78
		82.1%	17.9%	.0%	100.0%
	Total	175	195	7	377
		46.4%	51.7%	1.9%	100.0%
Shivpuri	Irrigated	170	218	0	388
		43.8%	56.2%	0%	100.0%
	Rainfed	67	2	0	69
		97.1%	2.9%	0%	100.0%
	Total	237	220	0	457
		51.9%	48.1%	0%	100.0%
Jhabua	Irrigated	52	268	0	320
		16.3%	83.8%	0%	100.0%
	Rainfed	78	45	0	123
		63.4%	36.6%	0%	100.0%
	Total	130	313	0	443
		29.3%	70.7%	0%	100.0%

We also tried to understand the impact of different categories/factors (a set of indicators which are broadly related is clubbed as one category) such as ‘soil conservation’, ‘water harvesting structures’ ‘agriculture diversification’ ‘CPR related issues’ and ‘investment aspects’ in order to see how they perform in the overall score each sets of HH received. This was done through calculating the percentage of mark each HH got for that specific category and creating a grading as that of <33, 34-65 and >65 percents. In case of soil conservation impacts 46.15% HH score <35 which also lead to the conclusion that soil

conservation measures were not the priority in the watershed development (*see annex 4* for more details). This is borne by the evidence from field visit and discussion with community. This is in contrast to the impact from water harvesting measures where 17.5 % only come under that category and more than 38 % reporting above 65 % of score (see *annexure 5* for more details on WHS)

Table 35 Percentage of HH in 'score categories' for soil conservation impacts

All districts	Type of HH	Soil Conservation factors (% to total expected score of 14 marks)			Total
		Less than 33%	34-65%	Above 65%	
Total for 11 Districts	LMF	489	552	231	1272
		38.44%	43.39	18.16	100%
	SMF	1034	765	229	2028
		50.98%	37.72%	11.29	100%
	Total	1523	1317	460	3300
		46.15%	39.90%	13.93	100%



Fig12 Farm bund in Awariya watershed in Betul district

Table 36 Percentage of HH in 'score categories' for water conservation impacts

All districts	Type of HH	WHS factors (% to total expected score of 8 marks)			Total
		Less than 33%	34-65%	Above 65%	
Total for 11 Districts	LMF	144	563	565	1272
		11.32%	44.26%	44.41%	100%
	SMF	422	915	691	2028
		20.81%	45.11%	34.07%	100%
	Total	566	1478	1256	3300
		17.15%	44.78%	38.06%	100%

Benefits from CPR and its management form a crucial aspect of watershed management not only from environmental sustainability issues but from meeting the basic needs such as fodder, fuel etc of the poorest of the poor. However our data shows that it is one of the weakest links in the project. This was evident from the watershed level data also. Of the total of 3300 HH only 13.5 % households' score more than 33 out of 100 score (*see annexure 6* for details). Three districts that fare better in this respect are Ratlam, Jhabua and Khargone. In Ratlam and Jhabua some system for management and benefit sharing was there as mentioned in the watershed level data. Nine household reported being in the above 65 marks category. This is mainly because common property land resources were not given any priority in the conservation and management strategy and in few places especially in Jhabua and Ratlam where JFM was undertaken we could observe some impacts.

Table 37 Percentage of HH in 'score categories' for soil conservation impacts

All districts	Type of HH	%CPR category (% to total expected mark of 20)			Total
		Less than 33%	34-65%	Above 65%	
Total for 11 District	LMF	1073	195	4	1272

		84.36 %	15.33%	0.31%	100%
	SMF	1777	246	5	2028
		87.62%	12.13%	0.24%	100
	Total	2850	441	9	3300
		86.36%	13.36%	0.27%	100

Watershed is expected to change the agricultural pattern and some sort of farming system development is expected to take root. But in the absence of investments and facilitation no such diversification happens on a scale as evident from the data. In the earlier projects (prior to the common guidelines of 2008) there was hardly any component or budget provision for production enhancement or agricultural diversification and it was visualized that once natural resources are conserved farmers on their own invest for such development. A whopping 97.42 % of households score less than 33 % of marks in this category (*see annexure 7* for details). This was evident as we hardly came across any households that ventured in to diversified production aspects other than agriculture. There is not much variation between districts or among the farmer categories. No HH reported being in the above 65 marks category.

Table 38 Percentage of HH in 'score categories' for agricultural diversification impacts

All districts	Type of HH	% Of agri. Diversification category (% to total expected mark of 21)		Total
		Less than 33%	34-65%	
Total for 11 Districts	LMF	1226	46	1272
		96.38%	3.62%	100%
	SMF	1989	39	2028
		98.07%	1.93%	100%
	Total	3215	85	3300
		97.42%	2.58%	100%

We also looked into the investment component, which generally reflects the availability of additional income and also reflects HH's decisions and priorities regarding investments, if resources for such investments are available. More than 80% of households score very poor on these aspects and in most cases investments are made on improving the farm and house (*see annexure 8* for detail). Large farmers in comparison to marginal categories made more investments especially in buying draft animals, irrigation development etc.

Table 39 Percentage of HH in 'score categories' for investment aspect impacts

All districts	Type of HH	% of Investment Category (% to the total expected mark of 14)			Total
		Less than 33%	34-65%	Above 65%	
Total for 11 district	LMF	931	338	3	1272
		73.2%	26.6%	0.2%	100%
	SMF	1765	263	0	2028
		87.03%	12.96%	0	100%
	Total	2696	601	3	3300
		81.69%	18.21%	0.1%	100%

Altogether these 5 categories constitute 77 marks out of 100 and we could see that except for first two the remaining three components fare very poorly and negatively impact the overall score. These three categories are basically outcome aspects and for them to have a significant place in the overall impact scenario, the project needs to invest and facilitate those in the implementation stage. It also reflects the overall emphasis and priorities of watershed development. This calls for reorienting the objectives as well as strategies of watershed development, which we will look in the last section.

3.4 Analysis of individual variables: impacts at house hold level

In this section we look into some of the key individual indicators related to management and maintenance of WHS, impacts on biophysical components like soil and water, impacts from CPR, impact on productivity etc. the data is analyzed across all the households and farmer categories and in the detailed tables are given in the annexure. Soil erosion reduction is reported by 65% of HH with comparatively larger percentage of HH from LMF reporting more benefits while majority of farmers report a reduction in the range of 25%. More than 60% of HH from Rajgarh, Guna, Shivpuri and Betul report no change while the percentage for that category is very few in Ratlam, Jhabua, Khandwa etc (*see Annexure 9* for detail)

Table 40 impacts of soil erosion reduction at HH

Type of HH	Reduction in soil erosion in (%)					Total
	Increased	No change	Reduced <25	Reduced 25-50	Reduced >50	
LMF	2	372	310	369	219	1272
	0.15%	29.24%	24.37%	29.00%	17.21%	100%
SMF	11	770	407	510	330	2028
	0.54%	37.96%	20.07%	25.15%	16.27%	100%
Total	13	1142	717	879	549	3300
	0.39%	34.60%	21.73%	26.64%	16.64%	100%

Another variable analysed is the quality and functioning of WHS and the perception and experience of HHs regarding this aspect. Forty HH reported that they are not being impacted by the WHS, while a large majority i.e around 72% of the HH report that WHS now are only partially functional as most of these structures are filled with silt. Dysfunctional are those category that failed to perform the desired function from the beginning like having leakage etc. Only 11.70% of HH report that the structures to which they have some stake are fully functional .Not much variation is observable in case of type of HH as different type of HHs is dependent on a specific structure and their perception may not vary as far as the status is concerned. As for other aspects the HH

reporting dysfunctional structures are more in Rajgarh (see *annexure 10* for details on WHS).

Table 41 Quality and status of WHS as reported by HH

Type of HH	Status of water harvesting structure					Total
	Dysfunctional	Partially functional (silted)	Broken	Fully functional	Not Applicable	
SMF	68	953	70	164	17	1272
	5.34%	74.92%	5.50%	12.89%	1.35%	100
LMF	190	1433	160	222	23	2028
	9.37%	70.66%	7.89%	10.95%	1.13%	100
Total	258	2386	230	386	40	3300
	7.82%	72.30%	6.97%	11.70	1.21%	100



Fig 13 Farm level WHS in Kodaroti watershed, Betul district

Water for irrigation and household use especially for drinking is considered a crucial impact of watershed development. Drinking water security is also factored as an objective in watershed development projects and guidelines. However most of the projects do not have a clear strategy to prioritize this and it is also reported that watershed development changes the priority and a conflict is observed between irrigation needs and drinking water needs. Even though our data do not look into specifically on the strategies

adopted for drinking water as part of watershed development, it tries to understand the availability of water for drinking and irrigation

Table 42 Availability of drinking water as reported by HH

Type of HH	Assured drinking water availability				Total
	Less	No Change	Adequate	Adequate with quality	
LMF	17	123	823	309	1272
	1.33%	9.66%	64.70%	24.29%	100%
SMF	35	260	1330	403	2028
	1.72%	12.82%	65.58%	19.87%	100%
Total	52	383	2153	712	3300
	1.57%	11.60%	65.24%	21.57%	100%

Majority of HH reports availability of drinking water, even though deficient rainfall was reported in most of the watershed. Maximum households reporting no change is from Rajgarh (26.9%) while most of other villages report increased availability (*see annexure 11* for details). As for increase in irrigation water we tried to gauge it from change in irrigated area and converting the figures in to certain ranges. The increase is comparatively in favor of the LMF while 15.61% of HH report either no change or decrease (for details see *annexure 12*).

Table 43 Increase in irrigated area as reported by HH

Type of HH	Increase in irrigated area (%)					Total
	Not applicable	No change / Less	10-20	20-30	>30	
LMF	118	173	449	403	129	1272
	9.27%	13.61%	35.29%	31.68%	10.14%	100%
SMF	421	342	637	503	125	2028
	20.76%	16.86%	31.41%	24.80%	6.16%	100%
Total	539	515	1086	906	254	3300
	16.33%	15.61%	32.90%	27.45%	7.69%	100%



Fig 14 Daily water needs from watershed activity, Ukhalda watershed, Dhar district

In productivity we looked into the change in production of cereals, cash crops from agriculture and availability of fodder and fuel from the CPR. Most of the households reported increase in grain production mainly for maize but they also felt that it is partially due to increased inputs also. Lower scale of increase is reported more by SMF while higher range is visible in case of LMF. Farmers reporting no change are higher in Rajgarh, Badwani, Betul and Guna (see *annexure 13* for details)

Table 44 Increase in cereal production as reported by HH

Type of HH	Enhanced yield Cereals (%)				Total
	No Change	<20	20-40	>40	
LMF	173	389	487	223	1272
	13.60%	30.58%	38.28%	17.54%	100%
SMF	432	701	649	246	2028
	21.30%	34.56%	32.00%	12.13%	100%
Total	605	1090	1136	469	3300
	18.34%	33.03%	34.42%	14.21%	100%

The scenario for cash crops is that a large number of farmers do not cultivate the crop hence getting clubbed with the 'no change' category while the increase is around half of the HH. Higher increase is reported by LMF while Rajgarh, Betul, Guna and Shivpuri have large number of HH that do not cultivate any cash crop (see annexure for details).

