

Watershed Development Programmes in Madhya Pradesh: Present Scenario and Issues for Convergence

Sucharita Sen¹, Amita Shah² and Animesh Kumar³

Gujarat Institute of Development Research
Forum for Watershed Research and Policy Dialogue

¹ *Associate Professor, Center for the Study of Regional Development, Jawaharlal Nehru University, New Delhi*

² *Professor, Gujarat Institute of Development Research, Ahmedabad*

³ *Research Fellow, Center for the Study of Regional Development, Jawaharlal Nehru University, New Delhi*

TABLE OF CONTENTS

List of Tables

List of Figures

Executive Summary

Chapter 1: Introduction

- 1.1 Context
- 1.2 Departure from Sectoral Approach
- 1.3 Stock Taking: Imperatives for a Conceptual framework
- 1.4 Emerging Issues and Normative Framework
- 1.5 Methodology and Approach

Chapter 2: Locating Madhya Pradesh: Scope and Challenges for WDPs

- 2.1 Resource Base
- 2.2 Regional Variations
- 2.3 Utilisation of Resource Base and Agricultural Performance
- 2.4 Some Aspects of Rural Livelihood
- 2.5 Natural Resource Degradation:
- 2.6 Augmentation and Supply of Drinking Water
- 2.7 Contextualising Watershed Development in MP: Scope and Challenges

Chapter 3: Coverage and Spatial Distribution

- 3.1 WDPs in M.P.: A Synoptic View
- 3.2 Spatial Distribution of WDPs
- 3.3 Complementarity and Prioritisation

Chapter 4: Performance of Watershed Programmes

- 4.1 Adaptation of Watershed Programmes in Madhya Pradesh
 - a) Rajiv Gandhi Mission Watershed for Watershed Development
 - b) Pani Roko Abhiyan
- 4.2 Aspects of Implementation of Watershed Projects in Madhya Pradesh

- a) Limitations of Review of Assessment Studies
 - b) Administration and Funding
 - c) Environmental Sustainability
 - d) Livelihood Enhancement:
 - e) Equity
 - f) Participation
- 4.4 Summing Up

Chapter 5: Watershed Programmes in Jhabua District—A Sub-Regional Analysis

- 5.1 Jhabua District: A Profile
- 5.2 Spatial Spread of WDPs in Jhabua
- 5.3 Comparison of RGMWM and NWDPRA Projects
- 5.4 NGO Participation in Watershed Programmes
- 5.5 Alternative Models
 - a) DANIDA NWDPRA Project (partnership between block agricultural office and Sampark)
 - b) Approach adopted by ASA, Jobat
 - c) Case of Gramin Vikas Trust, Jhabua
- 5.6 Overall Impact: What do Secondary Data Tell?
- 5.7 Summing Up

Chapter 6: Summary and Major Findings

- 6.1 The Context
- 6.2 Scope and Coverage of WDPs in M. P.
- 6.3 Jhabua District: A Disaggregated Analysis
- 6.4 Implementation and Achievements
- 6.5 Emerging Issues and Future Directions:

List of Abbreviations

References

Appendices:

Appendix 1

A note on Methodology of Prioritisation of Watershed Activities in Block Level used for Jhabua District

Appendix Tables

LIST OF TABLES

- 2.1 Land-Use Pattern: M. P. and India (2002-03)
- 2.2: Agro-Climatic Regions
- 2.3: Forest Area in M.P. Districts
- 2.4: Number of Districts Affected by Drought
- 2.5: Some Key Indicators for Access to Land
- 2.6: Distribution of Persons below Poverty Line among Social Groups in Rural areas: M.P. and India
- 2.7: Indicators of Land Degradation (Per cent)
- 2.8 Share of Area under Districts covered by DPAP and IWDP (2001)
- 3.1: Area Treated under Different Watershed Programmes
- 3.2: Area Treated under RGMWM and NWDPRRA across Districts
- 3.3: Districts with Higher Concentration of WDPs
- 3.4: Top and Bottom Ten Districts in terms of Area Coverage under NWDPRRA and RGWM
- 3.5: Prioritisation of WDP coverage by RGMWM and NWDPRRA
- 4.1: Comparison of Objectives of WDPs Undertaken by the MoRD and MoA
- 4.2: Evolution of Objectives of RGMWM
- 4.3: Institutional Structure Adopted for Rajiv Gandhi Mission for Watershed Management
- 4.4: Phases of Financial Disbursement to PIA and Village Watershed Committee (VWC) from RGMWM State Office
- 4.5: Heads of Activities and Variability in Expenditures
- 4.6: Percentage of Sample Villages Reporting Dry Ground Water Sources in Pre- and Post-Watershed Periods
- 4.7: Changes in Extent and Intensity of Agricultural Land-use in Sample Watersheds in DPAP
- 4.8: Yield per Hectare of Major crops of beneficiaries and non-beneficiaries in Chanderi Nala, Khargaon district, 1998
- 4.9 : Disparity Ratios in Female Employment with Respect to Female Population
- 4.10: Comparative Representations of Social Groups in Village Watershed Committees vis-à-vis Their Shares in Population at the District Level
- 5.1: Comparison of M.P. and Jhabua: Some Indicators

- 5.2: Geographical Area) of WDPs under Department of Rural Development and up after 1995-96 Agriculture Taken
- 5.3: Relative Importance of NWDPRRA and RGMWWM Projects across Blocks in Jhabua
- 5.4 Area taken up under WDP under RGMWWM at Different Stages (1995-95 onwards)
- 5.5: Area taken up under WDPs at Different Stages under NWDPRRA
- 5.6: Deviations of Rank between Deprivation Indices and Concentration of Watershed Work
- 5.7: Projects administered by RGMWWM and Dept. of Agriculture– A Comparison
- 5.8: Comparison between RGMWWM and NWDPRRA– Some Aspects of Efficiency
- 5.9 Relative Importance of NGOs in DPAP (II/5-8) Watershed Work in Jhabua District
- 5.10: Relative Importance of GOs and NGOs in the Evolution of DPAP Project in Jhabua
- 5.11: Comparison of GOs and NGOs with respect to Financial and Physical Progress of DPAP 5 and DPAP 7 in Jhabua District (as on October, 2005)
- 5.12: ASA'a Multi-Faceted Activities in Jhabua
- 5.13: Land-use Pattern in Jhabua and Nimar Plains
- 5.14: Yield Levels in Jhabua and Nimar Plains
- 5.15: Cropping Pattern in the Jhabua and Nimar Plains (in decreasing importance of crops)

LIST OF FIGURES

- 2.1: Agro-Climatic Regions in MP
- 2.2: Indices of Food Grain Production
- 2.3: Water Level Fluctuation Map
- 3.1: Share of Watershed Area under Treatment by 10th Plan
- 3.2: Watershed Coverage in MP: Relative share of NWDPPRA and RGMWM
- 4.1: Supporting Institutional Structures at the Micro-Watershed Level
- 4.2: Change in percentage of area under plough to total cultivable land in DPAP sample watersheds
- 4.3: Change in cropping intensity in DPAP sample watersheds
- 4.4: Relationship of changes in agricultural area extension and land use intensity
- 5.1: Percent deviation from normal rainfall: Jhabua 1991 - 2003
- 5.2: ASA's Strategy
- 5.3: Spatial Concentration of Watershed Programmes in Jhabua

EXECUTIVE SUMMARY

It may be noted at the outset that the present review of watershed programmers in Madhya Pradesh is not an attempt to evaluate nor assess the impact of the large number of watershed projects that have been implemented in the state. Rather, this is more or less an exercise in stock taking and learning from the past. The idea is to look at the present status of watershed development in the state so as to be able move towards a vision of better convergence across developmental objectives (including equity), synergy between natural resource regeneration, administrative co-ordination, institutional coherence, and resource mobilization. It is in this larger context, the review focuses is on (a) spatial spread, prioritization, and complementarity across projects; (b) comparison across modes/ approaches and cross learning; and, (c) issues for future policies.

Importantly, the stock taking exercise has been carried out with a difference where the status of watershed development is being examined through the lenses of a normative framework that lays special emphasis on productivity, equity, sustainability, and democratic decentralization.

The review is based mainly on the existing studies, which in fact, are quite scanty. There is also a serious problem of availability of such studies as well as other information in the public domain. Nevertheless, we have tried to overcome these constraints, at least partly, by holding detailed discussions with a large number of key informants and also by visiting a few sites of selected watershed projects. The strength of the analysis therefore, lies more in terms of evolving a larger picture of watershed projects in the state, rather than in terms of presenting precise estimates or evidence, which is difficult given the paucity and asymmetric (in terms of coverage of WDPs across projects and regions) analyses as well as data-base in the public domain. In this context, the review may be considered as an important landmark for understanding watershed development in Madhya Pradesh.

2. Watershed Projects in Madhya Pradesh: Scope and Coverage

Madhya Pradesh, one of the constituents of the oft talked about Bimaru states has a number of characteristics that render it such a dubious distinction. Largely due to a low productivity in agriculture along with larger area under forest (almost 30 per cent) offering limited entitlements to the forest dwellers, the state had 37.2 per cent of its rural population living in poverty as against 26.1 percent at all-India level by the end of the 1990s.

In terms of agricultural development, to a large extent, a low vertical spread of irrigation is responsible for low cropping intensity, which is merely 103 per cent compared to 137 per cent for the country as a whole. Even the horizontal coverage (gross area irrigated to gross cropped area) of irrigation is extremely poor compared to the country as a whole (27 vis-à-vis 41 per cent). Consequently, 89 per cent of the districts in M.P. covering around 81 per cent of its area are dry lands. These districts make up 23 per cent of India's 177 dry land districts and occupy 19 per cent of India's dry area. Even if the irrigation potential from surface and groundwater sources were fully realised, over 55 per cent of the net sown area in the state would still remain dependent on uncertain rainfall. Thus development of dry land farming techniques is of utmost importance in the state.

Since the eastern districts have more forest land and greater water resources, and at the same time limited cultivable land, the region needs to be developed keeping in view of its core agro-ecological character, which is mainly based on plantations,

pastures, and forest conservation. On the other hand, the western districts with their main focus on crop cultivation have already exploited significant amount of groundwater.

However, the state can, in no uncertain terms, be considered a resource poor one. M.P. represents one of the states having rich and diverse agro-climatic conditions with rainfall decreasing from east to west, having a range of almost 1000mm. With large proportion of the region receiving medium to high rainfall and the land mass characterised by undulating topography, soil-water conservation under watershed projects may bring greater benefits as compared to situations with very low rainfall and plain topography. With one-third of its area covered by forests, much of which having suffered severe degradation, watershed development may assume a central place in management of forest resources in the state. A substantial proportion of cultivated land having been converted from erstwhile forest area, the natural productivity is fairly good in most parts of the region where poor, especially tribal communities, are located.

Further, a substantial part of the area constitutes upper catchments where checking soil-water erosion is important for sustaining and improving productivity of the soil.

Besides these, there are two other factors that may help watershed development in the state.

- (i) Relatively low level of commercialisation of agriculture, especially with respect to use of chemical inputs. This may make it easy to promote sustainable farm practices through watershed programmes.
- (ii) Noteworthy achievements in strengthening decentralised governance through reforms in the panchayati raj system.

It may, thus, be inferred that the problem in the state is not of resource availability per se, but that of management of the same. Recognising the potential the state of Madhya Pradesh has undertaken a major initiative by setting Rajiv Gnadhi Mission for Watershed Management (RGMWM), which has emerged as a single entity implementing the largest number of micro watershed projects in the entire country. As per the Guidelines prepared by the Ministry of Rural Development (MoRD) during 1994-95, 29 out of the 45 districts in the state were eligible for being covered under different projects viz; EAS, IWDP, and DPAP. Besides this, other major watershed projects being implemented in the state include National Watershed Development Project for Rainfed Area (NWDPR), River Valley Projects, and other donor agency supported schemes.

Apart from watershed projects, the state has already made a major headway through Jal-Aabhishek Abhiyan. The link between WDPs and Jal-Aabhishek Abhiyan needs to be strengthened. M.P. is also one of the high priority states for a number of centrally sponsored schemes that focus on enhancing agricultural productivity and reducing resource degradation. This opens up a huge opportunity for convergence not only across different watershed projects, but other initiatives in the field of natural resource development and livelihood enhancement at state, district and sub-district levels.

By now about five million hectares of land have been covered under the three major projects viz; RGMWM, NWDPR, and RVP. Though, there is no systematic data base for coverage of different WDPs in the state, the available information indicates that RGMWM is the single largest contributor accounting for nearly 66 per cent of the area covered by the three projects. This is followed by NWDPR (20 per cent) and then by RVP (14 per cent).

3. Spatial Distribution: Complementarity and Prioritisation

The three projects viz. RGMWM, NWDPRRA, and RVP have been, by and large, implemented in a manner that avoids duplication of efforts, each one of them catering to specific areas on priority basis. However, it is likely that there is not much of synergy between various programmes because first, the projects are being planned within the context of departmental priorities; and secondly, the unit for planning is generally milli and/or micro watershed rather than a stream or river basin. In absence of synergy, the actual achievements of the programmes may have remained sub-optimal, notwithstanding the effective implementation of the micro/milli-watershed projects.

WDPs under RGMWM have been concentrated mainly in twelve districts – Bhind, Chhindwara, Dhar, Jhabua, Khargaon, Ratlam, Raysen, Satna, Shahdol, Sheoni, Shivapuri and Sidhi. NWDPRRA, on the other hand, is concentrated in eleven districts – Betul, Chhindwara, Guna, Indore, Jabalpur, Jhabua, Khargaon, Mandla, Mandasaur, Satna, and Shajapu. This suggests complementarity between the two major programmes for which areas have been broadly demarcated.

The two projects together cover 19 out of the 26 districts identified as those ‘deserving’ priority when viewed in terms of bio-physical as well as socio-economic criteria (including irrigation). This suggests that the prioritization (laid down in the guidelines, explicitly or implicitly) has been by and large adhered to at least at the level of districts. A more disaggregated analysis of blocks within Jhabua district also by and large confirms the pattern. It is however, imperative to examine the reasons for the neglect of seven districts so as to be able to make necessary corrections at the stage of planning as well as implementation. The seven districts are: Betul, Shajapur, Guna, Vidisha, Chhatarpur, Damoh, Khandawa, and Shajapur.

Overall, therefore, the spatial distribution of WDPs under RGMWM and NWDPRRA suggests that (a) there is complementarity in coverage of districts between the two major projects; and (b) there is a fair amount of correspondence between economic deprivation and concentration of watershed treatment.

To make the various watershed projects work in consonance with each other and at the same time contribute to the norms of prioritization as well as sequencing, based on multiple-criteria, it is essential that information below district level be made available in the public domain.

4. Approaches and Achievements: Comparison of RGMWM and NWDPRRA

Approaches:

A cursory review of the Tenth Plan and its constituent annual plans of the state reveals that the watershed programme figures much more prominently in the plans of the Department of Rural Development under the RGMWM than in the plans of the Department of Agriculture. An attempt is made to look at the nature of evolution of the programmes run under the MoRD from 1995 by comparing the stated objectives as provided in the different guidelines and try to contextualise this vis-à-vis the NWDPRRA guidelines of 2000.

Though in spirit the watershed programmes undertaken by different ministries have sustaining livelihoods of the poor as an objective, from the 2001 guidelines, equitable distribution of benefits from land and water management activities do not appear as explicitly stated core objective.

The objectives of RGMWM are in conformity with the central government guidelines for both the Ninth and the Tenth Plans. The Mission's articulation of the need to maximise people's participation stems from the explicit purpose of making the scheme more effective and transparent. The key difference in the evolution of the central government and the Mission's thrusts is that while the former dilutes the equity principles in some sense over time, the Mission strengthens the same.

The Mission suggests demarcation of three zones within each milli-watershed: the recharge zone, the transition zone, and the discharge zone. The first zone with high gradients and greater susceptibility to soil has been identified as the zone requiring the most intensive treatment. There is thus an inbuilt principle of prioritisation within the milli-watershed in the Mission document of 1995, at least with respect to the intensity of work to be done.

Some of the more recent changes (post-2002) undertaken either directly or indirectly under the institutional structure of RGMWM have attempted to incorporate new aspects that minimise weaknesses and make missing elements good. An element of convergence has been brought about by bringing 18 districts – the districts that have received funds earmarked for the National Rural Employment Guarantee Scheme (NREGS) – of the state into the fold of the watershed programme. Although major differences have come to the fore as a result of the convergence of funds, it has enabled the state government to sidestep the Hariyali Guidelines. The MP government has appointed NGOs as PIAs and allocated Rs.8000/- per hectare for the programme as against Rs. 6500/- allowed under the provisions of the Hariyali guidelines.

Pani Roko Abhiyan is a water-conservation and harvesting movement that was initiated after the widespread kharif drought in 2001. This movement was undertaken by the RGMWM in all non-watershed villages so as to reduce the gap between immediate needs and the pace at which watershed projects can reach out all the areas even within the priority districts/blocks. This is important from the view of convergence provided, there is a perspective planning and continuity between Pani Roko Abhiyan and WDPs.

Achievements:

The major benefits (as reflected through various evaluation studies conducted externally as well as in-house) of the implementation of watershed programmes in the state can be summarised in terms of:

- Increased availability of water through water harvesting structures and enhanced crop survival during mild drought.

- Significant awareness for harvesting and conserving water, inducing private initiatives.

- Positive demonstration effect of the relatively more successful and sustaining WDPs.

- Given the hilly and undulating terrain, the watershed structures have by and large yielded substantial benefits to about 8-10 farmers per structure. The benefits have resulted in increase in number of waterings, increased cropping intensity, and change in cropping pattern in favour of more water intensive crops.

Limited Impact:

Participation of the local community in the watershed projects in the state is generally weak and has undermined the objective of equitable distribution of

benefits of the project. Like other states, there are some success stories, but these efforts have not been scaled-up adequately

Broadly speaking, the findings are in conformity with the general perception that while the GOs have done better in terms of watershed works, the NGOs have been more successful in terms of community organisation. This provides a scope to look into GO-NGO partnerships in future, both within and outside the Hariyali framework, since each has its own area of core competence and the two are to a large extent complementary.

Another important gap is the lack of co-ordination between the forest and the revenue department on the issue of treating the forest area within the watershed. This hampers the efficacy of watershed projects especially if the upper catchments remain untreated or degraded.

The rich and diverse experience from various watershed projects in Jhabua leads one to expect certain tangible impact at district level. We have tried to ascertain this in the light of the changes that have taken place in the indicators like area under crops, yield, and cropping pattern. Based on the secondary data, the analysis tries to examine the changes in a comparative framework where the scenario in Jhabua is compared with two other districts viz; Khandwa and Khargaon belonging to the same Agro-Ecological Region, i.e., Nimar Plains. However, while Jhabua has a WDP coverage of almost 40 per cent, the Nimar Plains have about 10 per cent coverage, making them a suitable case for comparison across space and time. It is observed that from 1994-6 to 2000-1, the proportion of net sown to geographical area had declined marginally in all three districts. Similarly, cropping intensity had undergone a decline in all three districts. What is however, noteworthy is that the decline in cropping intensity was steepest, with the lowest level in Jhabua. With respect to crop yield, the picture is somewhat similar

What is however, interesting is the change in cropping-pattern. It is observed that whereas Khargaon has registered an increase in the area under crops like cotton, oilseeds, and soyabeans, the crops that have gained in terms of area in Jhabua are subsistence crops.

5. Emerging Issues and Future Directions:

The experiences suggest that whereas there is increasing awareness and interest among peoples in WDPs, the project by and large suffers from clear result orientation. At this juncture when the Rural Employment Guarantee Act is already in place, and WDPs is one of the most important thrust areas for the activities to be planned under the employment programme, it is essential that the lessons learnt from the past experience be incorporated in future planning. Following issues need special attention in this context:

Adopting a holistic approach by coordinating various watershed programmes taking a larger watershed unit, and multi-layer units within that for evolving a perspective planning.

Putting information about treated and planned micro watersheds in public domain so as to help enhancing transparency in planning and implementation.

Link with RVP and Forest watersheds should be established keeping the upstream-down stream perspective in place.

Setting up priority of treating CPLRs including the degraded forestland within a micro watershed as an important pre-condition for undertaking the WDP-implementation.

PIAs may not immediately withdraw after completion of the project. There is a need to dovetail other programmes where the NGOs/PIAs could continue their interaction with the village communities, especially in order to hand hold the community based organisations created under the project.

The scope for creating larger water harvesting structures or regenerating degraded forest/other land could be linked with minor irrigation and forest department respectively; same may apply for schemes for providing drinking water in the WDP villages.

A multi-stakeholder platform may help identifying and addressing conceptual as well as practical issues such as these. While there a couple of networks of WDP-parishioners, these networks need to be strengthened and represented in the state level coordinating committee as part of the process of broadening its base.

Introduction

1.1 Context

The disparity in agriculture that existed between predominantly irrigated areas and rainfed/ dry land areas, especially in the post-Green Revolution era, stemmed from the fact that the latter have been neglected both in terms of policy interventions and allocation of funds, notwithstanding the repeated pleas for attaining greater regional balance through planned economic development.

A major policy response to address the issues of rain-fed/dry land agriculture, which covers nearly two-thirds of cultivated land in the country, came in the early nineties in the form of Watershed Development Programmes (WDPs). Besides cropland, pastures and forests are important constituents of various agro-ecological systems in the country. They play a critical role in supporting livelihoods of rural communities, particularly in rain-fed and dry land regions. WDPs essentially seek to integrate these basic activities within a farming system by reviving and strengthening the symbiotic relationship between land, water, and vegetation. Integration thus becomes a core concept, which distinguishes WDPs from several other natural resource-based development programmes (Shah, 1998b). Another special feature of the programme is that it is multi-functional and its important outcomes viz., productivity, sustainability, and equity, are interconnected.

Over the past one-and-a-half decade, the programme has moved very rapidly in terms of conceptual refinement and scope and achieved a number of multiple and fairly complex objectives. A large volume of practical experiences in implementing WDPs is already available (Shiferaw and Ade, 2003). From the margins of rural development practice and a limited focus on soil and water conservation, the concept of integrated watershed development and management has emerged today as the cornerstone of rural development in the dry and semi-arid regions of India. What began as a set of diverse and isolated experiments in Sukhomajri, Ralegaon Siddhi and the Operations Research Project of the Indian Council for Agricultural Research (ICAR), was institutionalised initially in the form of the National Watershed Development Programme for Rainfed Areas (NWDPR) in 1990. Following the Hanumantha Rao Committee's review in 1994 and the formulation of Common Guidelines, the period 1995-2001 saw the implementation of the first generation projects under these guidelines on a very wide scale. More importantly, it is now acknowledged that integrated watershed development must be the core strategy for stabilising rural livelihoods in dry and semi-arid regions.

1.2 Departure from Sectoral Approach

Rural development programmes in India had adopted the sectoral approach until the advent of the watershed approach. Under the sectoral approach, plans and policies are separately formulated for each target area. Sector-based programmes have, for example, soil and moisture conservation programmes for environment; intensive area development programmes for agriculture, and employment guarantee schemes for livelihood sustenance. The watershed approach marks a major departure from such an approach in that it draws

its strength from the assumption that there is a systemic relationship between environment, production and livelihood sustenance. The two differ in three major aspects. First, since the possible linkages between the three issues are neither explicitly nor implicitly considered in the sectoral approach, the programmes based on it are characterised by duplication of efforts and lack of coordination. The second difference emanates from the first; while the watershed approach takes the geo-hydrological unit of a watershed as the functional unit, the second takes administrative boundaries (often blocks or districts) as the unit of operation. A third difference, i.e., the difference in their spatial focus manifests itself in the mode of implementation of these two approaches. Most of the public funding was channelised to the irrigated areas in the second phase (sectoral approach) due to the emphasis on production enhancement in these areas. The semi-arid rainfed regions received comparatively much less public funding through sporadic implementation of employment guarantee schemes and soil and moisture conservation schemes. With the watershed approach, the imbalance of public spending was somewhat corrected as the funding for environmental activities, production increase and livelihood sustenance was pooled and systematised under one head of watershed programmes. These programmes are currently concentrated in the rainfed areas, in principle the same approach could probably equally be applicable in irrigated areas.

¹ While the Ministry of Agriculture focuses primarily on cultivated and thus owned land in their watershed projects, the Ministry of Rural Development gives importance to wasteland and common land. The Ministry of Environment and Forests primarily treats the area coming under the jurisdiction of the Forest Department.

² The size of a micro-watershed ranges between 500 to 1000 hectares. Experience shows that in many cases, for the sake of administrative simplicity, this is taken to be coterminous with the village boundaries.

³ The size of a milli-watershed ranges from 5,000 to 10,000 hectares.