Table 45 Increase in cash crop production as reported by HH

Type of HH	Enhanced yields- Cash crops (%) ®			Total
	No change	10-20	>20	
LMF	568	376	328	1272
	44.65%	29.56%	25.78%	100%
SMF	1060	570	398	2028
	52.26%	28.10%	19.62%	100%
Total	1628	946	726	3300
	49.33%	28.66%	22%	100%

® The schedule had a category called <10, but no household reported that hence not reflected in the table

We tried to understand the change in labour opportunities at household level and found that the only category in which there was some significant improvement was in agriculture related labor opportunity. Almost 53% of HH report less than 10 days of additional labour days availability after watershed in non agriculture areas (mainly public works)for male, it is 56% of HH reporting less than 5 days for the same for female. Self employment category reports no change or reduction by almost 97% of households. There is no significant variation among the type of HH. As far as additional labour opportunities for male and female as reported by HH is as follows

Table 46 Increase in additional labour as reported by HH for male

Name of the District	Agriculture labour (No. of additional days) for male			Total
	<10	10-20	>20	
Badwani	80	85	56	221
	36.2%	38.5%	25.3%	100.0%
Betul	159	211	90	460
	34.6%	45.9%	19.6%	100.0%
Dhar	78	99	44	221
	35.3%	44.8%	19.9%	100.0%
Guna	71	119	39	229
	31.0%	52.0%	17.0%	100.0%
Khandwa	81	86	60	227

	35.7%	37.9%	26.4%	100.0%
Khargone	59	86	62	207
	28.5%	41.5%	30.0%	100.0%
Raisen	28	140	63	231
	12.1%	60.6%	27.3%	100.0%
Rajgarh	112	88	27	227
	49.3%	38.8%	11.9%	100.0%
Ratlam	150	128	99	377
	39.8%	34.0%	26.3%	100.0%
Shivpuri	124	211	122	457
	27.1%	46.2%	26.7%	100.0%
Jhabua	126	132	185	443
	28.4%	29.8%	41.8%	100.0%
Total	1068	1385	847	3300
	32.4%	42.0%	25.7%	100.0%

Table 47 Increase in additional labour as reported by HH for female

Name of the District	Agriculture labour (No. of additional days) for female			Total
	<20	20-30	>30	
Badwani	100	82	39	221
	45.2%	37.1%	17.6%	100.0%
Betul	179	237	44	460
	38.9%	51.5%	9.6%	100.0%
Dhar	113	91	17	221
	51.1%	41.2%	7.7%	100.0%
Guna	85	111	33	229
	37.1%	48.5%	14.4%	100.0%
Khandwa	90	107	30	227
	39.6%	47.1%	13.2%	100.0%
Khargone	67	97	43	207
	32.4%	46.9%	20.8%	100.0%
Raisen	42	152	37	231
	18.2%	65.8%	16.0%	100.0%
Rajgarh	112	99	16	227
	49.3%	43.6%	7.0%	100.0%
Ratlam	203	109	65	377
	53.8%	28.9%	17.2%	100.0%
Shivpuri	176	188	93	457
	38.5%	41.1%	20.4%	100.0%
Jhabua	196	167	80	443
	44.2%	37.7%	18.1%	100.0%
Total	1363	1440	497	3300
	41.3%	43.6%	15.1%	100.0%

Around 28% of HH report decreased availability of fodder from common sources while the ‘just adequate’ category means the availability only seasonally and just leaving the

cattle for grazing in forest and community lands, drainage course etc. Ratlam and Jhabua have less HH reporting decrease in availability of fodder, which is in tune with the data at watershed level. (See *annexure 15 and 16* for detail in availability of fodder and fuel wood). As compared to fodder, the availability of fuel from common sources particularly for the category ‘sufficient’ is higher mainly because of forest in the near vicinity of most of the watersheds. The main source of fuel for the HH as reported by them is the common sources especially the forest, community lands and fuel from agricultural residues. Cooking gas, biogas etc are non existent.



Fig 15 Fodder in Badgaon watershed, Badwani district

Table 48 Fodder availability as reported by HH

Type of HH	Common pool sources-Fodder			Total
	Less	Just Adequate	Sufficient	
LMF	331	884	57	1272
	26.02%	69.49%	4.48%	100%
SMF	598	1357	73	2028
	29.48%	66.91%	3.59%	100%
Total	929	2241	130	3300
	28.15%	67.90%	3.93%	100%

Table 49 Fuel wood availability as reported by HH

Type of HH	Common pool source -Fuel			Total
	Less	Just adequate	Sufficient	
LMF	337	646	289	1272
	26.50%	50.78%	22.72%	100%
SMF	585	1091	352	2028
	28.84%	53.80%	17.36%	100%
Total	922	1737	641	3300
	27.94%	52.64%	19.42%	100%

We also tried to see the maintenance and management aspects of resources such as issues of social fencing, desilting of water harvesting structures, and grazing practices. It was found that more than 97% of HH reporting no desilting being done. The only exception is in Ratlam district where 10% of HH reporting regular desilting by the CBOs (see *annexure 17* for details). As far social fencing is concerned it is reported by 12.845 of HH and in 43.48% of households report the presence of watchman. In our discussion we could find that it is in land under the forest department (see *annexure 18* for details).

Table 50 Social fencing practices as reported by HH

Type of HH	Maintenance of CPRs-Social fencing of community land			Total
	Not possible	Done with watchman	All agreed no watchman	
LMF	509	581	182	1272
	40.02%	45.67%	14.30%	100%
SMF	932	854	242	2028
	45.95%	42.11%	11.93%	100%
Total	1441	1435	424	3300
	43.66%	43.48%	12.84%	100%

Information on type of feeding/grazing practice of livestock substantiate that social fencing is practiced by very few house holds with some kind of restriction on open grazing (see *annexure 19* for details). And whoever follows some restriction it is in relation to large ruminants especially dairy animals. Social fencing or facilitating changed feeding practice were not a focused area of project management as we could gather.

Besides most ruminants found are local breeds and the culture is to leave them into the forest or cropland during the lean season.

Section 4

Conclusion and suggestions

This study covers 75 micro watersheds spread out in 11 districts and 42 tahsils, covering a wide spectrum of agro climatic regions of Madhya Pradesh. The project is implemented under a widely recognised watershed programme of the country known as Rajiv Gandhi Mission for Watershed Management- an innovative approach to project organization and management. The projects under the review covered two phases of guidelines hence with two distinct set of financial norms. Only around 15% of the projects under the review had PIAs from the NGO sector while majority of the projects were implemented by the line departments, PRI institutions etc

Our study shows that most of the projects have performed in the average and only around 30 percent of the projects could be called as ‘poor’. This was evident during the field visit itself, one could get a feeling that 3 out of 5 projects were comparatively better and villagers had a positive feeling about the work and its impacts irrespective of the fact that rain had failed them in this year. This picture is visible at the household level and thus one could confidently say that what is felt at the household is reflected in the community level interactions

However some of the concerns and those aspects that negatively impacted the overall performance of the project require a critical look. Social and participatory aspects, institutional arrangements at local level, management of non-private resources, enhancement of diversified production and maintenance of the assets are some of the critical issues as our data suggest. The overall good performance of the project in the areas of biophysical and agricultural aspects is marred by the problems in the earlier mentioned aspects. Thus one could say that these watersheds have performed its classical functions in relation to soil and water conservation but failed to build on livelihood enhancement, production diversification, development of CPLR, decentralized resource management etc. These are the concerns that often come out of many evaluation studies of watersheds. Most often the reasons cited were that those were not part of the watershed

development agenda and there were no resources or policy support for such measures and mechanism in the watershed guidelines.

Now we can say that the revised common guidelines have opened up some opportunities in terms of finance, institutional arrangements, scale of operation, budgetary allocation for different components etc. One of the crucial aspects which require certain reorganization is related to the way watersheds need to be planned at the local, cluster and district level at the local level planning if conservation is the only priority given then the result we get is like that. If agricultural diversification, livelihoods and production enhancement is visualised as an outcome, planning and resource allocation need to be in tune with that. A farming system approach -taking into consideration the local resources, orientations of the community and households and limitations of a dry land situation- could be explored and with the current unit cost (RS. 12000) it would be possible to do that. If livelihood activities are introduced one needs to look into its sustainability in the withdrawal phase also (as was evident there was no enterprise sustained after the withdrawal of the PIA). Instead of clubbing non- land based activities as watershed + and an isolated activity, it is necessary that an overall livelihood plan is made at the household level, taking into consideration the capability, assets etc.

Common resources need keen attention if one has to address the issue of equity, environmental sustainability and livelihood security. The study could find that this is one of the weak links and hardly any attempt is made to resolve the conflicts in the CPR related issues, regenerate it and put in place a system for its management and sustenance. Here also a little window is opened through the new common guidelines where forest area could be treated in collaboration with forest department and as JFM.

Another crucial issue is the poor condition of conservation assets created as part of watershed projects and lack of any institutional mechanism in its operation and management. Even the users of the assets hardly took any responsibility for its management as evident from watersheds and household information. Mechanism for repair and up keeping is supposed to be through the watershed development fund. However not much transparency is there as far as status of WDF is concerned. In some villages one could observe a public display of work done and expenditure but we could explore the possibility of displaying the WDF amount also as part of that. The handing

over of assets should accompany with handing over of the WDF and should be done in a gramsabha (either on 15th august or 26th January as the Gramsabhas on these days are compulsory organised). Participatory mechanisms should broaden its scope to include decentralized resource management, rather than the current occupation of having a WC president and secretary to manage the projects. Devolution and subsidiarity should be the principle and downward accountability needs to be stressed. Capacity building through skill development and learning by doing and extension needs to be explored. In our interaction we found that as major problem as hardly anybody received trainings on different aspects of project management, resource administration, institution strengthening etc.

If some of these crucial issues are taken care of there is quite a lot of potential for watershed development to become a sustainable livelihood programme and as our data suggest most of the projects have moved in this direction, but only to the half way mark.

Annexures

Annexure 1- list of micro watersheds

Sr.no	District	Taluka	Watershed	PIA
1	Shivpuri	Kolaras	Sigharai	GO
2	Shivpuri	Pohari	Raiyan	GO
3	Shivpuri	Kolaras	Ghutari	GO
4	Shivpuri	Kolaras	Amhara	GO
5	Shivpuri	Pohari	Dourani	GO
6	Shivpuri	Kolaras	Mathana	GO
7	Shivpuri	Pohari	Kemai	GO
8	Shivpuri	Kolaras	Dhekua	GO
9	Shivpuri	Pohari	Bhilodi	GO
10	Shivpuri	Kolaras	Khorana	GO
11	Guna	Mungaoli	Atareji	GO
12	Guna	Kumbhraj	Rama ka pura	GO
13	Guna	Kumbhraj	Gopalgad	GO
14	Guna	Guna	Dongari	GO
15	Guna	Isagarh	Sirani	GO
16	Rajgarh	Rajgarh	Junapani Jamashedpura	NGO
17	Rajgarh	Kilchipur	Kushalpura Mangalpura Surajpura Bisalai	GO
18	Rajgarh	Kilchipur	Ghatakhedi	GO
19	Rajgarh	Kilchipur	Devakhedi Hirapuri Semalkhedi	GO
20	Rajgarh	Rajgarh	Dilawara, Golakheda	GO
21	Raisen	Begamganj	Sihora Jagir	GO
22	Raisen	Gairatganj	Berkhedi	NGO
23	Raisen	Udaipura	Noorjahanganj	GO
24	Raisen	Begamganj	Tulsipar	GO
25	Raisen	Begamganj	Pandarbhata	NGO
26	Betul	Multai	Barai	GO
27	Betul	Multai	Joul Kheda	GO
28	Betul	Bhainsdehi	Chikhalajhodi	GO
29	Betul	Ghoda Dongri	Golhai khurd	GO
30	Betul	Shahapur	Chirmatekdi	GO
31	Betul	Betul	Kodaroti	GO
32	Betul	Amla	Ramli	GO
33	Betul	Shahapur	Chikhlda Buzurg	GO
34	Betul	Bhainsdehi	Dulariya	GO
35	Betul	Amla	Awariya	GO

36	Khandwa	Khandwa	Anjaniya kalan	GO
37	Khandwa	Khandwa	Jamniya (Attar)	GO
38	Khandwa	Harsud	Karwani	GO
39	Khandwa	Khandwa	Kharkali	GO
40	Khandwa	Pandhana	Jamathi	GO
41	Khargone	Segaon	Deoli	GO
42	Khargone	Khargone	Biroti	GO
43	Khargone	Bhikangaon	Aawaliya	GO
44	Khargone	Bhagwanpura	Dautkhedi	GO
45	Khargone	Jhimya	Nihali	GO
46	Dhar	Kukshi	Atarsuma	GO
47	Dhar	Manawar	Ukhalda	GO
48	Dhar	Sardarpur	Shyampurathakur	NGO
49	Dhar	Kukshi	Banki	GO
50	Dhar	Gandhwani	Kodi	GO
51	Badwani	Rajpur	Jalgaon	GO
52	Badwani	Barwani	Temla	GO
53	Badwani	Thikri	Badgaon	GO
54	Badwani	Sendhwa	Balkhad	GO
55	Badwani	Pati	Chakalya	GO
56	Jhabua	Thandla	Kukadipada	GO
57	Jhabua	Petlawad	Juwanpura	NGO
58	Jhabua	Jhabua	Pipaliya	GO
59	Jhabua	Rama/Jhabua	Amalwani	NGO
60	Jhabua	Meghanagar	Dedla	NGO
61	Jhabua	Petlawad	Suthwadia	NGO
62	Jhabua	Thandla	Jharni	NGO
63	Jhabua	Meghanagar	Guwali	GO
64	Jhabua	Jobat	Dekakund	NGO
65	Jhabua	Jobat	Mota Umar	GO
66	Ratlam	Bajna	Khedi	GO
67	Ratlam	Bajna	Manpura, Jankara	GO
68	Ratlam	Sailana	Amargarh Bavadikhoda	NGO
69	Ratlam	Bajna	Ratangarpith	GO
70	Ratlam	Bajna	Bhadankalan	NGO
71	Ratlam	Bajna	Kherda	GO
72	Ratlam	Bajna	Bagali	GO
73	Ratlam	Bajna	Khirpur (Salardoja)	GO
74	Ratlam	Sailana	Chhayani	NGO
75	Ratlam	Bajna	Banki	NGO

Annexure 2 – rainfall details in project districts

Rain Fall for the period from 01.06.2009 to 09.09.2009 (in MM)				
Districts under survey	Actual	Normal	Def or Excess	%Departures
BADWANI	394.5	579.6	-185.1	-32
BETUL	806.5	827.7	-21.2	-3
DHAR	595.8	681.8	-86.0	-13
GUNA	524.3	873.4	-349.1	-40
JHABUA	560.1	693.4	-133.3	-19
KHANDWA	473.6	753.5	-279.9	-37
KHARGONE	623.3	660.6	-37.3	-6
RAISEN	750.0	1033.2	-283.2	-27
RAJGARH	555.2	837.9	-282.7	-34
RATLAM	621.0	778.6	-157.6	-20
SHIVPURI	615.4	727.7	-112.3	-15

Annexure 3- Score and percentage (to total expected score for each of the factors) on physical, biological, economic and social factors for each watersheds.

	District	Taluka	Watershed	PIA	Biophysical total	% to Physical total	Biological total	% to Biological total	% to Economic total	Social total	% Social total	Total
1	Shivpuri	Kolaras	Sigharai	GO	19.5	48.75	4.8	19.2	70	3	20.00	41.3
2	Shivpuri	Pohari	Raiyan	GO	20	50	2.5	10	55	4	26.67	37.5
3	Shivpuri	Kolaras	Ghutari	GO	27	67.5	6	24	85	3	20.00	53
4	Shivpuri	Kolaras	Amhara	GO	15	37.5	5	20	60	2	13.33	34
5	Shivpuri	Pohari	Dourani	GO	8.5	21.25	1.5	6	45	4	26.67	23
6	Shivpuri	Kolaras	Mathana	GO	21	52.5	7	28	67.5	2	13.33	43.5
7	Shivpuri	Pohari	Kemai	GO	22	55	6	24	55	5	33.33	44
8	Shivpuri	Kolaras	Dhekua	GO	13.5	33.75	5.3	21.2	65	5	33.33	36.8
9	Shivpuri	Pohari	Bhilodi	GO	26	65	5	20	60	4	26.67	47
10	Shivpuri	Kolaras	Khorana	GO	22	55	6.8	27.2	70	4	26.67	46.8
11	Guna	Mungaoli	Atareji	GO	14	35	1.5	6	55	3	20.00	29.5
12	Guna	Kumbhraj	Rama ka pura	GO	11.5	28.75	4	16	45	2	13.33	26.5
13	Guna	Kumbhraj	Gopalgad	GO	27	67.5	5	20	72.5	3	20.00	49.5
14	Guna	Guna	Dongari	GO	13.5	33.75	2.5	10	55	5	33.33	32
15	Guna	Isagarh	Sirani	GO	33	82.5	7	28	85	7.5	50.00	64.5
16	Rajgarh	Rajgarh	Junapani Jamashedpura	NGO	12.5	31.25	4	16	55	2	13.33	29.5
17	Rajgarh	Kilchipur	Kushalpur Mangalpur Surajpur Bisalai	GO	10.5	26.25	0.5	2	32.5	3	20.00	20.5
18	Rajgarh	Kilchipur	Ghatakhedi	GO	10.5	26.25	1.5	6	20	3	20.00	19
19	Rajgarh	Kilchipur	Devakhedi Hirapur Semalkhedi	GO	7.5	18.75	-0.5	-2	40	2.5	16.67	17.5
20	Rajgarh	Rajgarh	Dilawara, Golakheda	GO	19.5	48.75	4	16	50	3.5	23.33	37
21	Raisen	Begamganj	Sihora Jagir	GO	20.5	51.25	8	32	90	4.5	30.00	51
22	Raisen	Gairatganj	Berkhedi	NGO	25	62.5	5.5	22	85	4	26.67	51.5
23	Raisen	Udaipura	Noorjahanganj	GO	26.5	66.25	9	36	100	7	46.67	62.5

24	Raisen	Begamganj	Tulsipar	GO	29	72.5	8	32	75	6	40.00	58
25	Raisen	Begamganj	Pandarbhata	NGO	29	72.5	11	44	85	7.5	50.00	64.5
26	Betul	Multai	Barai	GO	21	52.5	7.8	31.2	75	8	53.33	51.8
27	Betul	Multai	Joul Kheda	GO	12.5	31.25	2	8	60	6.5	43.33	33
28	Betul	Bhainsdehi	Chikhalajhodi	GO	20.5	51.25	4.8	19.2	55	4	26.67	40.3
29	Betul	Ghoda Dongri	Golhai khurd	GO	29	72.5	8	32	85	3.5	23.33	57.5
30	Betul	Shahapur	Chirmatekdi	GO	30	75	7.8	31.2	57.5	4	26.67	53.3
31	Betul	Betul	Kodaroti	GO	22.5	56.25	7.3	29.2	60	3	20.00	44.8
32	Betul	Amla	Ramli	GO	12.5	31.25	5	20	40	4	26.67	29.5
33	Betul	Shahapur	Chikhlda Buzurg	GO	25	62.5	7.5	30	45	3	20.00	44.5
34	Betul	Bhainsdehi	Dulariya	GO	9.5	23.75	2	8	55	2	13.33	24.5
35	Betul	Amla	Awariya	GO	25.5	63.75	10.5	42	75	4	26.67	55
36	Khandwa	Khandwa	Anjaniya kalan	GO	22	55	6.3	25.2	80	3	20.00	47.3
37	Khandwa	Khandwa	Jamniya (Attar)	GO	28	70	9.5	38	80	4	26.67	57.5
38	Khandwa	Harsud	Karwani	GO	34	85	12.5	50	85	3.5	23.33	67
39	Khandwa	Khandwa	Kharkali	GO	25	62.5	5	20	65	3	20.00	46
40	Khandwa	Pandhana	Jamathi	GO	27	67.5	7	28	80	4.5	30.00	54.5
41	Khargone	Segaon	Deoli	GO	10	25	2.3	9.2	62.5	1.5	10.00	26.3
42	Khargone	Khargone	Biroti	GO	15.5	38.75	4	16	52.5	2.5	16.67	32.5
43	Khargone	Bhikangaon	Aawaliya	GO	28	70	5	20	80	1.5	10.00	50.5
44	Khargone	Bhagwanpura	Dautkhedi	GO	27	67.5	8.5	34	77.5	4	26.67	55
45	Khargone	Jhirnya	Nihali	GO	27	67.5	12	48	80	3.5	23.33	58.5
46	Dhar	Kukshi	Atarsuma	GO	21	52.5	6.3	25.2	60	4	26.67	43.3
47	Dhar	Manawar	Ukhalda	GO	30	75	12	48	85	6.5	43.33	65.5
48	Dhar	Sardarpur	Shyampurathakur	NGO	27	67.5	14.5	58	85	4	26.67	62.5
49	Dhar	Kukshi	Banki	GO	26	65	10	40	72.5	4.5	30.00	55
50	Dhar	Gandhwani	Kodi	GO	23	57.5	7.5	30	55	4	26.67	45.5
51	Badwani	Rajpur	Jalgaon	GO	25	62.5	6	24	52.5	3	20.00	44.5
52	Badwani	Barwani	Temla	GO	30	75	13	52	80	4	26.67	63
53	Badwani	Thikri	Badgaon	GO	29	72.5	9.5	38	72.5	4	26.67	57

54	Badwani	Sendhwa	Balkhad	GO	5	12.5	-1.5	-6	45	1	6.67	13.5
55	Badwani	Pati	Chakalya	GO	25	62.5	10	40	70	4	26.67	53
56	Jhabua	Thandla	Kukadipada	GO	15	37.5	4.5	18	47.5	3.5	23.33	32.5
57	Jhabua	Petlawad	Juwanpura	NGO	26	65	10.5	42	62.5	5.5	36.67	54.5
58	Jhabua	Jhabua	Pipaliya	GO	23	57.5	7	28	60	5.5	36.67	47.5
59	Jhabua	Rama/Jhabua	Amalwani	GO	26	65	9.5	38	72.5	5	33.33	55
60	Jhabua	Meghanagar	Dedla	NGO	30	75	6	24	70	9	60.00	59
61	Jhabua	Petlawad	Suthwadia	NGO	23.5	58.75	10.5	42	80	8.5	56.67	58.5
62	Jhabua	Thandla	Jharni	NGO	36	90	8.5	34	57.5	5.5	36.67	61.5
63	Jhabua	Meghanagar	Guwali	GO	29	72.5	5.5	22	60	8	53.33	54.5
64	Jhabua	Jobat	Dekakund	NGO	33	82.5	9.5	38	62.5	10	66.67	65
65	Jhabua	Jobat	Mota Umar	GO	29	72.5	6	24	42.5	6	40.00	49.5
66	Ratlam	Bajna	Khedi	GO	19	47.5	5.5	22	52.5	5	33.33	40
67	Ratlam	Bajna	Manpura, Jankara	GO	27	67.5	6.5	26	22.5	3	20.00	41
68	Ratlam	Sailana	Amargarh Bavadikhoda	NGO	29	72.5	7	28	62.5	8	53.33	56.5
69	Ratlam	Bajna	Ratangarhpith	GO	28	70	12.5	50	67.5	0.5	3.33	54.5
70	Ratlam	Bajna	Bhadankalan	NGO	12	30	3	12	55	6	40.00	32
71	Ratlam	Bajna	Kherda	GO	17	42.5	4.5	18	55	7	46.67	39.5
72	Ratlam	Bajna	Bagali	GO	14.5	36.25	8.5	34	57.5	5.5	36.67	40
73	Ratlam	Bajna	Khirpur (Salardoja)	GO	21	52.5	9	36	50	4.5	30.00	44.5
74	Ratlam	Sailana	Chhayani	NGO	27	67.5	9	36	72.5	5.5	36.67	56
75	Ratlam	Bajna	Banki	NGO	19	47.5	4.5	18	45	4	26.67	36.5

Name of the District	Name of the watershed	Annexure 3.1 Grade category for HH at watershed level			Total
		Less than 33	34-65	above 65	
Badwani	Badgaon	9	37	0	46
		19.6%	80.4%	0	100.0 %
	Balkhad	18	26	0	44
		40.9%	59.1%	0	100.0 %
	Chakalya	21	19	0	40
		52.5%	47.5%	0	100.0 %
	Jalgaon	20	27	0	47
		42.6%	57.4%	0	100.0 %
	Temla	24	20	0	44
		54.5%	45.5%	0	100.0 %
	TOTAL	92	129	0	221
		41.6%	58.4%	0	100.0 %
Betul	Awariya	20	26	0	46
		43.5%	56.5%	0	100.0 %
	Barai	15	32	0	47
		31.9%	68.1%	0	100.0 %
	Chikhalajhodi	29	15	0	44
		65.9%	34.1%	0	100.0 %
	Chikhaldia Buzurg	9	33	0	42
		21.4%	78.6%	0	100.0 %
	Chirmatekadi	13	35	0	48
		27.1%	72.9%	0	100.0 %
	Dulariya	28	18	0	46
		60.9%	39.1%	0	100.0 %
	Golhai khurd	14	33	0	47
		29.8%	70.2%	0	100.0 %
	Kodaroti	13	35	0	48
		27.1%	72.9%	0	100.0 %
	Ramli	33	13	0	46
		71.7%	28.3%	0	100.0 %
	Joullkheda	19	27	0	46
		41.3%	58.7%	0	100.0 %
	Total	193	267	0	460
		42.0%	58.0%	0	100.0 %