Though theoretically the watershed approach appears to be a sound option, there are operational difficulties; it is still implemented by three different ministries in the Government of India, i.e., the Ministry of Agriculture, the Ministry of Rural Development and the Ministry of Environment and Forests, which retain their respective sectoral domains in terms of the focus of their operation¹. Multiple departmental handling of watershed projects is a hindrance to integration that is meant to be

achieved under the watershed approach.

By 2005, major watershed programmes under the Ministry of Agriculture and the Ministry of Rural Development, Government of India had invested approximately Rs. 180 billion and covered nearly 45 million hectares of land in different parts of the country characterised by deserts and drought-prone areas, predominance of wastelands and a low potential for rain-fed agriculture.

Implementation of numerous WDPs has left a rich experience in its wake. There has been a variety of learnings from its mixed bag of successes and failures. A number of studies have tried to summarise and synthesise experiences and outcomes of watershed programmes from different parts of the country (Kerr, 2002; Joy and Paranjape, 2004; Shah, 1998a; Deshpande and Narayanmoorthy, 1999). The recent report of the Parthasarathy Committee, 'From Hariyali to Neeranchal' (GoI, 2006) is built on this vast and varied experience and sets the stage for the next phase of watershed development in India. The first phase saw the beginning of new conceptualisation, setting up of implementing mechanisms, and resolving teething troubles. The second phase was the time for consolidation of experiences and smoothening of the path ahead. The third and the present phase marks a beginning of the realisation for convergence of objectives and focal areas; programmes; and organisations and agencies involved at different stages of watershed development.

The process of convergence requires creating a larger picture so that the nature, magnitude, and interconnectedness of the issues and solutions – many of them may go beyond the scope of micro-² or milli-watershed³ projects – may be gauged. Some of the important concerns in this context are:

Prioritisation within the broadly earmarked areas for each programme

Upstream-downstream dynamics
 Impact on water balance and ground water profile
 Promotion of sustainable farming practices
 Equitable sharing of benefits, cross-subsidisation, and cost-sharing or future investments
 Sustainability of watershed treatments and institutions
 Upward linkages with markets on better terms

Creating a larger picture of watershed development involves a number of activities: preparing a data-base, reviewing various experiences, understanding administrative problems, exploring alternative institutional mechanisms, and creating multi-stakeholder platforms for exchange of information, experiences, and policy feedback. It is towards this larger goal, that the Forum for Watershed Research and Policy Dialogue (ForWaRD⁴) has undertaken initiatives in Maharashtra, Madhya Pradesh, and Karnataka. The present paper is a part of the larger set of studies undertaken by ForWaRD.

The present study aims at preparing an overview of the various watershed programmes in Madhya Pradesh. It will have a comprehensive analysis covering different typologies of watershed projects which may help bridging critical gaps in developing a holistic understanding of watershed development in the state (Shah, 2005). Besides collating major findings from the already existing literature covering specific projects in different areas of the state, the study seeks to address the concerns about convergence as noted above. The idea is to go beyond stocktaking and highlight some of the new challenges that are likely to assume critical importance while scaling up. The aim is also enhance effectiveness of the programmes by attaining better convergence.

1.3 Stock Taking: Imperatives for a Conceptual Framework

Over the past decade a number of studies have been conducted which have examined the impact of various watershed projects in the country. Most of these studies have been undertaken as a part of the monitoring/evaluation exercises, mainly at the instance of funding agencies, both governmental as well as non-governmental. There are also a number of independent studies of watershed projects funded by different agencies that attempt to capture their impact and link up with the larger issues of productivity and livelihood, equity, decentralisation, and resource as well as institutional sustainability (Shah, 1998a; Kerr, Pangare, and Pangare, 2002; Joy and Paranjape, 2004). The independent studies, despite being rich in content and analytical in approach, do not help create a larger picture of what has been actually achieved by numerous watershed projects in different parts of the country. A mosaic fails to emerge from these studies because first, there are a number of methodological difficulties in gauging the actual impact of WDPs (Dar, 2003); and secondly, proper base-line data – essential for a fairly robust, if not scientifically most accurate, assessment of the outcomes – are not available. There is, of course, an additional difficulty arising from the fact that watershed development is a continuous process, rather than a time-bound project with a well-defined set of activities and clearly earmarked funds.

Notwithstanding these limitations, the studies suggest that: (a) a large number of water harvesting structures have been created which have enhanced irrigated area and, at times, helped in crop survival during extended dry spells; and (b) the project has provided an impetus for setting up local institutions as a result of participatory processes built into the programme though, its impact on maintenance of structures and benefit-sharing is yet to be realised.

⁴ ForWaRD is a consortium of three organisations – Society for Promoting Participative Eco-system Management (SOPPECOM), Gujarat Institute of Development Research (GIDR), and Centre for Interdisciplinary Studies in Environment and Development (CISED).

The studies also highlight the fact that apart from irrigation-induced improvement in productivity and net returns, there is a limited impact on sustainable livelihoods among the poor and on environmental regeneration. As a result, watershed projects already implemented or in the process of implementation, are characterised by certain critical missing links, for instance, regeneration of CPRs and degraded forest in a large number of watershed projects (Shah, 1998b). What is a matter of greater concern is that in most cases the environmental impact is captured only through indirect measures (Chopra, 1999). Even if environmental regeneration takes place, the requisite mechanism for ensuring that the additional resource, e.g., water for irrigation is distributed evenly and used efficiently, is seldom present. Since the conventional impact assessment focuses mainly on benefit-cost ratio at a village or micro-watershed level, it does not capture these issues despite the fact that the Ministry of Rural Development (MoRD) as well as the Ministry of Agriculture (MoA), having recently adopted the participatory approach for watershed development, consider efficiency in use and equity in distribution particularly relevant for impact assessment.

Overall, it appears that though the existing studies do bring out some positive effects of various watershed projects, the findings are not conclusive. Based on a brief review of evidence from the first batch of watershed projects under the MoRD, Rao (2000) noted that “from all these evaluations, one does not get a direct indication of soil conserved through watershed development – and that it would be useful to develop indicators and methodologies to capture separately the improvement in soil status” (p. 3945). Similar observations could also be made about the impact in terms of sustainability of (a) productivity gains and their distribution across regions and households; and (b) participatory institutions to address the missing links.

Attempts have also been made to

assess the impact of participatory approaches. A recent study of project implementation under MoRD suggested that a lack of implementation capacity was the major reason for poor performance of the project. However, training alone might not be adequate to overcome the insufficiency as the incentives to participate in training may be weak (Farrington, Turton, and James, 1999). What causes concern is that such limitations arise even in the cases where the project implementation has been fairly participatory. The need therefore is to understand the dynamics of three inter-related aspects as has been attempted more recently by Reddy and Soussan (2003) and Shah (2004).

1.4 Emerging Issues and Normative Framework

The existing literature raises certain important issues that need careful probing. First, the composition of watershed treatments, covering both public as well as private land, needs a closer look before the economic as well as environmental impact of the projects are assessed. To the extent that the choice of treatments is governed by the structure of economic incentives, a large part of the common property resources (CPRs) is likely to receive a lower priority. First, ensuring better coverage of treatments like pasture development, plantation on degraded lands, drainage line treatment, renovation of village tanks, and community based drinking water facilities may need a carefully worked out incentive structure. In addition, administrative difficulties will have to be addressed to improve effective access to the CPRs.

The second aspect relates to sharing of benefits not only across villages and communities but also among landed households within a micro-watershed. It is quite likely that in the successful projects with an overall favourable benefit-cost ratio significant economic returns accrue

only to a handful of landed households within the watershed community. This aspect needs probing; so does the impact in terms of reduced uncertainty of yield in a large number of unirrigated farms.

Thirdly, benefit-sharing, especially in terms of irrigation water, is closely related to the technology of water conservation as well as its utilisation. While harvesting rainwater is essential, to meet both economic and environmental objectives, the water harvesting structures have to be planned in the light of the geo-hydrological factors that operate at the level of river or sub-river basin. At present, some of these vital watershed treatments are planned and executed mainly at the micro-watershed level without taking into consideration their being an integral part of the larger systems. If carried out in a haphazard manner, check dams and other treatments on the drainage line might create distortions in the geo-hydrological systems downstream. These issues are often overlooked in the planned implementation as well as monitoring of the watershed projects.

Further, apart from water and irrigation, some of the agronomic practices like mulching, inter-cropping, trenching, adding manure and other vegetative measures need to be emphasised in watershed projects since these practices in combination with efficient use of water can lead to a new farming system which could be economically as well as environmentally sustainable and socially equitable. The need is to look at the technological potential and the commensurate incentive structures for these measures to promote simultaneous adoption. This may warrant fresh thinking in terms of cross-subsidisation across both watershed treatments and households.

This leads to the final issue of initiating a process of negotiation within and across micro watersheds. At present the issues of effective participation, sharing of costs and future management continue to remain elusive even in some of the better

performing projects. Partly the problem arises because the operation is in the project mode, and partly because in the given time-frame for implementation and evaluation, not much has been learnt about the mechanism that can work beyond the project mode in terms of funding, organisational support and monitoring.

The present review examines the experiences of the various watershed programmes in Madhya Pradesh and brings to light the issues noted above through the lens of a normative framework adopting three important interconnected themes of sustainability, livelihoods, and equity through participatory principles. An elaboration of the four issues of livelihoods, sustainability, equity and participation, as we understand them, is given below (adopted from Joy and Paranjape, 2004).

The understanding of sustainability, in our view, is limited to 'environmental sustainability as mediated by human intervention', and this is consistent with our assumption about the primacy of the role of natural capital in supporting livelihoods. Thus, from this perspective, watershed development should focus on 'conserving natural capital independent of all other forms of capital'. This would include interventions that ensure sustenance of increased levels of productivity on the basis of a well-maintained resource base. A possible conflict may arise between the aims to increase productivity by increasing physical or financial capitals on one hand and conserving the natural capital on the other. If it does, it will have to be resolved by the institutional structure adopted within the framework of WDPs. The primacy accorded to the natural capital would require that the productive planning of the watershed be 'done within the annual renewability limits'. In 'bad years' some transfers from the stock of resources may be permitted to sustain livelihoods, with the understanding that the stock would be replenished in the 'good years'.

Livelihood encompasses building capabilities and assets to generate activities to support a basis for living. Some distinction has been made between basic needs and livelihood needs on the basis of whether they are unmediated or imposed with relation to production. In the normative framework, natural capital is accorded primacy over social, physical, human and financial capital in supporting livelihood needs. The relationship between natural capital and livelihood is not predictable – a decrease in the base of natural capital may not always lead to an adverse livelihood status. For example, a reduced natural resource base may induce a farmer to adopt better cultivation management practices (Chadha, Sen, and Sharma, 2004). Or, as is generally expected, a greater amount of production forced from smaller portion of land may lead to 'soil-mining'.

Equity issues are intrinsically linked with nature of participatory institutions built within watershed interventions. The principle of equity applies to wide ranging issues relating to access to natural resources and sharing of gains, and it requires one to take cognizance of the disabilities created by class, gender, caste, and ethnicity. Natural resources that are not privately owned have the potential to play a key role in reducing disparities across households within a watershed. While it is desirable that the entire stock of natural resources is shared equitably, the least that the participatory institutions ought to ensure is that the incremental resources generated through the interventions are shared fairly. While a democratically constituted watershed institution should be in a position to intervene in the issues regarding encroachment of CPRs for cultivation, or sharing of forest products, it may be difficult to do so in heterogenous societies ridden with class and/or caste conflicts. In relatively homogenous societies, like many tribal communities in Madhya Pradesh, the participatory institutions would have far greater potential to apply the principle of equity in many of the above-mentioned settings.

It has been recognised that water is both a local and non-local resource (Joy and Paranjape, 2004). Modifying water regimes in any watershed irrespective of its size has basin-wide implications. Since the current policies of watershed development concentrates on micro-watersheds, their downstream impact appears as an externality which should be considered as a systemic effect. From this perspective, it is desirable that milli-watersheds be taken up for watershed development from the highest lying upland to lowland, conforming to the ridge to valley principle (Joy et al, 2006). The decision regarding the scale of operations is extremely difficult to make since trade-offs are involved in going from micro to meso and macro (micro-watershed to basin) between managerial problems and capturing off-site externalities.

In our review, we see participation as a means to enable the local community to make informed choices and ensuring more equitable, sustainable and efficient outcomes. However, it is important to view critically the constituents of local community that are engaged in the decision making process. Our expectations are that homogenous societies would respond very differently to opportunities of participation available within the framework of watershed programmes as compared to heterogeneous societies. Since, in their current form, the WDPs necessarily require partnership in some form with outside agencies (governmental and non-governmental organisations, international donors, etc.), the nature of this collaboration is bound to affect the efficiency of the participatory communities within the watersheds. In this context, the increased importance of the institutions of local self government – panchayats – as brought about by the Hariyali Guidelines in 2003 is expected to change somewhat the participatory dynamics.

1.5 Methodology and Approach

The main purpose of this study is to review the experiences from various watershed programmes implemented during the past one-and-a-half decade in Madhya Pradesh with a specific focus on convergence that cuts across activities within a watershed project, various watershed programmes, and other developmental programmes related to natural resource-based livelihood enhancement. The review emphasises three aspects viz., the approach, the implementation mechanisms and processes, and the outcomes⁵. It may be noted once again, that the aim is not to evaluate the performance; rather the idea is to learn from the experiences and move towards convergence at various levels.

The analysis is based on data gathered mainly from existing literature (published as well as unpublished), discussions with key informants (policy makers, implementers, and other experts), and a few field visits. Given the limitations of information and other material in the public domain, the review does not make any categorical statements about the actual outcomes or impact of different watershed programmes in the state. Many of the observations and conclusions are indicative; they need to be discussed further in various fora. Moreover, the review suffers from certain data gaps pertaining to the coverage as well as other details on watershed programmes (e.g., no CAPART-supported projects have been studied). Since there was hardly any information/material available (with reasonable amount of efforts), the review is somewhat tilted towards the watershed projects implemented by Rajiv Gandhi Mission for Watershed Management (RGMWM), which is the largest watershed programme not only in the state, but also in the country.

The analysis in the report is undertaken at two levels. First, we attempt to review the WDPs for the state as a whole. Since the available material is inadequate to develop a comprehensive review, we have added

a case study of Jhabua district to our review to fill in some of the gaps. Jhabua was selected for the case study for two reasons. First, the watershed work in Jhabua district has been most extensive, the coverage being nearly 38 per cent of the total geographical area of the district (as against 12 per cent in the state as a whole). This implies that the investment in the district under the head of land development programmes have been the highest per unit area. Secondly, probably due to the above reason and also due to the fact that the district has the highest concentration of tribal population (as high as 86 per cent as against 20 per cent in the state), much more reference material is available on the district than what is available for rest of the state. While drawing conclusions for the state as a whole on the basis of data available on Jhabua is not warranted, we felt that the availability of more material and the assessment based on it could have implications and lessons for other parts of the state.

The database of this report has been (a) the collection of state-related and Jhabua-related documented material (reviews undertaken by Taru Leading Edge and Centre for Advanced Research and Development (CARD) for the RGMWM, (b) interviews with key persons which include officials in the Central Government (the Planning Commission, the Ministry of Rural Development, and the Ministry of Agriculture), the State Government (Departments of Panchayat and Rural Development, and Agriculture), officials in different project implementing agencies (covering a cross-section of models), staff of non-governmental organisations like National Centre for Human Settlements and Environment (NCHSE), Action for Social Advancement (ASA), Sampark, etc., selected members of watershed development committees and beneficiaries (again ensuring coverage of programmes by different agencies), and (c) preliminary field visits in Raisen, Sehore and Jhabua for a qualitative assessment of the

5 Since WDPs are being implemented by numerous agencies, each having its own individual model to follow, they are seen as just one more rural development programme implemented by the same departments/agencies. As a result, the importance of watershed approach as distinguished from the sectoral approach is undermined, partly or completely. This actually makes a good case for using the guidelines of our normative approach to review and validate the rationale for convergence of these programmes in comparing the different models being followed in the state

nature of implementation of the projects. It may be noted here that carrying out a systematic survey was not within the scope of our review. The review, as may be understood from the underlying approach, is expected to be broadly qualitative, and probably would have no conclusive findings. Nevertheless, since published material available is extremely scant, even a skeletal status report would prepare a base for a policy dialogue between practitioners and policy makers. Finally, it is hoped that it would provide some directions for future research in this field.

The analysis is divided into six chapters including the introductory one. This is followed by a brief description of the natural resource endowment and livelihood scenarios in Madhya Pradesh so as to highlight the scope for watershed development in

different agro-climatic situations in the state. Chapter 3 presents a bird's eye-view of various watershed programmes in the state, and discusses the geographical spread in the context of spatial prioritisation. The next chapter presents the status of watershed projects in the state focusing on the three broad aspects viz.; policy approaches; processes/mechanisms for project implementation; and experiences from the point of view of productivity/livelihood, sustainability, equity and participation. Chapter 5 presents the experience of Jhabua district as a case study and Chapter 6 summarises the findings which could provide inputs in the policy formulation, project planning and monitoring processes, and setting up of a new set of institutional mechanisms for implementing and sustaining watershed based development as an evolving phenomenon.

Locating Madhya Pradesh: Scope and Challenges for Watershed Development Programmes

Almost two-thirds of India's cultivated land is farmed as dry-land. These areas suffer from low productivity, their natural resources are subject to degradation, and their agriculture is vulnerable to risk and uncertainty (Joshi, *et al.*, 2004). Madhya Pradesh constitutes a significant part of the vast tracts of dry-lands. The topography and other agro-climatic conditions in the state, however, offer a fair opportunity for watershed development. Setting up of the Rajiv Gandhi Mission for Watershed Management (RGMWM) as a special organisational arrangement is a pointer to the official recognition of the need as well as scope for watershed development in the state which otherwise has remained fairly subdued in terms its agricultural growth and the associated poverty reduction (Shah and Sah, 2004).

The section contextualises the state of M.P. with respect to the status of its natural resource base and the need as well as scope for policy interventions, especially within the framework of WDPs. Important features of the state's natural resources - the endowment, their status, the pattern of resource-use, and its interface with rural livelihoods – are examined which leads to the identification of some of the major issues in watershed development in the specific context of M.P.

2. 1 Resource Base

M.P. represents one of the natural resource-rich states in the country. Of the 14 major Indian river systems, M.P. encompasses the upper catchments of seven and the state is the source of all major river systems of Central India. The proportion of area under plough (47.7 per cent of the geographical area) is almost the same as that of all-India average (46.0 per cent) while the proportion of culturable waste and long term fallow land in the state (5.8 per cent) is marginally lower than that of the country as a whole (7.8 per cent). Remarkably, forests constitute a fairly large proportion (28.1 per cent) of the total reported area as compared to 22.4 per cent at the all India level (See Table 2.1, next page).

M.P., with its vast geographical area has a highly diverse natural resource base. The state receives an average annual rainfall of 1150 mm. Since it is concentrated in the brief monsoon season, most watercourses remain dry from January to June. As a result, water availability depends critically on the extent of water storage from surface water capture or groundwater.

2.2 Regional Variations

There are widespread regional variations within the state. The average rainfall decreases from east to west. The normal annual rainfall ranges from 1570 mm in Mandla of the Chhattisgarh region in the east to 668 mm in Datia in the west-central grid. However, there are variations within the pattern. For instance, the rainfall is highest in the westernmost district of Jhabua and lowest in the Bundalkhand region and Keymore plateau. Table 2.2 and Figure 2.1 provide the agro-climatic characteristics of the state in detail.

Sl. No.	Agro-climatic Region	Districts	Normal Rainfall (area weighted) (in mm)	Rainfall Variability (area weighted) (Coefficient of variation: in per cent)	Climate	Soils
1	Jhabua Hills	Jhabua	828	41.6	Semi-arid	Medium to deep black
2	Malwa Plateau	Indore, Dhar, Badwani, Ujjain, Ratlam, Dewas, Mandsaur, Neemach, Shajapur	916	28.2	Semi-arid	Medium to deep black
3	Nimar Plains	Khargone, Khandwa	820	30.3	Semi-arid	Medium to deep black
4	Vindhya Plateau	Rajgarh, Bhopal, Sehore, Vidisha, Guna, Raisen, Sagar, Damoh	1175	24.7	Dry, sub-Humid	Shallow to Medium Black
5	Central Narmada Valley	Harda, Hoshangabad, Narsimhapur, Jabalpur	1288	27.7	Dry, sub-Humid	Deep black
6	Satpura Plateau	Betul, Chindwara	1214	26.4	Dry, sub-Humid	Shallow to Medium Black
7	Grid Region	Gwalior, Bhind, Morena, Sheopur, Shivpuri	749	22.1	Semi-Arid	Medium Black Alluvial
8	Keymore Plateau	Panna, Satna, Seoni Umaria, Katni, Rewa	1306	20.7	Sub-Humid	Medium Black
9	Bundelkhand Region	Chattarpur, Datia, Tikamgarh	978	21.7	Dry, sub-humid	Mixed red and black
10	Northern Region of Chhattisgarh	Mandla, Dindori, Shahdol, Sidhi	1306	23.1	Sub-humid	Red & yellow
11	Chhattisgarh Plain	Balaghat	1623	28.3	Moist, Sub-humid	Medium to deep black and yellow

Table 2.2: Agro-Climatic Regions in M.P.

Sources: 1. Department of Agriculture, Govt of Madhya Pradesh 2. Indian Meteorological Department

Agro-climatic Region	Districts	Forest Area	% Area under Forest
Jhabua Hills	Jhabua	130.4	19.3
Malwa Plateau	Indore	52.2	13.6
	Dhar	119.7	14.6
	Ujjain	3.2	0.5
	Ratlam	34.5	7.1
	Dewas	205.7	29.4
	Mandsaur	104.9	11.1
	Shajapur	6.8	1.1
Nimar Plains	Khargone	429.3	31.8
	Khandwa	511.6	45.7
Vindhya Plateau	Rajgarh	18.9	3.1
	Bhopal	44.1	15.9
	Sehore	172.8	26.3
	Vidisha	105.7	14.5
	Guna	152.0	13.8
	Raisen	333.4	39.3
	Sagar	288.7	28.2
	Damoh	267.0	36.6
	Hoshangabad	357.2	35.7
	Narsimhapur	136.3	26.5
	Jabalpur	173.8	17.2
Satpura Plateau	Betul	395.8	39.3
	Chindwara	479.0	40.4
Grid Region	Gwalior	109.5	21.0
	Bhind	8.9	2.0
	Morena	333.5	28.5
	Shivpuri	330.5	32.5
Keymore Plateau	Panna	299.4	42.6
	Satna	203.5	27.4
	Seoni	327.5	37.4
Bundelkhand Region	Rewa	67.0	10.7
	Chattarpur	214.3	24.8
	Datia	20.9	10.5
Northern Region of Chhattisgarh	Tikamgarh	66.7	13.2
	Mandla	617.9	46.7
	Shahdol	541.6	39.1
Chhattisgarh Plain	Sidhi	440.1	42.3
	Balaghat	505.6	54.7
Madhya Pradesh		8609.9	28.0

Table 2.3: Forest Area in M.P. Districts, 1997-98

Note: Refer to undivided districts in the state.

Source: Directorate of Economics and Statistics, Govt of MP

The relatively better rainfall profile (compared to several other arid and semi-arid regions in the country) along with large forest areas and undulating topography in large parts of the state, *prima facie*, creates a favourable environment for watershed development. As per the classification developed by Fan and Hazell (2000), three out of eleven agro-climatic zones in M.P. belong to high potential rain-fed region (which corresponds to the Agro-climatic Zone No. 10 as classified by the ICAR while the remaining zones belong to low potential rain-fed regions.

The state has a rich forest cover of 8.6 million hectares (mha). The given geographical distribution of the forest resources enhances the regional diversity of the state further. The eastern and south-eastern districts of Balaghat and Mandla have relatively extensive forest areas, while the districts in the western and northern regions are poor in forest cover (Table 2.3). The distribution of forest resource in the state has a correspondence with availability of moisture from natural sources. During the late nineteenth century, large-scale forest surveys were undertaken to demarcate reserve forest areas. The first such demarcation in the country was made in the Central Provinces (M.P. was formed by integrating Central Provinces and the princely states of the region after independence) in 1865. These forests were demarcated in remote areas to minimise disturbances to the local population. *In recognition of local rights, affected villages were settled outside the reserve forest areas. Negotiations were held with landlords for a majority of uncultivated tracts of land and they were recorded as dhar (forest) in the revenue records.* These lands were later either transferred to the state

government or to the rural poor. However, even today, the farmers who were given these tracts of land are prohibited from changing its mode of land-use, and this norm acts as a dampener to taking up private forestry (GoMP, 1998).

The National Forest Policy (1952) reflected appreciation of the multiple benefits of forests. However, utilisation of forests for optimising revenue continued to remain the dominating aim for managing country's forests while 'conservation' of forests was a relatively minor part of forest development plan. This bias is visible in the manner in which forest resources are classified by the state till date. Only 5.4 per cent of the forest is presently classified as 'protection forests' for soil and water conservation work. more than 84 per cent of the forest resources were 'production forests', further divided into major and minor forests (GoM.P., 1998) ⁶.