					%
Dhar	Atarsuma	20	27	0	47
		42.6%	57.4%	0	100.0 %
	Banki	18	26	0	44
		40.9%	59.1%	0	100.0 %
	Shayampura Thakur	7	33	0	40
		17.5%	82.5%	0	100.0 %
	Ukhalda	15	33	0	48
		31.3%	68.8%	0	100.0 %
	kodi	23	19	0	42
		54.8%	45.2%	0	100.0 %
	Total	83	138	0	221
		37.6%	62.4%	0	100.0 %
Guna	Atareji	25	20	0	45
		55.6%	44.4%	0	100.0 %
	Dongari	34	12	0	46
		73.9%	26.1%	0	100.0 %
	Gopalgarh	15	31	0	46
		32.6%	67.4%	0	100.0 %
	Rama ka pura	33	12	0	45
		73.3%	26.7%	0	100.0 %
	Sirani	18	29	0	47
		38.3%	61.7%	0	100.0 %
	Total	125	104	0	229
		54.6%	45.4%	0	100.0 %
Khandva	Aanjaniya Kalan	16	25	0	41
		39.0%	61.0%	0	100.0 %
	Jamathi	8	39	0	47
		17.0%	83.0%	0	100.0 %
	Jamniya	2	45	0	47
		4.3%	95.7%	0	100.0 %
	Karwani	11	35	0	46
		23.9%	76.1%	0	100.0 %
	Kharkali	19	27	0	46
		41.3%	58.7%	0	100.0 %
	Total	56	171	0	227
		24.7%	75.3%	0	100.0

					%
Khargone	Aawaliya	16	28	0	44
		36.4%	63.6%	0	100.0%
	Biroti	12	32	0	44
		27.3%	72.7%	0	100.0%
	Deoali	12	27	0	39
		30.8%	69.2%	0	100.0%
	Dhaud Khedi	11	30	0	41
		26.8%	73.2%		100.0%
	Nihali	7	32	0	39
		17.9%	82.1%	0	100.0%
	Total	58	149	0	207
		28.0%	72.0%	0	100.0%
Raisen	Berkhedi	13	31	0	44
		29.5%	70.5%	0	100.0%
	Nurjahan ganj	16	26	0	42
		38.1%	61.9%	0	100.0%
	Pandar bhata	10	38	0	48
		20.8%	79.2%	0	100.0%
	Sihora Jagir	25	22	0	47
		53.2%	46.8%	0	100.0%
	Tulsipur	5	45	0	50
		10.0%	90.0%	0	100.0%
	Total	69	162	0	231
		29.9%	70.1%	0	100.0%
Rajgarh	Devakhedi	45		0	45
		100.0%		0	100.0%
	Dilwara	27	19	0	46
		58.7%	41.3%	0	100.0%
	Ghatakhedi	41	3	0	44
		93.2%	6.8%	0	100.0%
	Junapani	40	5	0	45
		88.9%	11.1%	0	100.0%
	khushalpura	46	1	0	47
		97.9%	2.1%	0	100.0%
	Total	199	28	0	227
		87.7%	12.3%	0	100.0%

					%
Ratlam	Amargarh	16	25	0	41
		39.0%	61.0%	0	100.0 %
	Bagali	8	34	0	42
		19.0%	81.0%	0	100.0 %
	Banki R	26	16	0	42
		61.9%	38.1%	0	100.0 %
	Bhadanklan	32	10	0	42
		76.2%	23.8%	0	100.00 %
	Chhayani	15	27	0	42
		35.7%	64.3%	0	100.0 %
	Kherda	19	24	0	43
		44.2%	55.8%	0	100.0 %
	Manpura/Khedi (2 WS)	9	26	7	42
		21.4%	61.9%	16.7%	100.0 %
	Ratangadpith	22	20	0	42
		52.4%	47.6%	0	100.0 %
	Salar Doja	28	13	0	41
		68.3%	31.7%	0	100.0 %
	Total	175	195	7	377
		46.4%	51.7%	1.9%	100.0 %
Shivpuri	Amhara	20	26	0	46
		43.5%	56.5%	0	100.0 %
	Bhilodi	20	26	0	46
		43.5%	56.5%	0	100.0 %
	Dhekua	17	29	0	46
		37.0%	63.0%	0	100.0 %
	Dourani	45		0	45
		100.0%		0	100.0 %
	Ghutari	22	19	0	41
		53.7%	46.3%	0	100.0 %
	Kemai	26	22	0	48
		54.2%	45.8%	0	100.0 %
	Khorana	32	16	0	48
		66.7%	33.3%	0	100.0 %
	Mathana	12	32	0	44
		27.3%	72.7%	0	100.0

					%
	Raiyan	25	23	0	48
		52.1%	47.9%	0	100.0%
	Singharai	18	27	0	45
		40.0%	60.0%	0	100.0%
	Total	237	220	0	457
		51.9%	48.1%	0	100.0%
Jhabua	Amalvani	9	35	0	44
		20.5%	79.5%	0	100.0%
	Dedla	9	38	0	47
		19.1%	80.9%	0	100.0%
	Dekakund	8	39	0	47
		17.0%	83.0%	0	100.0%
	Gauvali	19	27	0	46
		41.3%	58.7%	0	100.0%
	Juwanpura	17	24	0	41
		41.5%	58.5%	0	100.0%
	Kukadipada	8	36	0	44
		18.2%	81.8%	0	100.0%
	Mota Umar	11	34	0	45
		24.4%	75.6%	0	100.0%
	Pipaliya	18	24	0	42
		42.9%	57.1%	0	100.0%
	Suthwadiya	4	37	0	41
		9.8%	90.2%	0	100.0%
	Jharni	27	19	0	46
		58.7%	41.3%	0	100.0%
	Total	130	313	0	443
		29.3%	70.7%	0	100.0%

Annexure 4 HH category with grades on soil conservation factors

Name of the District	Type of HH	Soil Conservation factors (% to total expected score of 14 marks)			Total
		Less than 33%	34-65%	Above 65%	
Badwani	LMF	22	28	20	70
		31.4%	40.0%	28.6%	100.0%
	SMF	67	68	16	151
		44.4%	45.0%	10.6%	100.0%
	Total	89	96	36	221
		40.3%	43.4%	16.3%	100.0%
Betul	LMF	119	89	12	220
		54.1%	40.5%	5.5%	100.0%
	SMF	140	85	15	240
		58.3%	35.4%	6.3%	100.0%
	Total	259	174	27	460
		56.3%	37.8%	5.9%	100.0%
Dhar	LMF	21	27	10	58
		36.2%	46.6%	17.2%	100.0%
	SMF	65	64	34	163
		39.9%	39.3%	20.9%	100.0%
	Total	86	91	44	221
		38.9%	41.2%	19.9%	100.0%
Guna	LMF	62	53	6	121
		51.2%	43.8%	5.0%	100.0%
	SMF	80	28	-	108
		74.1%	25.9%	-	100.0%
	Total	142	81	6	229
		62.0%	35.4%	2.6%	100.0%
Khandwa	LMF	28	44	47	119
		23.5%	37.0%	39.5%	100.0%
	SMF	26	57	25	108
		24.1%	52.8%	23.1%	100.0%
	Total	54	101	72	227
		23.8%	44.5%	31.7%	100.0%

Khargone	LMF	18	43	29	90
		20.0%	47.8%	32.2%	100.0%
	SMF	38	61	18	117
		32.5%	52.1%	15.4%	100.0%
	Total	56	104	47	207
		27.1%	50.2%	22.7%	100.0%
Raisen	LMF	58	54	10	122
		47.5%	44.3%	8.2%	100.0%
	SMF	54	54	1	109
		49.5%	49.5%	.9%	100.0%
	Total	112	108	11	231
		48.5%	46.8%	4.8%	100.0%
Rajgarh	LMF	26	3	-	29
		89.7%	10.3%	-	100.0%
	SMF	189	9	-	198
		95.5%	4.5%	-	100.0%
	Total	215	12	-	227
		94.7%	5.3%	-	100.0%
Ratlam	LMF	25	68	36	129
		19.4%	52.7%	27.9%	100.0%
	SMF	93	119	36	248
		37.5%	48.0%	14.5%	100.0%
	Total	118	187	72	377
		31.3%	49.6%	19.1%	100.0%
Shivpuri	LMF	85	85	14	184
		46.2%	46.2%	7.6%	100.0%
	SMF	195	70	8	273
		71.4%	25.6%	2.9%	100.0%
	Total	280	155	22	457
		61.3%	33.9%	4.8%	100.0%
Jhabua	LMF	25	58	47	130
		19.2%	44.6%	36.2%	100.0%
	SMF	87	150	76	313
		27.8%	47.9%	24.3%	100.0%
	Total	112	208	123	443
		25.3%	47.0%	27.8%	100.0%
Total for Districts	LMF	489	552	231	1272
		38.44%	43.39	18.16	100%
	SMF	1034	765	229	2028
		50.98%	37.72%	11.29	100%
	Total	1523	1317	460	3300
		46.15%	39.90%	13.93	100%

Annexure 5 HH category with grades on water harvesting factors

Name of the District	Type of HH	WHS factors (% to total expected score of 8 marks)			Total
		Less than 33%	34-65%	Above 65%	
Badwani	LMF	3	24	43	70
		4.3%	34.3%	61.4%	100.0%
	SMF	29	67	55	151
		19.2%	44.4%	36.4%	100.0%
	Total	32	91	98	221
		14.5%	41.2%	44.3%	100.0%
Betul	LMF	36	120	64	220
		16.4%	54.5%	29.1%	100.0%
	SMF	47	123	70	240
		19.6%	51.3%	29.2%	100.0%
	Total	83	243	134	460
		18.0%	52.8%	29.1%	100.0%
Dhar	LMF	5	31	22	58
		8.6%	53.4%	37.9%	100.0%
	SMF	18	81	64	163
		11.0%	49.7%	39.3%	100.0%
	Total	23	112	86	221
		10.4%	50.7%	38.9%	100.0%
Guna	LMF	27	65	29	121
		22.3%	53.7%	24.0%	100.0%
	SMF	46	46	16	108
		42.6%	42.6%	14.8%	100.0%
	Total	73	111	45	229
		31.9%	48.5%	19.7%	100.0%
Khandwa	LMF	6	42	71	119
		5.0%	35.3%	59.7%	100.0%
	SMF	11	51	46	108
		10.2%	47.2%	42.6%	100.0%
	Total	17	93	117	227
		7.5%	41.0%	51.5%	100.0%
Khargone	LMF	5	29	56	90

		5.6%	32.2%	62.2%	100.0%
		4	54	59	117
	SMF	3.4%	46.2%	50.4%	100.0%
	Total	9	83	115	207
Raisen	LMF	4.3%	40.1%	55.6%	100.0%
		9	52	61	122
	SMF	7.4%	42.6%	50.0%	100.0%
		15	52	42	109
	Total	13.8%	47.7%	38.5%	100.0%
		24	104	103	231
Rajgarh	LMF	10.4%	45.0%	44.6%	100.0%
		9	14	6	29
	SMF	31.0%	48.3%	20.7%	100.0%
		96	92	10	198
	Total	48.5%	46.5%	5.1%	100.0%
		105	106	16	227
Ratlam	LMF	46.3%	46.7%	7.0%	100.0%
		11	41	77	129
	SMF	8.5%	31.8%	59.7%	100.0%
		51	104	93	248
	Total	20.6%	41.9%	37.5%	100.0%
		62	145	170	377
Shivpuri	LMF	16.4%	38.5%	45.1%	100.0%
		29	102	53	184
	SMF	15.8%	55.4%	28.8%	100.0%
		76	150	47	273
	Total	27.8%	54.9%	17.2%	100.0%
		105	252	100	457
Jhabua	LMF	23.0%	55.1%	21.9%	100.0%
		4	43	83	130
	SMF	3.1%	33.1%	63.8%	100.0%
		29	95	189	313
	Total	9.3%	30.4%	60.4%	100.0%
		33	138	272	443
Total for Districts	LMF	7.4%	31.2%	61.4%	100.0%
		144	563	565	1272
	SMF	11.32%	44.26%	44.41%	100%
		422	915	691	2028
	Total	20.81%	45.11%	34.07%	100%
		566	1478	1256	3300
		17.15%	44.78%	38.06%	100%