2.3 Utilisation of Resource Base and Agricultural Performance

Though the state of M.P. enjoys a fairly rich natural resource base, it has fared poorly in its utilisation. The cropping intensity of the state is only 122 per cent as compared to the all-India average of 133 per cent. To a large extent, a low vertical spread of irrigation is responsible for low cropping intensity, which is merely 103 per cent compared to 137 per cent for the country as a whole. Even the horizontal coverage (gross area irrigated to gross cropped area) of irrigation is extremely poor compared to the country as a whole (27 vis-à-vis 41 per cent). Consequently, 89 per cent of the districts in M.P. covering around 81 per cent of its area are dry lands as per the methodology used by Shah, et al; (1998). These districts make up 23 per cent of India's 177 dry land districts and occupy 19 per cent of India's dry area.

⁶ Tree forests are meant for industrial and commercial wood, whereas small timber and fuel wood is allowed from minor forests. (The forest community is allowed to use timber and fuel wood?)

Due to the poor irrigation coverage and lack of adequate development in dry land farming techniques, large parts of the state are affected by droughts almost every year. Over the last sixteen years, the state has remained unaffected by drought in only three years (Table 2.4). It may be further noted that during the last three decades in the districts of eastern M.P., the average rainfall was 10% lower than the average rainfall recorded prior to 1970 (GoM.P., 2000).

Looking at the two indicators viz. average rainfall (which is medium to high in most parts of the state), and the variability over time and space together, it becomes clear that the main issue is not so much adequacy of rainfall *per se*. Rather the issue is more as of effective conservation and utilisation of water, especially to take care of uncertainty about rainfall. Watershed programmes have a significant role to play in this context.

In absence of interventions such as WDPs, the agricultural prospects in

the state remain dismal (Shankar, 2005). Under the circumstances, dry crops with fairly low level of productivity assume the centre stage in agricultural production, and thereby in the income of a large proportion of rural communities. For example, M.P. is the single largest contributor of soybean, gram, linseed, and maize to the country's pool. Whereas a number of states, particularly those within the Indo-Gangetic plains have been moving towards specialisation in water intensive crops like wheat and paddy, M.P. has remained much more diversified in terms of its cropping pattern. Oilseeds and pulses figure prominently among the state's crops, whereas rice (a highly water demanding crop), which is the most important crop at all-India level, is only the fourth most important crop in the state.

The poor irrigation facility has led to much lower yield levels in M.P. compared to rest of the country. For instance, in food grains as a whole, M.P. is a poor performer (1114 kg/ hectare compared with 1667 kg/ hectare for all-India for 2001-03

Table 2.4:
Number of
Districts
Affected by
Drought in
M.P.

Year	No. of Districts Affected	Per cent of Districts Affected
1991-92	23	47.9
1992-93	4	8.3
1994-95	4	8.3
1995-96	8	16.7
1996-97	5	10.4
1997-98	35 (affected by heavy rains)	72.9
1998-99	23	47.9
1999-00	10	20.8
2000-01	32	66.7
2001-02	06	12.5
2002-03	33	68.8
2004-05	20	41.7
2005-06	17	35.4

Source:
Department of
Agriculture,
Government of
M.P.

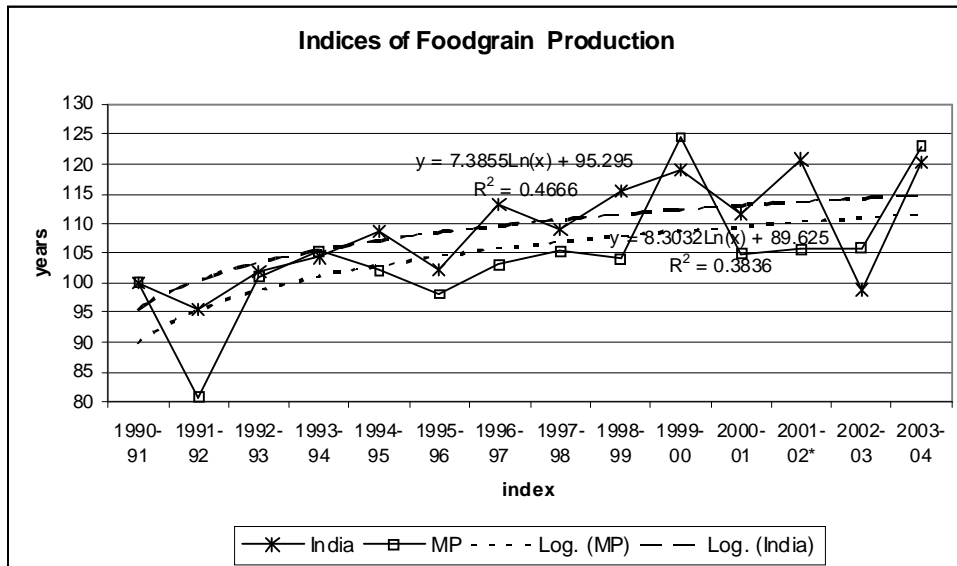


Figure 2.2:
Indices of
Foodgrain
Production

Source:
Directorate of
Economics and
Statistics, Govt.
of India

triennium) and ranks fourth lowest among states. In dry crops, however, the state performs far better. The yield of coarse cereals for the state – 1257 kg/hectare for 2001-03 triennium – is higher than all-India average of 1180 kg/hectare for the same period.

The trend of food grain production in the state is characterised by higher instability, though it otherwise follows the all-India trend closely (Figure 2.2). The production in rain-fed agriculture is expected to follow the rainfall fluctuations and M.P. is no exception in this regard.

The poor spread of irrigation in the state notwithstanding, the area under irrigation has increased by more than six times over the last five decades. Most of this expansion has come after mid-eighties, unlike in the states with successful record of the green revolution where it took place in the sixties and seventies. While increase in the irrigated area from canal water has only been moderate during this period, the rapid spread of irrigation after mid-eighties has been contributed primarily by minor irrigation sources, namely groundwater and lift irrigation schemes. This trend however, is more prominent in the western parts of the state. The eastern districts have witnessed only a modest

increase in irrigated area after the mid-eighties. In particular, there has not been much expansion of irrigated area in the tribal districts of the eastern region (GoM.P, 2000).

Whereas the expansion of irrigation facilities has aided areal expansion of wheat, mustard and gram in the state, there has been a substantial reduction in area growing coarse cereals. There has been one exception, though, the area for soyabean, a dry crop, which was introduced in the state in early 1980s, has expanded rapidly and it has become the most important crop in the state.

The productivity of irrigated crops has either declined or stagnated. Productivity of rice has been declining in one of the major rice producing districts of Balaghat while that of wheat has generally stagnated during the nineties and has even declined in some districts. Gram is the only exception among the irrigated crops whose productivity has risen. (GoM.P., 2000).

Notwithstanding the growing importance of some of the irrigated crops in the state, according to the M.P. Human Development Report, 1998, even if the irrigation potential from surface and groundwater sources was fully realised, over 55 per cent of the net sown area in the

7 Usually land-ownership in rain-fed regions is more equitable than in irrigated ones.

state would still remain dependent on uncertain rainfall. Thus development of dryland farming techniques is of utmost importance in the state.

the state, compared with 3 and 8 per cent of the country averages (Table 2.5). This pattern however reveals only partially the dynamics of access to land in the state. M.P. is the only state where the percentage of area irrigated increases with the farm-size (Chadha, Sen, and Sharma, 2004). Thus, while in general, the degree of underutilisation of land tends to rise with the increase in the farm-size, in M.P., this relationship is reversed.

2.4 Some Aspects of Rural Livelihood

Access to land has a crucial bearing on rural livelihoods. One key feature of the rural poverty to emerge consistently from household consumer expenditure surveys in the country is that the landless have the highest incidence of poverty. Though the percentage of landless households in M.P. was comparable to the all-India average in 1971-72 (around 9.5 per cent) it increased much faster in the subsequent two decades compared to the country as a whole (Table 2.5). However, in the category of households having access to land, the distribution of land appears to be more equitable in the state compared to the country as a whole⁷. For example, the share of area owned and operated by the bottom 50 per cent of the households is 6 and 13 per cent respectively in

In M.P., opportunities of livelihood are subject to great regional variations, which cut across spatial trends of distribution of natural resources. To a large extent, poverty in M.P. follows the pattern of distribution of scheduled tribes. The southern belt of M.P., that include dry, hard-rock regions of Jhabua, Barwani, and Dhar on one hand and the relatively wet forested areas of Dindori, Mandla, and Shahdol on the other, are characterised by both high proportion of tribal population and high incidence of poverty (FAO, 1998). This is due to the fact that scheduled tribe populations in India suffer from various forms of human

Table 2.5:
Some Key
Indicators of
Access to
Land

<i>Indicators / Years</i>	<i>M.P.</i>	<i>India</i>
<i>Per cent of Landless Households</i>		
1971-72	9.58	9.64
1991-92	15.19	11.24
<i>Share of Area Owned by the Bottom 50% Households</i>		
1971-72	7.98	3.86
1991-92	6.37	3.33
<i>Share of Area Operated by the Bottom 50% Households</i>		
1971-72	14.57	11.74
1991-92	13.15	8.26
<i>Share of ST in:</i>		
Rural Population (1991)	28.85	10.01
Land (1992)	23.78	11.72
<i>Share if Non SC/ST in</i>		
Rural Population (1991)	56.28	72.08
Land (1992)	63.28	77.94

Source: Adopted from Chadha, Sen, and Sharma (2004)

deprivation other than the lack of material well being (see Table 2.6). While the tribal population accounts for only about 8 per cent of the total population, it constitutes 40 per cent of the displaced population (FAO, 1998)⁸.

Source: Radhakrishna and Ray, 2005, Table 3.4,

Table 2.6: Distribution of Persons below Poverty Line among Social Groups in Rural areas– M.P. and India

State / India	Year	Social Groups (%)			
		ST	SC	Other	All
Madhya Pradesh	1993-94	41.4	19.5	39.2	100.0
	1999-2000	42.9	16.0	41.0	100.0
India	1993-94	14.8	27.6	57.6	100.0
	1999-2000	17.5	27.3	55.2	100.0

By the end of the 1990s, the state had 37.2 per cent of its rural population living in poverty. The poverty ratio however, had declined marginally from 40.7 per cent during 1993-94 (Radhakrishna and Ray, 2005). During this period the relative rank of the state had improved vis-à-vis other major states in the country (Dreze and Deaton, 2002). What is more important to note is the inter-region disparity within the state. The estimates for poverty among the NSSO regions suggest that the incidence of rural poverty (during 1993-94) ranged from 15 per cent in Northern Region to 44.5 per cent in Central M.P. and 64.6 per cent in South Western region (Shah, 2005, Table 3). To a large extent, these intra-state variations in rural poverty could be attributed to the endowment as well as use of natural resources in state.

Both caste and ethnicity determine ownership of land and thus economic status. M.P. has a very high concentration of scheduled tribe population compared to other large states of India. While the share of land owned by the STs in India is marginally higher than their share in total population (12 and 9 per cent respectively), the proportion of land owned by the same group is substantially lower than their share in total population in the state (24 and

29 per cent respectively). This indicates that probably both in terms of average size of land owned and incidence of landlessness, ST groups are more disadvantaged than the general population of the state on the one hand and their counterparts in the other states of India, on the other.

Many districts characterised by a high incidence of poverty witness seasonal migration to other districts and to neighbouring states. M.P. Government reports suggest that poverty has worsened in the regions where natural resource degradation is high (GoM.P. 1998; 2000). The broad issues regarding natural resource degradation need to be contextualised in the light of the interface between natural resource endowment as well as use and poverty scenarios across districts/ regions in the state (Shah, 2005, p.25).

2.5 Natural Resource Degradation

Rural livelihoods are crucially interlinked with natural resources, and this relationship is probably more deep-rooted for the state of M.P. The dependence on technology in the state is appreciably less as evident from lower coverage of irrigation and chemical fertiliser use,

8 M.P. has a large number of people, especially tribal population, who have been ousted from their homes and villages because land is required for a development project.

9 The Himalayan states like Uttaranchal and Himachal Pradesh and all northeastern states, are exposed to high incidence of degradation due to high slopes, snow cover, and rocky outcrops.

for instance. Thus, the deterioration of quality and status of natural resources arguably affect the welfare of rural population more acutely than in most other states. Also, the linkages between the three natural resources of land, water and forest are more explicitly visible in the state.