Annexure 6 HH category with grades on CPR components/ factors

Name of the District		%CPR category (% to total expected mark of 20)			Total
		Less than 33%	34-65%	Above 65%	
Badwani	LMF	67	3	-	70
		95.7%	4.3%	-	100.0%
	SMF	146	5	-	151
		96.7%	3.3%	-	100.0%
	Total	213	8	-	221
		96.4%	3.6%	-	100.0%
Betul	LMF	190	30	-	220
		86.4%	13.6%	-	100.0%
	SMF	224	16	-	240
		93.3%	6.7%	-	100.0%
	Total	414	46	-	460
		90.0%	10.0%	-	100.0%
Dhar	LMF	47	11	-	58
		81.0%	19.0%	-	100.0%
	SMF	136	27	-	163
		83.4%	16.6%	-	100.0%
	Total	183	38	-	221
		82.8%	17.2%	-	100.0%
Guna	LMF	119	2	-	121
		98.3%	1.7%	-	100.0%
	SMF	108	-	-	108
		100.0%	-	-	100.0%
	Total	227	2	-	229
		99.1%	.9%	-	100.0%
Khandwa	LMF	96	23	-	119
		80.7%	19.3%	-	100.0%
	SMF	94	14	-	108
		87.0%	13.0%	-	100.0%
	Total	190	37	-	227
		83.7%	16.3%	-	100.0%
Khargone	LMF	74	16	-	90
		82.2%	17.8%	-	100.0%
		85	32	-	117

	SMF	72.6%	27.4%	-	100.0%
	Total	159	48	-	207
		76.8%	23.2%	-	100.0%
Raisen	LMF	98	24	-	122
		80.3%	19.7%	-	100.0%
	SMF	97	11	1	109
		89.0%	10.1%	.9%	100.0%
	Total	195	35	1	231
		84.4%	15.2%	.4%	100.0%
Rajgarh	LMF	26	3	-	29
		89.7%	10.3%	-	100.0%
	SMF	192	6	-	198
		97.0%	3.0%	-	100.0%
	Total	218	9	-	227
		96.0%	4.0%	-	100.0%
Ratlam	LMF	88	37	4	129
		68.2%	28.7%	3.1%	100.0%
	SMF	181	64	3	248
		73.0%	25.8%	1.2%	100.0%
	Total	269	101	7	377
		71.4%	26.8%	1.9%	100.0%
Shivpuri	LMF	171	13	-	184
		92.9%	7.1%	-	100.0%
	SMF	258	15	-	273
		94.5%	5.5%	-	100.0%
	Total	429	28	-	457
		93.9%	6.1%	-	100.0%
Jhabua	LMF	97	33	-	130
		74.6%	25.4%	-	100.0%
	SMF	256	56	1	313
		81.8%	17.9%	.3%	100.0%
	Total	353	89	1	443
		79.7%	20.1%	.2%	100.0%
Total for Districts	LMF	1073	195	4	1272
		84.36 %	15.33%	0.31%	100%
	SMF	1777	246	5	2028
		87.62%	12.13%	0.24%	100
	Total	2850	441	9	3300
		86.36%	13.36%	0.27%	100

Annexure 7 HH category with grades on diversification of agriculture component

Name of the District	Type of HH	% Of agri. diversification category (% to total expected mark of 21)		Total
		Less than 33%	34-65%	
Badwani	LMF	67	3	70
		95.7%	4.3%	100.0%
	SMF	148	3	151
		98.0%	2.0%	100.0%
	Total	215	6	221
		97.3%	2.7%	100.0%
Betul	LMF	216	4	220
		98.2%	1.8%	100.0%
	SMF	238	2	240
		99.2%	.8%	100.0%
	Total	454	6	460
		98.7%	1.3%	100.0%
Dhar	LMF	56	2	58
		96.6%	3.4%	100.0%
	SMF	159	4	163
		97.5%	2.5%	100.0%
	Total	215	6	221
		97.3%	2.7%	100.0%
Guna	Type of farmers LMF	119	2	121
		98.3%	1.7%	100.0%
	SMF	108	-	108
		100.0%	-	100.0%
	Total	227	2	229
		99.1%	.9%	100.0%
Khandwa	LMF	116	3	119
		97.5%	2.5%	100.0%
	SMF	107	1	108
		99.1%	.9%	100.0%
	Total	223	4	227
		98.2%	1.8%	100.0%
Khargone	LMF	88	2	90
		97.8%	2.2%	100.0%

	SMF	114	3	117
		97.4%	2.6%	100.0%
	Total	202	5	207
		97.6%	2.4%	100.0%
Raisen	LMF	120	2	122
		98.4%	1.6%	100.0%
	SMF	108	1	109
		99.1%	.9%	100.0%
	Total	228	3	231
		98.7%	1.3%	100.0%
Rajgarh	LMF	29	-	29
		100.0%	-	100.0%
	SMF	198	-	198
		100.0%	-	100.0%
	Total	227	-	227
		100.0%	-	100.0%
Ratlam	LMF	111	18	129
		86.0%	14.0%	100.0%
	SMF	235	13	248
		94.8%	5.2%	100.0%
	Total	346	31	377
		91.8%	8.2%	100.0%
Shivpuri	LMF	180	4	184
		97.8%	2.2%	100.0%
	SMF	270	3	273
		98.9%	1.1%	100.0%
	Total	450	7	457
		98.5%	1.5%	100.0%
Jhabua	LMF	124	6	130
		95.4%	4.6%	100.0%
	SMF	304	9	313
		97.1%	2.9%	100.0%
	Total	428	15	443
		96.6%	3.4%	100.0%
Total for Districts	LMF	1226	46	1272
		96.38%	3.62%	100%
	SMF	1989	39	2028
		98.07%	1.93%	100%
	Total	3215	85	3300
		97.42%	2.58%	100%

Annexure 8 HH category with grades on investment component

Name of the District	Type of HH	%Investment Category (% to the total expected mark of 14)			Total
		Less than 33%	34-65%	Above 65%	
Badwani	LMF	60	10	-	70
		85.7%	14.3%	-	100.0%
	SMF	141	10	-	151
		93.4%	6.6%	-	100.0%
	Total	201	20	-	221
		91.0%	9.0%	-	100.0%
Betul	LMF	160	59	1	220
		72.7%	26.8%	.5%	100.0%
	SMF	203	37	-	240
		84.6%	15.4%	-	100.0%
	Total	363	96	1	460
		78.9%	20.9%	.2%	100.0%
Dhar	LMF	47	11	-	58
		81.0%	19.0%	-	100.0%
	SMF	145	18	-	163
		89.0%	11.0%	-	100.0%
	Total	192	29	-	221
		86.9%	13.1%	-	100.0%
Guna	LMF	95	26	-	121
		78.5%	21.5%	-	100.0%
	SMF	96	12	-	108
		88.9%	11.1%	-	100.0%
	Total	191	38	-	229
		83.4%	16.6%	-	100.0%
Khandwa	LMF	79	39	1	119
		66.4%	32.8%	.8%	100.0%
	SMF	91	17	-	108
		84.3%	15.7%	-	100.0%
	Total	170	56	1	227
		74.9%	24.7%	.4%	100.0%
Khargone	LMF	63	26	1	90
		70.0%	28.9%	1.1%	100.0%
	SMF	114	3	-	117
		97.4%	2.6%	-	100.0%
	Total	177	29	1	207
		85.5%	14.0%	.5%	100.0%

Raisen	LMF	82	40	-	122
		67.2%	32.8%	-	100.0%
	SMF	91	18	-	109
		83.5%	16.5%	-	100.0%
	Total	173	58	-	231
		74.9%	25.1%	-	100.0%
Rajgarh	LMF	24	5	-	29
		82.8%	17.2%	-	100.0%
	SMF	190	8	-	198
		96.0%	4.0%	-	100.0%
	Total	214	13	-	227
		94.3%	5.7%	-	100.0%
Ratlam	LMF	100	29	-	129
		77.5%	22.5%	-	100.0%
	SMF	214	34	-	248
		86.3%	13.7%	-	100.0%
	Total	314	63	-	377
		83.3%	16.7%	-	100.0%
Shivpuri	LMF	155	29	-	184
		84.2%	15.8%	-	100.0%
	SMF	257	16	-	273
		94.1%	5.9%	-	100.0%
	Total	412	45	-	457
		90.2%	9.8%	-	100.0%
Jhabua	LMF	66	64	-	130
		50.8%	49.2%	-	100.0%
	SMF	223	90	-	313
		71.2%	28.8%	-	100.0%
	Total	289	154	-	443
		65.2%	34.8%	-	100.0%
Total for Districts	LMF	931	338	3	1272
		73.2%	26.6%	0.2%	100%
	SMF	1765	263	-	2028
		87.03%	12.96%	-	100%
	Total	2696	601	3	3300
		81.69%	18.21%	0.1%	100%

Annexure 9 impacts of soil erosion reduction at HH (variation at district and HH category)

Name of the District	Type of HH	Reduction in soil erosion in (%)					Total
		Increased	No change	Reduced <25	Reduced 25-50	Reduced >50	

Badwani	LMF	-	19	15	29	7	70
		-	27.1%	21.4%	41.4%	10.0%	100.0%
	SMF	3	45	40	50	13	151
		2.0%	29.8%	26.5%	33.1%	8.6%	100.0%
	Total	3	64	55	79	20	221
		1.4%	29.0%	24.9%	35.7%	9.0%	100.0%
Betul	LMF	0	91	74	45	10	220
		.0%	41.4%	33.6%	20.5%	4.5%	100.0%
	SMF	2	130	55	41	12	240
		.8%	54.2%	22.9%	17.1%	5.0%	100.0%
	Total	2	221	129	86	22	460
		.4%	48.0%	28.0%	18.7%	4.8%	100.0%
Dhar	LMF	2	17	15	20	4	58
		3.4%	29.3%	25.9%	34.5%	6.9%	100.0%
	SMF	4	42	42	48	27	163
		2.5%	25.8%	25.8%	29.4%	16.6%	100.0%
	Total	6	59	57	68	31	221
		2.7%	26.7%	25.8%	30.8%	14.0%	100.0%
Guna	LMF	-	59	25	32	5	121
		-	48.8%	20.7%	26.4%	4.1%	100.0%
	SMF	-	69	23	15	1	108
		-	63.9%	21.3%	13.9%	.9%	100.0%
	Total	-	128	48	47	6	229
		-	55.9%	21.0%	20.5%	2.6%	100.0%
Khandwa	LMF	-	15	18	47	39	119
		-	12.6%	15.1%	39.5%	32.8%	100.0%
	SMF	1	9	21	47	30	108
		.9%	8.3%	19.4%	43.5%	27.8%	100.0%
	Total	1	24	39	94	69	227
		.4%	10.6%	17.2%	41.4%	30.4%	100.0%
Khargone	LMF	-	17	18	33	22	90
		-	18.9%	20.0%	36.7%	24.4%	100.0%
	SMF	-	22	29	52	14	117
		-	18.8%	24.8%	44.4%	12.0%	100.0%
	Total	-	39	47	85	36	207
		-	18.8%	22.7%	41.1%	17.4%	100.0%
Raisen	LMF	-	50	40	25	7	122
		-	41.0%	32.8%	20.5%	5.7%	100.0%
	SMF	-	72	14	21	2	109
		-	66.1%	12.8%	19.3%	1.8%	100.0%
	Total	-	122	54	46	9	231
		-	52.8%	23.4%	19.9%	3.9%	100.0%