The share of wasteland in the total geographical area in the state is only marginally higher than the all-India average (Table 2.7). However, other states that have a higher share of wasteland compared to the country average are located either in the Himalayan Region⁹ or in the Thar desert, and are exposed to severer natural processes of degradation. In M.P., man-made degradation is much higher compared to the country as a whole. For example, the single major component of wasteland in the state is uncultivated wasteland with scrub (47 per cent of total wasteland as opposed to 27 per cent in the country) and this category of wasteland usually expands as a result of lack of proper land management measures in agriculture and allied sectors. A more positive way of looking at this problem is that with well-directed natural resource management, this extensive wasteland could offer livelihood opportunities to the large number of landless and land-poor households in the state (with the revival of state-institutions within the framework of land reform measures). Further, more than 9 per cent of the total geographical area of the state is

infested with gullies and ravines – one-third of them classified as deep. Large areas of degraded land in the catchment areas cause substantial siltation of reservoirs, watercourses, and irrigation canals.

Rain-fed conditions and associated low productivity place unnecessary pressure on land. In the state, the net area sown has increased by more than 25 per cent since the mid-fifties. This has come at the cost of encroachment on common property resources (CPRs). The area under CPRs has come down by 40 per cent adversely affecting the rural poor and increasing pressure on forests (GoMP., 2000). According to the NRSA estimates in 2005, more than 7 per cent of area under agriculture is on notified forest area. Further, they also estimate that the rest of the forested area in the state is dominated by scrubs. Though the data generated by the NRSA and those by the Ministry of Agriculture (MoA) are strictly not comparable, the degraded forest area as reported by the former source is actually marginally larger than the total forest area in the state shown in the MoA land-use statistics.

Using the Guidelines for Watershed Development prepared by Hanumantha Rao committee, M.P. has six districts under Drought Prone Areas Programme (DPAP) and 16 districts under Integrated Wastelands Development Programme (IWDP). The areas covered in these districts constitute

Table 2.7: Indicators of Land Degradation (Per cent)

Indicators	M.P.	India
<i>Composition of Wasteland by Processes</i>		
Natural Processes	1.5	27.54
Natural and Man-made Processes	60.17	41.92
Man-made Processes	38.32	30.54
Total	100	100
<i>Per cent of Wasteland to Geographical Area</i>	18.53	17.45

Source: Computed from National Remote Sensing Agency (NRSA), 2005 as per methodology used in Chadha, Sen, and Sharma, 2004.

about 20 and 34 per cent of the total reported area in the state (Table 2.8). This of course, is an overestimation as the area identified for the two projects cover only a part of the total area in the district.

The area under degraded forests constitutes 29.32 per cent of the total wasteland in the state. Conceding that of the total wasteland in the state, degraded forest is the third largest category (next only to land with/without scrub and barren rocky area), this may have special significance vis-à-vis other two categories of wasteland noted above.

Competition for water resources within the agricultural sector has become severe over time as a result of the rapid increase in the use of groundwater for irrigation over the

last two decades¹⁰. The share of groundwater sources in the total irrigated area in 2000-01 in the state was more than 65 per cent. Groundwater exploitation for irrigation has caused widespread decline in the groundwater table and has led to severe conflicts between claims for domestic water supply on one hand, which draws heavily on groundwater (GoM.P., 1995a), and irrigation on the other. As per the Central Ground Water Board (CGWB), over a decade (between 1995 and 2005), high groundwater depletion (over 4 meters decline) is concentrated in the three major agro-climatic regions: the Grid Region in the North¹¹, Malwa Plateau in the West (along with western parts of the Vindhya Plateau)¹², and the West Nimar Plains, to some extent (Figure 2.3).

10 The irrigated area in M.P. has increased more than three-fold since 1986 reaching 5.4 million ha. in 2000.

11 The depletion has taken place in Bhind, Morena, Gwalior from this region and also in the adjoining Datia district from the Bundelkhand region.

12 Ujjain, Indore, Dewas, Rajgarh, and Shajapur districts are severely affected in this region.

DPAP			
District	Area*	District	Area
Betul	1004.3	Khargaon	1345.2
Dhar	815.3	Shahdol	1402.8
Jhabua	677.8	Sidhi	1052.6
Total Area		6298	
IWDP			
District	Area	District	Area
Bhind	445.9	Ratlam	486.1
Raisen	846.6	Guna	1106.4
Narsingpur	513.3	Datia	269.1
Indore	389.8	Vidisha	737.1
Shajapur	619.5	Dewas	702
Ujjain	609.1	Rewa	631.4
Mandsaur	979.1	Tikamgarh	504.8
Rajgarh	615.3	Chhindwara	1181.5
Total Area		10637	
Total Area of M.P.		30824.5	
Area under DPAP-districts as % Total Area		20.43 %	
Area under IWDP-districts as % of Total Area		34.51 %	

Table 2.8: Share of Area under Districts covered by DPAP and IWDP in M.P. (2001)

**Figures in '000 ha
Source: Compiled from various district offices of RGMWM*

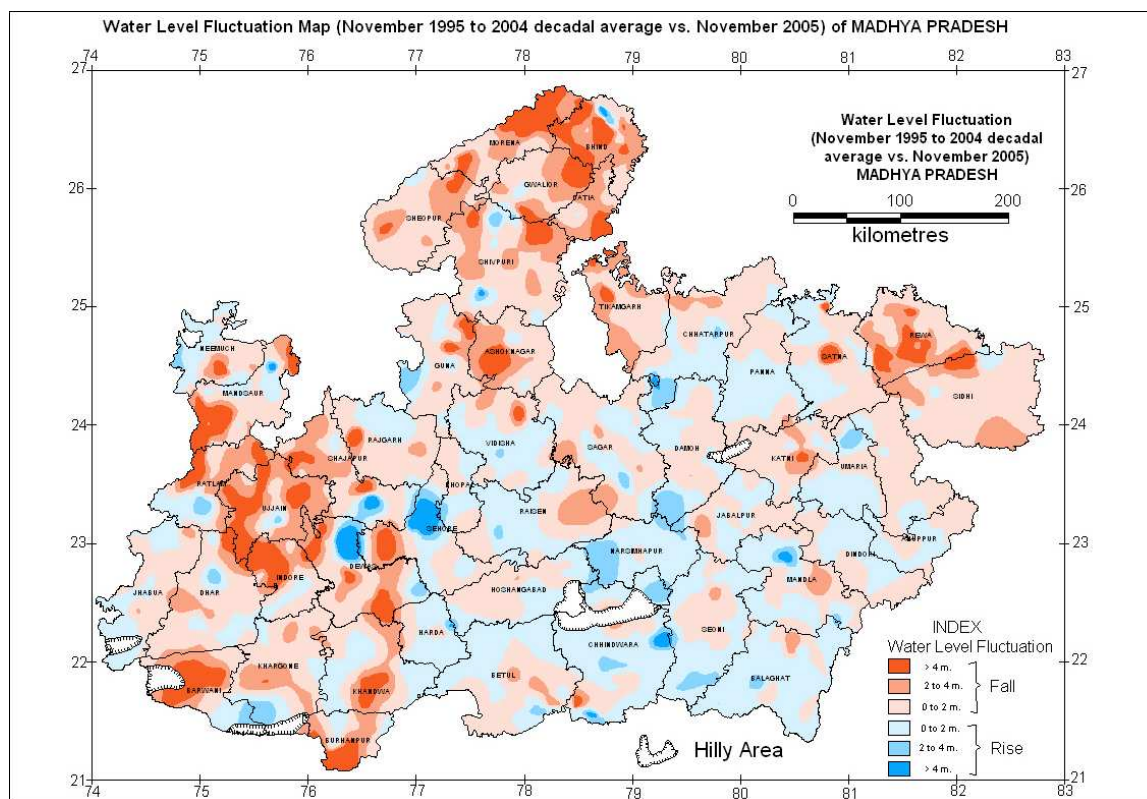


Figure 2.3

Source: CGWB, North Central Region, Bhopal (<http://cgwbmp.nic.in/maps/GWmonitoring>)

Most of the affected areas in the Grid region are characterised by a relatively large irrigation extent depending heavily on groundwater. Though the affected districts in the Malwa Plains do not have a very high coverage of irrigation facilities, the growth of groundwater irrigation has been extremely rapid in this area. While the CGWB data indicate that the groundwater potential is much higher in eastern parts of the state, the major development of groundwater irrigation has taken place in western parts in the last two decades.

At the same time, the performance of surface water irrigation schemes has been poor, with only about half of the created irrigation potential utilised, due largely to insufficient operation and maintenance (O&M). Most of the development of surface water irrigation in the form of canal irrigation has taken place in the eastern districts of Balaghat, Harda, Hoshangabad, and Seoni. Since canal irrigation is concentrated in certain areas, there are only three

districts – Harda, Hoshangabad, and Seoni – where conjunctive practices have developed.

The area of surface water bodies is about 4 lakh hectares, out of which almost one-third is made up by village ponds, located mainly in eastern parts of the state. Large irrigation bodies are located in a few districts. The development of water-bodies and minor irrigation (surface) has slowed down during the last decade (GoMP, 2000) .

Ideally, this backdrop should help designing and implementing watershed development programmes in M.P.. In what follows, we identify scope as well as challenges in the specific context of the state.

2.6 Augmentation and Supply of Drinking Water

Scarcity of drinking water has become an ever-increasing problem in urban as well as rural areas

(Khanna and Khanna, 2006). Many of the traditional water sources have become seasonal. Although, 60 per cent of the villages in the state are rated as 'Fully Covered' by source of drinking water, they are not so in reality (Das, 2006). At the same time, communities are not able to cope with the situation despite large-scale efforts made by the State Government under massive programmes such as *Pani Roko Abhiyan* and more recently, *Jal-Abhishek Abhiyan*. These programmes, by and large, are complementary to watershed projects; they are expected to cover areas which are not priority areas of watershed projects undertaken by RGMWM. While this is a useful strategy in the initial phase, what is essential is to integrate the two sets of interventions. This would call for augmentation and supply of drinking water as an essential precondition for implementing WDPs—something that a number of agencies, and even the Partasarathy committee, have been repeatedly pleading for.

2.7 Contextualising Watershed Development in M.P.: Scope and Challenges

1. Given that average land holding size is relatively large in M.P., and that rainfall profile is better than that of several arid and semi-arid regions in the country, watershed development may bring relatively larger benefits in terms of productivity-enhancement per household. With a relatively low concentration ratio of land the benefits may also be distributed more equitably. But this needs to be ensured while designing the watershed intervention and also the mechanism for sharing of benefits households.

2. The non-viability of the small and marginal farms due to lack of

irrigation facilities, along with high incidence of out-migration, may lead to a situation of reverse tenancy and/or neglect (if not abandonment) of crop land. This, in turn may lead to further degradation.

3. Given that a large proportion of wasteland in the state is constituted by degraded forests, and there is an increasing competition between agricultural lands on the one hand and pastures and forests on the other, development of CPLRs including forests, deserves special attention. The diversion of forests as well as community pastures towards cropland is likely to be aggravated in the wake of a relatively faster rate of population growth (particularly in rural areas) in the state, as compared to all-India figures.

4. There is a correspondence between the concentration of tribal population and incidence of poverty. Also, the spatial convergence between distribution of tribal population and forest resources, as expected, is high in the state. It is thus imperative that benefits from watershed development is tilted in favour of the districts having high concentration of tribal population provided forest resources are brought within the fold of NRM conservation efforts.

5. Given the more or less subsistence nature of agriculture in large parts of the state, promoting sustainable farming practices is more feasible than in the areas where agriculture has already reached higher level of *chemicalisation* and commercialisation.

6. Though irrigation is expanding rapidly, given its limited irrigation potential in the state, the prominence of rain-fed farming is going to remain important even in future. In this regard, it is encouraging to note that the dry crops, for example coarse cereals and oilseeds, are performing better in terms of relative productivity levels in the state.

7. Since the eastern districts have more forest land and greater water resources, and at the same time limited cultivable land, the region needs to be developed keeping in view its core agro-ecological character, which is mainly based on plantations, pastures, and forest conservation. On the other hand, the western districts with their main focus on crop cultivation have already exploited significant amount of groundwater. Watershed development should help in shifting irrigation-intensive agriculture to a more diversified dryland farming system, with special role for the livestock component.

8. Given the reasonably more favourable rainfall as well as topography, rainwater harvesting may play important role in

augmenting and supplying water for drinking and domestic use. The state has already made a major headway through *Jal-Abhishek Abhiyan*. The link between WDPs and *Jal-Abhishek Abhiyan* needs to be strengthened.