Rajgad	LMF	-	25	3	1	-	29
		-	86.2%	10.3%	3.4%	-	100.0%
	SMF	-	191	7	-	-	198
		-	96.5%	3.5%	-	-	100.0%
	Total	-	216	10	1	-	227
		-	95.2%	4.4%	.4%	-	100.0%
Ratlam	LMF	-	5	24	36	64	129
		-	3.9%	18.6%	27.9%	49.6%	100.0%
	SMF	1	20	49	79	99	248
		.4%	8.1%	19.8%	31.9%	39.9%	100.0%
	Total	1	25	73	115	163	377
		.3%	6.6%	19.4%	30.5%	43.2%	100.0%
Shivpuri	LMF	-	70	58	50	6	184
		-	38.0%	31.5%	27.2%	3.3%	100.0%
	SMF	-	144	73	50	6	273
		-	52.7%	26.7%	18.3%	2.2%	100.0%
	Total	-	214	131	100	12	457
		-	46.8%	28.7%	21.9%	2.6%	100.0%
Jhabua	LMF	-	4	20	51	55	130
		-	3.1%	15.4%	39.2%	42.3%	100.0%
	SMF	-	26	54	107	126	313
		-	8.3%	17.3%	34.2%	40.3%	100.0%
	Total	-	30	74	158	181	443
		-	6.8%	16.7%	35.7%	40.9%	100.0%
Total for Districts	LMF	2	372	310	369	219	1272
		0.15%	29.24%	24.37%	29.00%	17.21%	100%
	SMF	11	770	407	510	330	2028
		0.54%	37.96%	20.07%	25.15%	16.27%	100%
	Total	13	1142	717	879	549	3300
		0.39%	34.60%	21.73%	26.64%	16.64%	100%

Annexure 10 status of WHS as reported by HH(variation at district and HH category)

Name of the District	Type of HH	Status of water harvesting structure					Total
		Dysfunctional	Partially functional (silted)	Broken	Fully functional	Not Applicable	
Badwani	LMF	2	48	3	17	-	70
		2.9%	68.6%	4.3%	24.3%	-	100.0%
	SMF	7	106	17	19	2	151
		4.6%	70.2%	11.3%	12.6%	1.3%	100.0%
	Total	9	154	20	36	2	221
		4.1%	69.7%	9.0%	16.3%	.9%	100.0%

Betul	LMF	13	173	15	14	5	220
		5.9%	78.6%	6.8%	6.4%	2.3%	100.0%
	SMF	17	180	20	18	5	240
		7.1%	75.0%	8.3%	7.5%	2.1%	100.0%
	Total	30	353	35	32	10	460
		6.5%	76.7%	7.6%	7.0%	2.2%	100.0%
Dhar	LMF	2	48	3	5	-	58
		3.4%	82.8%	5.2%	8.6%	-	100.0%
	SMF	12	132	8	9	2	163
		7.4%	81.0%	4.9%	5.5%	1.2%	100.0%
	Total	14	180	11	14	2	221
		6.3%	81.4%	5.0%	6.3%	.9%	100.0%
Guna	LMF	16	85	13	4	3	121
		13.2%	70.2%	10.7%	3.3%	2.5%	100.0%
	SMF	19	68	15	1	5	108
		17.6%	63.0%	13.9%	.9%	4.6%	100.0%
	Total	35	153	28	5	8	229
		15.3%	66.8%	12.2%	2.2%	3.5%	100.0%
Khandwa	LMF	2	94	2	18	3	119
		1.7%	79.0%	1.7%	15.1%	2.5%	100.0%
	SMF	8	88	3	6	3	108
		7.4%	81.5%	2.8%	5.6%	2.8%	100.0%
	Total	10	182	5	24	6	227
		4.4%	80.2%	2.2%	10.6%	2.6%	100.0%
Khargone	LMF	5	65	2	18	-	90
		5.6%	72.2%	2.2%	20.0%	-	100.0%
	SMF	4	86	3	24	-	117
		3.4%	73.5%	2.6%	20.5%	-	100.0%
	Total	9	151	5	42	-	207
		4.3%	72.9%	2.4%	20.3%	-	100.0%
Raisen	LMF	1	107	3	9	2	122
		.8%	87.7%	2.5%	7.4%	1.6%	100.0%
	SMF	1	103	3	2	0	109
		.9%	94.5%	2.8%	1.8%	.0%	100.0%
	Total	2	210	6	11	2	231
		.9%	90.9%	2.6%	4.8%	.9%	100.0%
Rajgarh	LMF	6	21	1	1	-	29
		20.7%	72.4%	3.4%	3.4%	-	100.0%
	SMF	62	118	13	5	-	198
		31.3%	59.6%	6.6%	2.5%	-	100.0%
	Total	68	139	14	6	-	227
		30.0%	61.2%	6.2%	2.6%	-	100.0%

Ratlam	LMF	10	67	13	38	1	129
		7.8%	51.9%	10.1%	29.5%	.8%	100.0%
	SMF	15	131	45	52	5	248
		6.0%	52.8%	18.1%	21.0%	2.0%	100.0%
	Total	25	198	58	90	6	377
		6.6%	52.5%	15.4%	23.9%	1.6%	100.0%
Shivpuri	LMF	9	152	13	9	1	184
		4.9%	82.6%	7.1%	4.9%	.5%	100.0%
	SMF	37	212	17	7	-	273
		13.6%	77.7%	6.2%	2.6%	-	100.0%
	Total	46	364	30	16	1	457
		10.1%	79.6%	6.6%	3.5%	.2%	100.0%
Jhabua	LMF	2	93	2	31	2	130
		1.5%	71.5%	1.5%	23.8%	1.5%	100.0%
	SMF	8	209	16	79	1	313
		2.6%	66.8%	5.1%	25.2%	.3%	100.0%
	Total	10	302	18	110	3	443
		2.3%	68.2%	4.1%	24.8%	.7%	100.0%
Total for Districts	LMF	68	953	70	164	17	1272
		5.34%	74.92%	5.50%	12.89%	1.35%	100
	SMF	190	1433	160	222	23	2028
		9.37%	70.66%	7.89%	10.95%	1.13%	100
	Total	258	2386	230	386	40	3300
		7.82%	72.30%	6.97%	11.70	1.21%	100

Annexure 11 availability of drinking water as reported by HH (district and HH category)

Name of the District	Type of HH	Assured drinking water supply				Total
		Less	No Change	Adequate	Adequate with quality	
Badwani	LMF	0	10	37	23	70
		.0%	14.3%	52.9%	32.9%	100.0%
	SMF	2	12	96	41	151
		1.3%	7.9%	63.6%	27.2%	100.0%
	Total	2	22	133	64	221
		.9%	10.0%	60.2%	29.0%	100.0%
Betul	LMF	2	22	145	51	220
		.9%	10.0%	65.9%	23.2%	100.0%
	SMF	2	35	173	30	240
		.8%	14.6%	72.1%	12.5%	100.0%
	Total	4	57	318	81	460
		.9%	12.4%	69.1%	17.6%	100.0%

Dhar	LMF	0	10	35	13	58
		.0%	17.2%	60.3%	22.4%	100.0%
	SMF	1	21	112	29	163
		.6%	12.9%	68.7%	17.8%	100.0%
	Total	1	31	147	42	221
		.5%	14.0%	66.5%	19.0%	100.0%
Guna	LMF	1	15	96	9	121
		.8%	12.4%	79.3%	7.4%	100.0%
	SMF	3	19	80	6	108
		2.8%	17.6%	74.1%	5.6%	100.0%
	Total	4	34	176	15	229
		1.7%	14.8%	76.9%	6.6%	100.0%
Khandwa	LMF	3	14	78	24	119
		2.5%	11.8%	65.5%	20.2%	100.0%
	SMF	0	19	71	18	108
		.0%	17.6%	65.7%	16.7%	100.0%
	Total	3	33	149	42	227
		1.3%	14.5%	65.6%	18.5%	100.0%
Khargone	LMF	-	9	61	20	90
		-	10.0%	67.8%	22.2%	100.0%
	SMF	-	6	84	27	117
		-	5.1%	71.8%	23.1%	100.0%
	Total	-	15	145	47	207
		-	7.2%	70.0%	22.7%	100.0%
Raisen	LMF	0	1	77	44	122
		.0%	.8%	63.1%	36.1%	100.0%
	SMF	1	7	66	35	109
		.9%	6.4%	60.6%	32.1%	100.0%
	Total	1	8	143	79	231
		.4%	3.5%	61.9%	34.2%	100.0%
Rajgarh	LMF	0	7	17	5	29
		.0%	24.1%	58.6%	17.2%	100.0%
	SMF	5	54	118	21	198
		2.5%	27.3%	59.6%	10.6%	100.0%
	Total	5	61	135	26	227
		2.2%	26.9%	59.5%	11.5%	100.0%
Ratlam	LMF	3	10	86	30	129
		2.3%	7.8%	66.7%	23.3%	100.0%
	SMF	14	32	166	36	248
		5.6%	12.9%	66.9%	14.5%	100.0%
	Total	17	42	252	66	377
		4.5%	11.1%	66.8%	17.5%	100.0%

Shivpuri	LMF	6	16	117	45	184
		3.3%	8.7%	63.6%	24.5%	100.0%
	SMF	2	36	182	53	273
		.7%	13.2%	66.7%	19.4%	100.0%
	Total	8	52	299	98	457
		1.8%	11.4%	65.4%	21.4%	100.0%
Jhabua	LMF	2	9	74	45	130
		1.5%	6.9%	56.9%	34.6%	100.0%
	SMF	5	19	182	107	313
		1.6%	6.1%	58.1%	34.2%	100.0%
	Total	7	28	256	152	443
		1.6%	6.3%	57.8%	34.3%	100.0%
Total for Districts	LMF	17	123	823	309	1272
		1.33%	9.66%	64.70%	24.29%	100%
	SMF	35	260	1330	403	2028
		1.72%	12.82%	65.58%	19.87%	100%
	Total	52	383	2153	712	3300
		1.57%	11.60%	65.24%	21.57%	100%

Annexure 12 increase in irrigated area (district and HH category)

Name of the District	Type of HH	Increase in irrigated area (%)				Total
		NA/No change / Less	10-20	20-30	>30	
Badwani	LMF	15	31	21	3	70
		21.4%	44.3%	30.0%	4.3%	100.0%
	SMF	48	63	35	5	151
		31.8%	41.7%	23.2%	3.3%	100.0%
	Total	63	94	56	8	221
		28.5%	42.5%	25.3%	3.6%	100.0%
Betul	LMF	66	90	60	4	220
		30.0%	40.9%	27.3%	1.8%	100.0%
	SMF	91	89	53	7	240
		37.9%	37.1%	22.1%	2.9%	100.0%
	Total	157	179	113	11	460
		34.1%	38.9%	24.6%	2.4%	100.0%
Dhar	LMF	10	32	11	5	58
		17.2%	55.2%	19.0%	8.6%	100.0%
	SMF	50	55	37	21	163
		30.7%	33.7%	22.7%	12.9%	100.0%
	Total	60	87	48	26	221
		27.1%	39.4%	21.7%	11.8%	100.0%
Guna	LMF	32	51	31	7	121

	SMF	26.4%	42.1%	25.6%	5.8%	100.0%
		51	40	15	2	108
	Total	47.2%	37.0%	13.9%	1.9%	100.0%
		83	91	46	9	229
Khandwa	LMF	36.2%	39.7%	20.1%	3.9%	100.0%
		21	27	53	18	119
	SMF	17.6%	22.7%	44.5%	15.1%	100.0%
		39	22	39	8	108
	Total	36.1%	20.4%	36.1%	7.4%	100.0%
		60	49	92	26	227
Khargone	LMF	26.4%	21.6%	40.5%	11.5%	100.0%
		20	20	30	20	90
	SMF	22.2%	22.2%	33.3%	22.2%	100.0%
		32	42	37	6	117
	Total	27.4%	35.9%	31.6%	5.1%	100.0%
		52	62	67	26	207
Raisen	LMF	25.1%	30.0%	32.4%	12.6%	100.0%
		20	41	48	13	122
	SMF	16.4%	33.6%	39.3%	10.7%	100.0%
		40	26	38	5	109
	Total	36.7%	23.9%	34.9%	4.6%	100.0%
		60	67	86	18	231
Rajgarh	LMF	26.0%	29.0%	37.2%	7.8%	100.0%
		12	10	7	-	29
	SMF	41.4%	34.5%	24.1%	-	100.0%
		124	63	11	-	198
	Total	62.6%	31.8%	5.6%	-	100.0%
		136	73	18	-	227
Ratlam	LMF	59.9%	32.2%	7.9%	-	100.0%
		19	34	45	31	129
	SMF	14.7%	26.4%	34.9%	24.0%	100.0%
		85	66	70	27	248
	Total	34.3%	26.6%	28.2%	10.9%	100.0%
		104	100	115	58	377
Shivpuri	LMF	27.6%	26.5%	30.5%	15.4%	100.0%
		41	92	45	6	184
	SMF	22.3%	50.0%	24.5%	3.3%	100.0%
		126	104	37	6	273
	Total	46.2%	38.1%	13.6%	2.2%	100.0%
		167	196	82	12	457
Jhabua	LMF	36.5%	42.9%	17.9%	2.6%	100.0%
		35	21	52	22	130

	SMF	26.9%	16.2%	40.0%	16.9%	100.0%
		77	67	131	38	313
	Total	24.6%	21.4%	41.9%	12.1%	100.0%
		112	88	183	60	443
		25.3%	19.9%	41.3%	13.5%	100.0%
Total for Districts	LMF	291	449	403	129	1272
		22.88%	35.29%	31.68%	10.14%	100%
	SMF	763	637	503	125	2028
		37.62%	31.41%	24.80%	6.16%	100%
	Total	1054	1086	906	254	3300
		31.93%	32.90%	27.45%	7.69%	100%

Annexure 13 increase in yield –cereals (district and HH category)

Name of the District	Type of HH	Enhanced yields Cereals				Total
		No Change	<20	20-40	>40	
Badwani	LMF	11	18	22	19	70
		15.7%	25.7%	31.4%	27.1%	100.0%
	SMF	38	41	54	18	151
		25.2%	27.2%	35.8%	11.9%	100.0%
	Total	49	59	76	37	221
Betul	LMF	52	74	80	14	220
		23.6%	33.6%	36.4%	6.4%	100.0%
	SMF	52	85	75	28	240
		21.7%	35.4%	31.3%	11.7%	100.0%
	Total	104	159	155	42	460
Dhar	LMF	7	21	20	10	58
		12.1%	36.2%	34.5%	17.2%	100.0%
	SMF	29	47	54	33	163
		17.8%	28.8%	33.1%	20.2%	100.0%
	Total	36	68	74	43	221
Guna	LMF	22	36	61	2	121
		18.2%	29.8%	50.4%	1.7%	100.0%
	SMF	23	56	28	1	108
		21.3%	51.9%	25.9%	.9%	100.0%
	Total	45	92	89	3	229
Khandwa	LMF	9	25	40	45	119
		7.6%	21.0%	33.6%	37.8%	100.0%

	SMF	12	19	59	18	108
		11.1%	17.6%	54.6%	16.7%	100.0%
	Total	21	44	99	63	227
		9.3%	19.4%	43.6%	27.8%	100.0%
Khargone	LMF	8	15	39	28	90
		8.9%	16.7%	43.3%	31.1%	100.0%
	SMF	8	40	53	16	117
		6.8%	34.2%	45.3%	13.7%	100.0%
	Total	16	55	92	44	207
		7.7%	26.6%	44.4%	21.3%	100.0%
Raisen	LMF	18	44	48	12	122
		14.8%	36.1%	39.3%	9.8%	100.0%
	SMF	22	40	40	7	109
		20.2%	36.7%	36.7%	6.4%	100.0%
	Total	40	84	88	19	231
		17.3%	36.4%	38.1%	8.2%	100.0%
Rajgarh	LMF	8	17	4	-	29
		27.6%	58.6%	13.8%	-	100.0%
	SMF	104	78	14	2	198
		52.5%	39.4%	7.1%	1.0%	100.0%
	Total	112	95	18	2	227
		49.3%	41.9%	7.9%	.9%	100.0%
Ratlam	LMF	10	43	40	36	129
		7.8%	33.3%	31.0%	27.9%	100.0%
	SMF	45	77	89	37	248
		18.1%	31.0%	35.9%	14.9%	100.0%
	Total	55	120	129	73	377
		14.6%	31.8%	34.2%	19.4%	100.0%
Shivpuri	LMF	24	69	76	15	184
		13.0%	37.5%	41.3%	8.2%	100.0%
	SMF	80	128	57	8	273
		29.3%	46.9%	20.9%	2.9%	100.0%
	Total	104	197	133	23	457
		22.8%	43.1%	29.1%	5.0%	100.0%
Jhabua	LMF	4	27	57	42	130
		3.1%	20.8%	43.8%	32.3%	100.0%
	SMF	19	90	126	78	313
		6.1%	28.8%	40.3%	24.9%	100.0%
	Total	23	117	183	120	443
		5.2%	26.4%	41.3%	27.1%	100.0%
Total for Districts	LMF	173	389	487	223	1272
		13.60%	30.58%	38.28%	17.54%	100%

	SMF	432	701	649	246	2028
		21.30%	34.56%	32.00%	12.13%	100%
	Total	605	1090	1136	469	3300
		18.34%	33.03%	34.42%	14.21%	100%

Annexure 14 increase in yield – cash crops (district and HH category)

Name of the District	Type of HH	Enhanced yields crop (Cash crops) in %			Total
		No change	10-20	>20	
Badwani	LMF	21	18	31	70
		30.0%	25.7%	44.3%	100.0%
	SMF	60	56	35	151
		39.7%	37.1%	23.2%	100.0%
	Total	81	74	66	221
		36.7%	33.5%	29.9%	100.0%
Betul	LMF	151	39	30	220
		68.6%	17.7%	13.6%	100.0%
	SMF	153	68	19	240
		63.8%	28.3%	7.9%	100.0%
	Total	304	107	49	460
		66.1%	23.3%	10.7%	100.0%
Dhar	LMF	13	25	20	58
		22.4%	43.1%	34.5%	100.0%
	SMF	47	60	56	163
		28.8%	36.8%	34.4%	100.0%
	Total	60	85	76	221
		27.1%	38.5%	34.4%	100.0%
Guna	LMF	68	41	12	121
		56.2%	33.9%	9.9%	100.0%
	SMF	79	25	4	108
		73.1%	23.1%	3.7%	100.0%
	Total	147	66	16	229
		64.2%	28.8%	7.0%	100.0%
Khandwa	LMF	18	54	47	119
		15.1%	45.4%	39.5%	100.0%
	SMF	24	55	29	108
		22.2%	50.9%	26.9%	100.0%
	Total	42	109	76	227
		18.5%	48.0%	33.5%	100.0%

Khargone	LMF	16	34	40	90
		17.8%	37.8%	44.4%	100.0%
	SMF	31	46	40	117
		26.5%	39.3%	34.2%	100.0%
	Total	47	80	80	207
		22.7%	38.6%	38.6%	100.0%
Raisen	LMF	74	34	14	122
		60.7%	27.9%	11.5%	100.0%
	SMF	71	35	3	109
		65.1%	32.1%	2.8%	100.0%
	Total	145	69	17	231
		62.8%	29.9%	7.4%	100.0%
Rajgarh	LMF	27	2	-	29
		93.1%	6.9%	-	100.0%
	SMF	191	6	1	198
		96.5%	3.0%	.5%	100.0%
	Total	218	8	1	227
		96.0%	3.5%	.4%	100.0%
Ratlam	LMF	24	48	57	129
		18.6%	37.2%	44.2%	100.0%
	SMF	97	76	75	248
		39.1%	30.6%	30.2%	100.0%
	Total	121	124	132	377
		32.1%	32.9%	35.0%	100.0%
Shivpuri	LMF	107	53	24	184
		58.2%	28.8%	13.0%	100.0%
	SMF	196	65	12	273
		71.8%	23.8%	4.4%	100.0%
	Total	303	118	36	457
		66.3%	25.8%	7.9%	100.0%
Jhabua	LMF	49	28	53	130
		37.7%	21.5%	40.8%	100.0%
	SMF	111	78	124	313
		35.5%	24.9%	39.6%	100.0%
	Total	160	106	177	443
		36.1%	23.9%	40.0%	100.0%
Total for Districts	LMF	568	376	328	1272
		44.65%	29.56%	25.78%	100%
	SMF	1060	570	398	2028
		52.26%	28.10%	19.62%	100%
	Total	1628	946	726	3300
		49.33%	28.66%	22%	100%

® The schedule had a category called <10, but no household reported that hence not reflected in the table

Annexure 15 change in availability of fodder (district and HH category)

Name of the District	Type of HH	Common pool sources -Fodder			Total
		Less	Just Adequate	Sufficient	
Badwani	LMF	36	30	4	70
		51.4%	42.9%	5.7%	100.0%
	SMF	84	64	3	151
		55.6%	42.4%	2.0%	100.0%
	Total	120	94	7	221
		54.3%	42.5%	3.2%	100.0%
Betul	LMF	53	162	5	220
		24.1%	73.6%	2.3%	100.0%
	SMF	80	156	4	240
		33.3%	65.0%	1.7%	100.0%
	Total	133	318	9	460
		28.9%	69.1%	2.0%	100.0%
Dhar	LMF	22	35	1	58
		37.9%	60.3%	1.7%	100.0%
	SMF	45	115	3	163
		27.6%	70.6%	1.8%	100.0%
	Total	67	150	4	221
		30.3%	67.9%	1.8%	100.0%
Guna	LMF	51	70	-	121
		42.1%	57.9%	-	100.0%
	SMF	40	67	1	108
		37.0%	62.0%	.9%	100.0%
	Total	91	137	1	229
		39.7%	59.8%	.4%	100.0%
Khandwa	LMF	21	92	6	119
		17.6%	77.3%	5.0%	100.0%
	SMF	17	88	3	108
		15.7%	81.5%	2.8%	100.0%
	Total	38	180	9	227
		16.7%	79.3%	4.0%	100.0%
Khargone	LMF	16	69	5	90
		17.8%	76.7%	5.6%	100.0%
	SMF	21	85	11	117
		17.9%	72.6%	9.4%	100.0%
	Total	37	154	16	207
		17.9%	74.4%	7.7%	100.0%
Raisen	LMF	20	92	10	122
		16.4%	75.4%	8.2%	100.0%

	SMF	29	71	9	109
		26.6%	65.1%	8.3%	100.0%
	Total	49	163	19	231
		21.2%	70.6%	8.2%	100.0%
Rajgarh	LMF	10	19	-	29
		34.5%	65.5%	-	100.0%
	SMF	88	110	-	198
		44.4%	55.6%	-	100.0%
	Total	98	129	-	227
		43.2%	56.8%	-	100.0%
Ratlam	LMF	23	93	13	129
		17.8%	72.1%	10.1%	100.0%
	SMF	62	173	13	248
		25.0%	69.8%	5.2%	100.0%
	Total	85	266	26	377
		22.5%	70.6%	6.9%	100.0%
Shivpuri	LMF	59	120	5	184
		32.1%	65.2%	2.7%	100.0%
	SMF	82	188	3	273
		30.0%	68.9%	1.1%	100.0%
	Total	141	308	8	457
		30.9%	67.4%	1.8%	100.0%
Jhabua	LMF	20	102	8	130
		15.4%	78.5%	6.2%	100.0%
	SMF	50	240	23	313
		16.0%	76.7%	7.3%	100.0%
	Total	70	342	31	443
		15.8%	77.2%	7.0%	100.0%
Total for Districts	LMF	331	884	57	1272
		26.02%	69.49%	4.48%	100%
	SMF	598	1357	73	2028
		29.48%	66.91%	3.59%	100%
	Total	929	2241	130	3300
		28.15%	67.90%	3.93%	100%

Annexure 16 change in availability of fuel wood (district and HH category)