9. M.P. is one of the high priority states for a number of centrally sponsored schemes that focus on enhancing agricultural productivity and reducing rural poverty. These schemes (including watershed development) need to be planned, designed, and implemented in co-ordination with each other.

These are some of the special features that need to be considered while embarking upon the next stage of watershed development in the state.

Coverage and Spatial Distribution of Watershed Programmes

This chapter presents a snapshot of various watershed programmes that have been implemented across Madhya Pradesh. The main idea is to identify pockets of concentration as well as important gaps in implementation in the context of agro-ecological and socio-economic characteristics of districts and regions in the state. The focus is mainly on two major programmes viz. RGMWM and NWDPR (no ongoing watershed projects are included). In that sense the database is somewhat incomplete. Nevertheless, insofar as the analysis would help evolving a larger picture of watershed programmes, it would provide an indication of how far the spatial distribution of the programmes has been in consonance with some of the important characteristics noted previously.

3.1 WDPs in Madhya Pradesh: A Synoptic View

As noted in Chapter 1, M.P. is better endowed with natural resources compared to other predominantly dry-land states, viz. Rajasthan, Gujarat, and Maharashtra located in western India. A summary of M.P.'s natural resources follows:

Three out of 11 regions (consisting of 12 entire districts and parts of other four) are characterised by sub-humid

conditions with average annual rainfall exceeding 1000 mm.

A substantial part of the area constitutes upper catchments where checking soil-water erosion is important for sustaining and improving productivity of soil.

With forests covering nearly 30 per cent of the land area, and a substantial proportion of cultivated land having been converted from erstwhile forest area, the natural productivity is fairly good in most parts of the region where poor, especially tribal communities, are located.

Besides these, there are two other factors that may help watershed development in the state.

- (i) Relatively low level of commercialisation of agriculture, especially with respect to use of chemical inputs. This may make it easy to promote sustainable farm practices through watershed programmes.
- (ii) Noteworthy achievements in strengthening decentralised governance through reforms in the *panchayati raj* system.

Given the scope, the Government of M.P. recognised the need to harness its natural resources for achieving the dual goals of environmental regeneration and poverty reduction. M.P. is perhaps the only state in the country to have set up a special mission (RGMWM) for implementing watershed development projects (funded through the MoRD).

Besides RGMWM, which has the distinction of implementing the largest number of watershed projects in the state, there are other agencies and programmes that have made a significant contribution towards watershed development. The other major programme is NWDPR, which till recently, had covered less than one third of the area covered by RGMWM. The relatively higher

coverage of WDPs by RGMWM in the state is due to the fact that as many as 25 districts have been identified for programmes like DPAP and IWDP while Employment Assurance Scheme (EAS) was also implemented in 19 districts. Most of them covered relatively backward districts in the state. According to available data, EAS had a fairly large share in the total area covered by RGMWM, wherein the area covered under EAS accounted for 48 per cent of the total treated area by RGMWM; followed by DPAP (37 per cent) and then IWDP (15 per cent).

While consolidated information of the various watershed projects in M.P. is not readily available, data presented in Table 3.1 may give a broad picture of the achievements under the major watershed programmes being implemented in the state.

Table 3.1:
Area Treated
Under
Different
Watershed
Programmes

	WDP	Area Covered (in 000's ha.)
1	RGMWM	3309.30*
2	NWDPRA (up to 10 th Plan)	988.77
	Sub Total	4298.07 (13.9%)
3	River Valley Projects Saturated	710.60 (2.3%)
4	Total	5008.67 (16.25%)

* Note: The estimates include area under micro watersheds taken up till 2005 (Hariyal-II).
Source: Compiled from various official sources

As presented in Table 3.1, more than 5 million hectares of land, accounting for more than 16 per cent of the total area of the state, was covered under RGMWM and NWDPRA (This however does not incorporate information of three districts under RGMWM, viz. Dindori, Sheopur, and Tikamgadh). This is not a mean achievement considering that the major impetus for WDPs has come only after 1995.

Besides this, a large area (0.71 million ha.) has been covered under River Valley Projects (RVPs) in five catchments in the state. The priority is being accorded on the basis of All

India Soil and Land Use Survey (AISLUS).

The other programmes for which we do not have information are Council for Advancement of People's Action & Rural Technology (CAPART) supported projects (in 11 districts), and projects funded by donor agencies such as Department for International Development (DFID), European Commission (EC), and India-Canada Environment Facility (ICEF). Lastly, the Forest Department undertakes soil water conservation treatment on degraded forest area that constitutes major part of the upper catchments of watersheds located in the state.

The three projects viz. RGMWM, NWDPRA, and RVP have been, by and large, implemented in a manner that avoids duplication of efforts, each one of them catering to specific areas on priority basis. However, it is likely that there is not much of synergy between various programmes because first, the projects are being planned within the context of departmental priorities; and secondly, the unit for planning is generally milli and/or micro watershed rather than a stream or river basin.

In absence of synergy, the actual achievements of the programmes may have remained sub-optimal, notwithstanding the effective implementation of the micro/milli-watershed projects. It is therefore likely that the impact of the various programmes may have remained localised; and learning from one another may have remained limited. A more holistic picture therefore is needed to address the above limitations.

3.2 Spatial Distribution of WDPs

Watershed programmes are concentrated more in the western and eastern districts than in the north-central districts. About 40 per cent of Jhabua district is covered by

watershed programme, while several other districts have less than 5 per cent of their geographical area covered (Table 3.2).

Note: NA-Information not available for the newly demarcated districts.

Source: Compiled from various official sources

Table 3.2: Area Treated under RGMWM and NWDPR

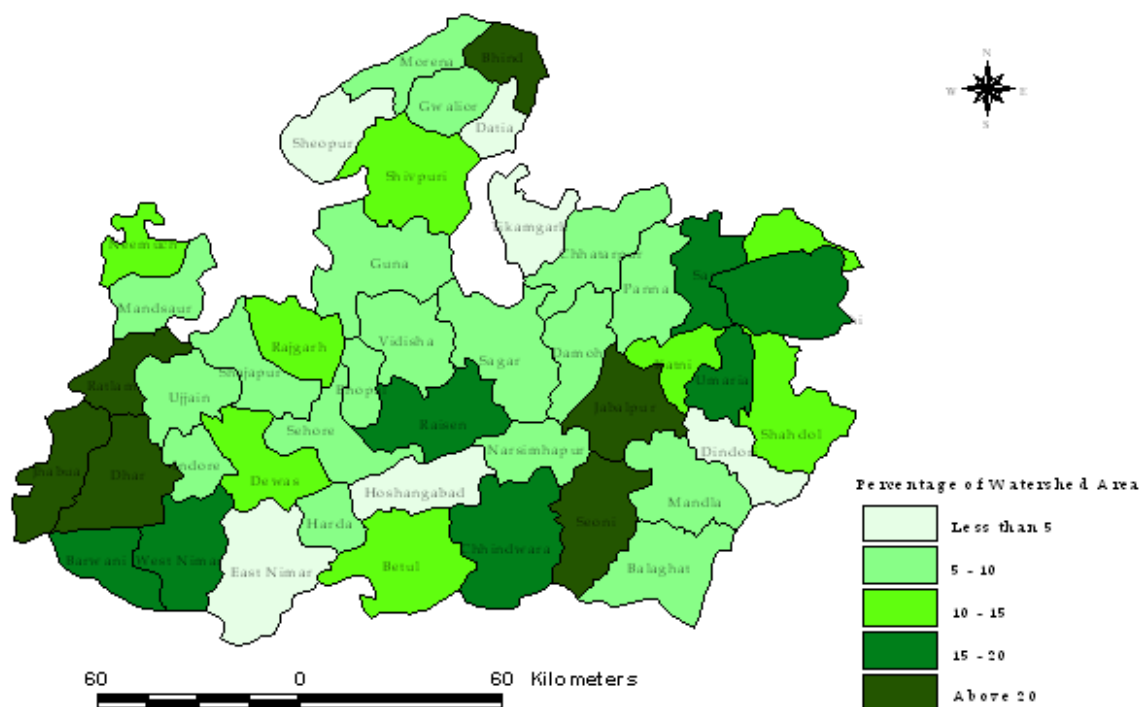
Name of the Districts	(NWDPR 8 th , 9 th , 10 th Plan) Area	RGMWM (All Schemes) Area	NWDPR % to Geo. Area	RGMWM % to Geo. Area	RGMWM & NWDPR Area % to Geo.
Jabalpur	38195	68458	7.33	13.14	20.47
Katni	12431	91990	2.51	18.58	21.10
Balaghat	22976	45321	2.49	4.91	7.40
Chhindwara	38792	206605	3.28	17.49	20.77
Seoni	26991	191122	3.08	21.82	24.90
Dindori	13764	NA	1.84	NA	1.84
Narshinhpur	25995	33417	5.06	6.51	11.57
Damoh	20873	43937	2.86	6.01	8.87
Panna	17080	51000	2.39	7.15	9.54
Tikamgarh	6984	NA	1.38	NA	1.38
Chhatarpur	25284	71140	2.91	8.19	11.10
Rewa	24360	62951	3.86	9.97	13.83
Sidhi	17817	170445	1.69	16.19	17.89
Satana	41983	105953	5.60	14.12	19.72
Umariya	8169	52147	2.00	12.79	14.80
Jhabua	30028	238694	4.43	35.22	39.65
Badwani	7208	95560	1.33	17.62	18.95
Mandsaur	37562	31186	6.79	5.63	12.42
Neemuch	13647	36740	3.21	8.63	11.84
Ratlam	26979	122216	5.55	25.14	30.69
Dewas	22943	72281	3.27	10.30	13.56
Seopur	3317	NA	0.50	NA	0.50
Gwalior	9332	27248	2.05	5.98	8.02
Shivpuri	16767	128938	1.63	12.55	14.18
Guna	34371	65113	3.11	5.89	8.99
Datia	4571	5000	1.70	1.86	3.56
Sagar	31674	47733	3.09	4.66	7.75
Raisen	29756	124239	3.51	14.68	18.19
Betul	34060	93761	3.39	9.34	12.73
Mandla	34412	70103	5.93	12.09	18.02
Shahdol + Anuppur	29555	142509	2.97	14.32	17.29
Indore	32428	24344	8.11	6.09	14.20
Dhar	19847	186323	2.43	22.85	25.29
Khargone	30557	131720	3.78	16.30	20.08

Table 3.2
contd...

Name of the Districts	(NWDPPRA 8 th , 9 th , 10th Plan) Area	RGMWM (All Schemes) Area	NWDPPRA % to Geo. Area	RGMWM % to Geo. Area	RGMWM & NWDPPRA Area % to Geo.
Khargone	30557	131720	3.78	16.30	20.08
Khandwa + Burhanpur	18798	42249	1.74	3.92	5.67
Ujjain	26952	40388	4.42	6.63	11.06
Shahjapur	38047	25010	6.14	4.04	10.18
Bhind	13546	114115	3.04	25.59	28.63
Bhopal	3143	11945	1.13	4.31	5.44
Sehore	22773	45091	3.46	6.85	10.32
Vidisha	29790	39149	4.04	5.31	9.35
Rajgarh	29885	63617	4.86	10.34	15.20
Harda	1869	19724	0.56	5.92	6.48
Morena	9842	43888	1.97	8.80	10.77
Hosangabad	3421	25935	0.51	3.87	4.38
M. P. State	988774	3309305	3.21	10.74	13.94

Fig 3.1

SHARE OF WATERSHED AREA UNDER TREATMENT BY 10TH PLAN



WDPs under RGMWM have been concentrated mainly in twelve districts – Bhind, Chhindwara, Dhar, Jhabua, Khargone, Ratlam, Raisen, Satna, Shahdol, Sheoni, Shivapuri and Sidhi, constituting about 56 per