Name of the District	Type of HH	Common pool sources-Fuel			Total
		Less	Just Enough	Adequate	
Badwani	LMF	27	30	13	70
		38.6%	42.9%	18.6%	100.0%
	SMF	66	74	11	151
		43.7%	49.0%	7.3%	100.0%
	Total	93	104	24	221
		42.1%	47.1%	10.9%	100.0%
Betul	LMF	54	119	47	220
		24.5%	54.1%	21.4%	100.0%
	SMF	64	137	39	240
		26.7%	57.1%	16.3%	100.0%
	Total	118	256	86	460
		25.7%	55.7%	18.7%	100.0%
Dhar	LMF	20	20	18	58
		34.5%	34.5%	31.0%	100.0%
	SMF	40	86	37	163
		24.5%	52.8%	22.7%	100.0%
	Total	60	106	55	221
		27.1%	48.0%	24.9%	100.0%
Guna	LMF	49	51	21	121
		40.5%	42.1%	17.4%	100.0%
	SMF	36	49	23	108
		33.3%	45.4%	21.3%	100.0%
	Total	85	100	44	229
		37.1%	43.7%	19.2%	100.0%
Khandwa	LMF	39	37	43	119
		32.8%	31.1%	36.1%	100.0%
	SMF	26	43	39	108
		24.1%	39.8%	36.1%	100.0%
	Total	65	80	82	227
		28.6%	35.2%	36.1%	100.0%
Khargone	LMF	25	47	18	90
		27.8%	52.2%	20.0%	100.0%
	SMF	30	49	38	117
		25.6%	41.9%	32.5%	100.0%
	Total	55	96	56	207
		26.6%	46.4%	27.1%	100.0%
Raisen	LMF	18	74	30	122
		14.8%	60.7%	24.6%	100.0%

	SMF	29	69	11	109
		26.6%	63.3%	10.1%	100.0%
	Total	47	143	41	231
		20.3%	61.9%	17.7%	100.0%
Rajgarh	LMF	9	16	4	29
		31.0%	55.2%	13.8%	100.0%
	SMF	70	121	7	198
		35.4%	61.1%	3.5%	100.0%
	Total	79	137	11	227
		34.8%	60.4%	4.8%	100.0%
Ratlam	LMF	36	72	21	129
		27.9%	55.8%	16.3%	100.0%
	SMF	101	133	14	248
		40.7%	53.6%	5.6%	100.0%
	Total	137	205	35	377
		36.3%	54.4%	9.3%	100.0%
Shivpuri	LMF	34	100	50	184
		18.5%	54.3%	27.2%	100.0%
	SMF	41	155	77	273
		15.0%	56.8%	28.2%	100.0%
	Total	75	255	127	457
		16.4%	55.8%	27.8%	100.0%
Jhabua	LMF	26	80	24	130
		20.0%	61.5%	18.5%	100.0%
	SMF	82	175	56	313
		26.2%	55.9%	17.9%	100.0%
	Total	108	255	80	443
		24.4%	57.6%	18.1%	100.0%
Total for Districts	LMF	337	646	289	1272
		26.50%	50.78%	22.72%	100%
	SMF	585	1091	352	2028
		28.84%	53.80%	17.36%	100%
	Total	922	1737	641	3300
		27.94%	52.64%	19.42%	100%

Annexure 17 periodic de-silting of WHS (district and HH category)

Name of the District	Type of HH	Maintenance of CPRs-Periodical desilting of water bodies			Total
		No desilting	Beneficiaries	CBOs	
Badwani	LMF	68	-	2	70
		97.1%	-	2.9%	100.0%
	SMF	148	1	2	151

	Total	98.0%	.7%	1.3%	100.0%
		216	1	4	221
		97.7%	.5%	1.8%	100.0%
Betul	LMF	217	1	2	220
		98.6%	.5%	.9%	100.0%
	SMF	235	-	5	240
		97.9%	-	2.1%	100.0%
	Total	452	1	7	460
		98.3%	.2%	1.5%	100.0%
Dhar	LMF	57	-	1	58
		98.3%	-	1.7%	100.0%
	SMF	158	-	5	163
		96.9%	-	3.1%	100.0%
	Total	215	-	6	221
		97.3%	-	2.7%	100.0%
Guna	LMF	121	-	-	121
		100.0%	-	-	100.0%
	SMF	108	-	-	108
		100.0%	-	-	100.0%
	Total	229	-	-	229
		100.0%	-	-	100.0%
Khandwa	LMF	112	3	4	119
		94.1%	2.5%	3.4%	100.0%
	SMF	105	0	3	108
		97.2%	.0%	2.8%	100.0%
	Total	217	3	7	227
		95.6%	1.3%	3.1%	100.0%
Khargone	LMF	87	1	2	90
		96.7%	1.1%	2.2%	100.0%
	SMF	115	0	2	117
		98.3%	.0%	1.7%	100.0%
	Total	202	1	4	207
		97.6%	.5%	1.9%	100.0%
Raisen	LMF	121	-	1	122
		99.2%	-	.8%	100.0%
	SMF	108	-	1	109
		99.1%	-	.9%	100.0%
	Total	229	-	2	231
		99.1%	-	.9%	100.0%
Rajgarh	LMF	29	-	0	29
		100.0%	-	.0%	100.0%
	SMF	197	-	1	198

	Total	99.5%	-	.5%	100.0%
		226	-	1	227
Ratlam	LMF	99.6%	-	.4%	100.0%
		113	-	16	129
	SMF	87.6%	-	12.4%	100.0%
		226	-	22	248
	Total	91.1%	-	8.9%	100.0%
		339	-	38	377
Shivpuri	LMF	89.9%	-	10.1%	100.0%
		184	-	0	184
	SMF	100.0%	-	.0%	100.0%
		269	-	4	273
	Total	98.5%	-	1.5%	100.0%
		453	-	4	457
Jhabua	LMF	99.1%	-	.9%	100.0%
		127	1	2	130
	SMF	97.7%	.8%	1.5%	100.0%
		306	1	6	313
	Total	97.8%	.3%	1.9%	100.0%
		433	2	8	443
		97.7%	.5%	1.8%	100.0%

Annexure 18 social fencing practices as reported by HH (district and HH category)

Name of the District	Type of HH	Maintenance of CPRs-Social fencing of community land			Total
		Not possible	Done along with watchman	All agreed no watchman	
Badwani	LMF	48	11	11	70
		68.6%	15.7%	15.7%	100.0%
	SMF	101	26	24	151
		66.9%	17.2%	15.9%	100.0%
	Total	149	37	35	221
		67.4%	16.7%	15.8%	100.0%
Betul	LMF	91	96	33	220
		41.4%	43.6%	15.0%	100.0%
	SMF	132	87	21	240
		55.0%	36.3%	8.8%	100.0%
	Total	223	183	54	460
		48.5%	39.8%	11.7%	100.0%
Dhar	LMF	28	15	15	58
		48.3%	25.9%	25.9%	100.0%
	SMF	56	83	24	163
		34.4%	50.9%	14.7%	100.0%

	Total	84	98	39	221
		38.0%	44.3%	17.6%	100.0%
Guna	LMF	61	36	24	121
		50.4%	29.8%	19.8%	100.0%
	SMF	71	29	8	108
		65.7%	26.9%	7.4%	100.0%
	Total	132	65	32	229
		57.6%	28.4%	14.0%	100.0%
Khandwa	LMF	40	79	-	119
		33.6%	66.4%	-	100.0%
	SMF	47	61	-	108
		43.5%	56.5%	-	100.0%
	Total	87	140	-	227
		38.3%	61.7%	-	100.0%
Khargone	LMF	57	23	1	90
		63.3%	25.6%	11.1%	100.0%
	SMF	59	45	13	117
		50.4%	38.5%	11.1%	100.0%
	Total	116	68	23	207
		56.0%	32.9%	11.1%	100.0%
Raisen	LMF	49	63	10	122
		40.2%	51.6%	8.2%	100.0%
	SMF	38	58	13	109
		34.9%	53.2%	11.9%	100.0%
	Total	87	121	23	231
		37.7%	52.4%	10.0%	100.0%
Rajgarh	LMF	11	10	8	29
		37.9%	34.5%	27.6%	100.0%
	SMF	112	62	24	198
		56.6%	31.3%	12.1%	100.0%
	Total	123	72	32	227
		54.2%	31.7%	14.1%	100.0%
Ratlam	LMF	46	64	19	129
		35.7%	49.6%	14.7%	100.0%
	SMF	93	110	45	248
		37.5%	44.4%	18.1%	100.0%
	Total	139	174	64	377
		36.9%	46.2%	17.0%	100.0%
Shivpuri	LMF	46	108	30	184
		25.0%	58.7%	16.3%	100.0%
	SMF	90	145	38	273
		33.0%	53.1%	13.9%	100.0%

	Total	136	253	68	457
		29.8%	55.4%	14.9%	100.0%
Jhabua	LMF	32	76	22	130
		24.6%	58.5%	16.9%	100.0%
	SMF	133	148	32	313
		42.5%	47.3%	10.2%	100.0%
	Total	165	224	54	443
		37.2%	50.6%	12.2%	100.0%
Total for Districts	LMF	509	581	182	1272
		40.02%	45.67%	14.30%	100%
	SMF	932	854	242	2028
		45.95%	42.11%	11.93%	100%
	Total	1441	1435	424	3300
		43.66%	43.48%	12.84%	100%

Annexure 19 grazing practices as reported by HH (district and HH category)

Name of the District	Type of HH	Type of Feeding-Grazing			Total
		Free grazing of all animals	Only small ruminants	No free grazing	
Badwani	LMF	45	23	2	70
		64.3%	32.9%	2.9%	100.0%
	SMF	106	37	8	151
		70.2%	24.5%	5.3%	100.0%
	Total	151	60	10	221
Betul	LMF	114	105	1	220
		51.8%	47.7%	.5%	100.0%
	SMF	157	82	1	240
		65.4%	34.2%	.4%	100.0%
	Total	271	187	2	460
Dhar	LMF	36	22	-	58
		62.1%	37.9%	-	100.0%
	SMF	127	24	12	163
		77.9%	14.7%	7.4%	100.0%
	Total	163	46	12	221
Guna	LMF	84	37	-	121
		69.4%	30.6%	-	100.0%
	SMF	78	30	-	108
		72.2%	27.8%	-	100.0%
	Total	162	67	-	229
		70.7%	29.3%	-	100.0%

Khandwa	LMF	87	31	1	119
		73.1%	26.1%	.8%	100.0%
	SMF	92	15	1	108
		85.2%	13.9%	.9%	100.0%
	Total	179	46	2	227
		78.9%	20.3%	.9%	100.0%
Khargone	LMF	63	14	13	90
		70.0%	15.6%	14.4%	100.0%
	SMF	92	11	14	117
		78.6%	9.4%	12.0%	100.0%
	Total	155	25	27	207
		74.9%	12.1%	13.0%	100.0%
Raisen	LMF	59	62	1	122
		48.4%	50.8%	.8%	100.0%
	SMF	73	36	-	109
		67.0%	33.0%	-	100.0%
	Total	132	98	1	231
		57.1%	42.4%	.4%	100.0%
Rajgarh	LMF	15	13	1	29
		51.7%	44.8%	3.4%	100.0%
	SMF	154	44	-	198
		77.8%	22.2%	-	100.0%
	Total	169	57	1	227
		74.4%	25.1%	.4%	100.0%
Ratlam	LMF	94	27	8	129
		72.9%	20.9%	6.2%	100.0%
	SMF	166	69	13	248
		66.9%	27.8%	5.2%	100.0%
	Total	260	96	21	377
		69.0%	25.5%	5.6%	100.0%
Shivpuri	LMF	139	44	1	184
		75.5%	23.9%	.5%	100.0%
	SMF	225	48	-	273
		82.4%	17.6%	-	100.0%
	Total	364	92	1	457
		79.6%	20.1%	.2%	100.0%
Jhabua	LMF	77	50	3	130
		59.2%	38.5%	2.3%	100.0%
	SMF	189	105	19	313
		60.4%	33.5%	6.1%	100.0%
	Total	266	155	22	443
		60.0%	35.0%	5.0%	100.0%