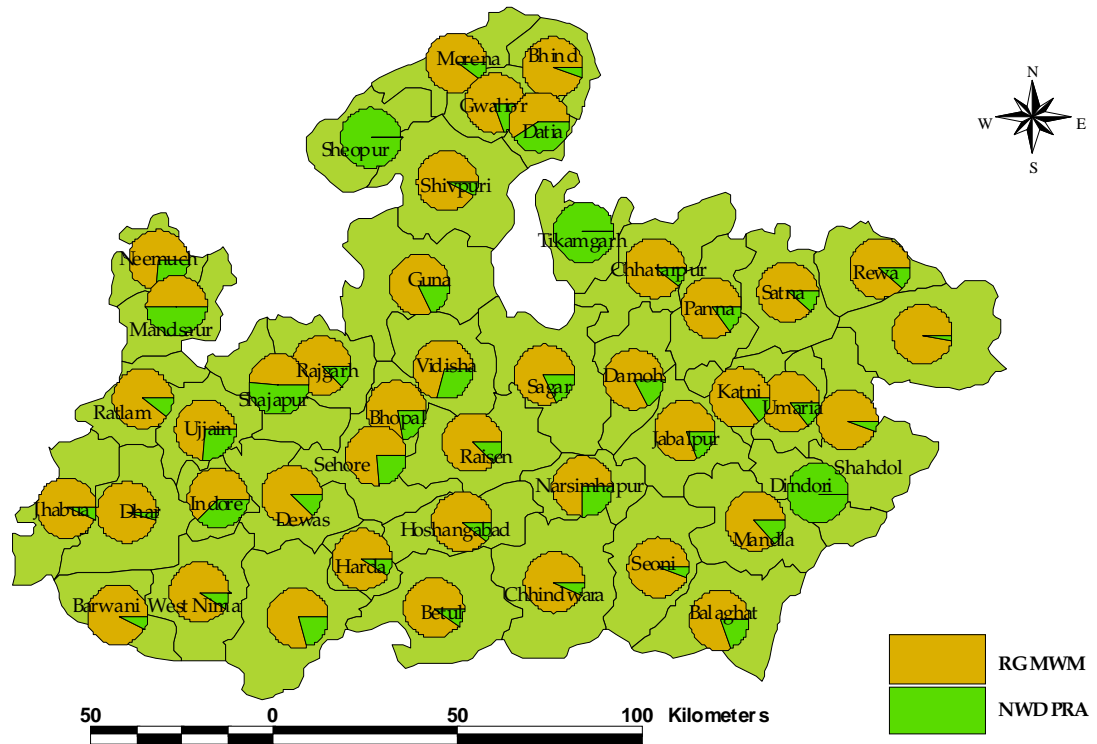
cent of the total area covered under the programme (Figure 3.2). These districts have more than one lakh hectare of treated land under the programme. NWDPPRA, on the other hand, has a higher concentration

concentrated in eleven districts – Betul, Chhindwara, Guna, Indore, Jabalpur, Jhabua, Khargaon, Mandla, Mandasaur, Satna, and Shajapur – accounting for 39 per cent of the total treated area under the programme (Figure 3.2). Each of these districts has more than 30,000

them, especially at district level. Therefore the issue of prioritisation followed within the areas earmarked for each of these programmes becomes relevant.

Ideally one should map spatial concentration of WDPs at taluka/

WATERSHED COVERAGE IN MADHYA PRADESH Fig 3.2
RELATIVE SHARE OF NWD PRA & RGMWM



ha. of treated area under NWD PRA. Together there are 19 districts having large areas under the two major watershed programmes with four districts appearing in both the lists, viz. Chhindwara, Jhabua, Khargaon, and Satana.

3.3 Complementarity and Prioritisation

The three major watershed programmes viz., RGMWM, NWD PRA, and RVP and the ones implemented by the Forest Department have more or less clearly demarcated areas of operation. There is, of course, some element of overlap in areas among

block level since, under RGMWM, areas for EAS and DPAP are identified at taluka level. Similarly, areas earmarked for RVP and Forest Department are also more clearly defined at taluka level than at district level. Nevertheless, in the absence of more disaggregated data, we have tried to gauge the extent of concentration and its interface with various categories of priority areas at district level.

Spatial Concentration of WDPs

As far as concentration in terms of proportion of geographical area covered is concerned, 10 out of the 45 districts have more than 15 per

Table 3.3

Source: Same as Table 3.2

cent of the total area treated under the two major watershed programmes; other districts have 10-15 per cent of area treated (Table 3.3).

Strangely, Satna is not covered under any of the four categories of prioritisation. In fact, only three districts, viz. Jhabua, Dhar and Raisen, are included in the list of 14

	Districts (by Watershed Coverage)	Share of Area under WDP to total Geo. Area	Title of the Programme			
			EAS	DPAP	IWDP	Most Backward Districts identified for implementation of National Food for Work
	Above 15 %	<i>(in %)</i>				
1	Jhabua	39.77	✓	✓		✓
2	Ratlam	30.67	✓		✓	
3	Bhind	28.67			✓	
4	Dhar	25.16	✓	✓		✓
5	Seoni	24.92	✓			
6	Chhindwara	20.71	✓		✓	
7	Satna	19.93				
8	Raisen	18.14			✓	
9	Sidhi	18.12	✓	✓		✓
10	Rajgarh	15.17			✓	
	<i>10 - 15 %</i>					
1	Indore	14.82			✓	
2	Shivpuri	14.32				✓
3	Rewa	13.89			✓	
4	Dewas	13.59	✓		✓	
5	Betul	12.68	✓	✓		✓
6	Shahdol	12.2	✓	✓		✓
7	Khargone	12.03	✓	✓		✓
8	Narsimhapur	11.57			✓	
9	Chhatarpur	11.17				✓
10	Ujjain	11.04			✓	
11	Jabalpur	10.53	✓			
12	Sehore	10.34				
13	Shajapur	10.21			✓	

Out of 10 districts with higher degree of concentration (above 15 per cent), six are covered by the EAS, and five under IWDP. (There is an overlap in the case of Ratlam and Chhindwara.)

districts from the state, forming a part of the 150 most backward districts in the country. If we consider the next degree of concentration, we find that 11 out of

23 districts are covered in each of the two categories viz. EAS and IWDP. Of the remaining 12 districts, 10 are covered by at least one of the four categories of prioritisation. This leaves Chhatarpur and Sehore, which are not covered in any of the four categories, like Satna.

Complementarity between RGMWM and NWDPR

To understand whether the two major projects have worked in complementary or overlapping manner, the top and bottom ten districts of the state are listed in Table 3.4 (WDPs, which were included in the Tenth Plan, are not taken into account due to unavailability of data). The proportion of treated area in the total geographical area of the district has been taken as the criterion for putting districts in the top or bottom tens. Three districts (Mandsaur, Sidhi and Shivpuri) figure in the top ten of one programme and bottom ten of the other programme, implying that the two programmes complement each other. In all there are 33 (instead of 40) districts in the four categories presented in Table 3.4. Only seven districts are found to be the same (three in the top list and four in the bottom list) across the two programmes.

Prioritisation:

The issue of prioritisation has attracted special attention especially, in the case of watershed projects supported by the MoRD. The Guidelines prepared in 1994-95, as noted earlier, had identified districts/ talukas to be covered under each of the four major schemes viz; EAS, DPAP, IWDP, and DDP. For NWDPR the major criterion is extent of irrigation with a cut-off of 30 per cent or less. Given the fact that WDP is a multi-functional programme with multiple objectives, the criteria used for identifying the priority areas consist of both biophysical as well as socio-economic indicators. For instance, whereas the criteria used for DPAP, IWDP, and DDP are mainly bio-physical in nature, that for EAS and to an extent for NWDPR are based on socio-economic deprivation or backwardness. Balancing these two sets of concerns however, would necessitate that the flow of funds under the two sets of schemes (i.e. DPAP and IWDP on one hand and EAS and NWDPR on the other) are in proportion of the area covered by bio-physical and socio-economic deprivation. It is difficult to gauge the relative magnitude of the total funds allocated to these two sets of schemes; also, the EAS has now been discontinued and/or replaced by some other schemes having more

Table 3.4:
Top and Bottom Ten Districts according to Area Coverage under NWDPR and RGMWM

Top Ten districts		Bottom Ten Districts	
NWDPR	RGMWM	NWDPR	RGMWM
Mandsaur	Jhabua	Morena	Tikamgarh
Vidisha	Bhind	Bhopal	Datia
Ujjain	Ratlam	Tikamgarh	Mandsaur
Jhabua	Dhar	Shivpuri	Morena
Rajgarh	Seoni	Khandwa + Burhanpur	Khandwa + Burhanpur
Narshinhpur	Chhindwara	Sidhi	Shajapur
Ratlam	Sidhi	Gwalior	Bhopal
Satna	Raisen	Shahdol	Sagar
Shajapur	Satna	Khargone	Balaghat
Indore	Shivpuri	Datia	Gwalior

Note: Area coverage is determined in terms of proportion of watershed area to geographical area in the respective district. Source: Calculated from Table 3.2

specific agenda for employment/
livelihood support in the deprived/
backward districts.

Nevertheless it may still be useful to
map out the spread of WDPs across
the two sets of indicators used for
prioritisation. On a socio-economic
side, we have used economic
deprivation as yet another indicator
in addition to EAS and extent of
irrigation [Table 3.5].

*Source: Various project documents, Department
of Agriculture and M.P. Human Development
Report*

*# Figures in parentheses in IWDP column show
the percentage of wastelands in the district
@ Districts having higher proportion of irrigated
area and not in the list of 15 most deprived
districts have not been numbered.*

Table 3.5 Prioritisation of WDP
coverage by RGMWM and NWDPPRA

S. No. @	EAS (17)	DPAP (6)	IWDP # (16)	Least Irrigated (<15 %)	Index of Deprivation (Bottom 16)	Treated by RGMWM	Combined (RGMWM+ NWDPPRA)
EAS Districts							
1	Jhabua	*		13.2	*	35.22	39.65
2	Dhar	*		17.4		22.85	25.29
3	Mandla			3.9	*	12.09	18.02
4	Sidhi	*		9.0		16.19	17.89
5	Shahdol	*		5.6	*	14.32	17.29
6	Rajgarh		* (43.6)	17.3	*	10.43	15.20
7	Balaghat			37.6		4.91	7.40
8	Seoni			13.7		21.82	24.90
9	Chhindawada		*	13.5		17.49	20.77
10	Jabalpur-Katani			25.0 12.0		13.14 18.58	20.47 21.10
11	Ratlam		* (22.0)	17.5		25.14	30.69
12	Morena			53.0		8.80	10.77
13	Khandawa			17.0	*	3.92	5.67
14	Dewas		*	15.6		10.30	13.56
15	Betul	*		14.9	*	9.34	12.73
16	Hoshangabad			42.9		3.87	4.38
17	Khargon	*		17.6	*	16.30	20.08
Non-EAS Districts							
	Bhind		*	33.5		25.59	28.63
	Raisen		*	20.8		14.69	18.19
	Narasinghpur		*	28.3		6.51	11.57
	Indore		*	21.1		6.09	14.20
18	Shajapur		* (64.2)	19.0		4.04	10.18
	Ujjain		*	19.8		6.63	11.06
	Madanasaur		*	24.5		5.63	12.42
19	Guna		*	13.8	*	5.89	8.99
	Datia		*	38.0		1.86	3.56
20	Vidisha		*	14.9	*	5.31	9.35
21	Rewa		*	14.5	*	9.97	13.83
	Tikamgad		*	45.2	*	NA	NA
Districts not covered under EAS, DPAP and IWDP							
22	Panna			12.2	*	7.15	9.54
23	Chhatarpur			29.4	*	8.19	11.10
24	Stana			16.1	*	14.12	19.72
25	Shivpuri			28.	*	12.55	14.18
26	Damoh			15.9	*	6.01	8.87

The table presents list of districts covered under the three major projects viz; EAS, DPAP, and IWDP in M.P. It also lists the bottom 15 districts in terms of proportion of irrigated area, and also the 15 most deprived districts in the state (based on index of deprivation - one of the indices used for computing human development index). Whereas the 17 districts under EAS cover all the six districts under DPAP and also seven out of the 15 most deprived districts, the overlap between EAS and IWDP is limited. Only 12 out of 16 IWDP-districts are also covered under EAS. In all there were 34 out of 45 districts covered under the various categories listed in Table 3.5.

With a view of getting a more focused understanding on the issue of prioritisation, we have dropped WDP-districts that had relatively higher proportion of irrigated areas as compared to the state average. Also these districts did not constitute the 15 most deprived districts. In the process nine districts were dropped, leaving 26 districts for the analysis.

We tried to examine whether the 26 districts that 'deserve' special attention owing to one or more of the several criteria, have received priority as reflected in terms of proportion of treated area or not. Viewing from this angle, it is observed that 11 out of 26 districts had less than 14 per cent of land covered under WDP-treatment taking the two projects together (data isn't available for Tikamgarh). The cut-off of 14 percent refers to the proportion at the state level. However, at a closer look, one finds that four of these 11 districts have significantly higher proportion of irrigated area. This may be the reason for low coverage of watershed treatments in these districts.

This leaves seven out the 26 districts that have received low attention from WDPs despite being in the list of 'deserving' districts in term of multiple criteria used for identifying priorities. These districts are: Betul

(12.7 %), Shajapur (10.2 %), Guna (8.9 %), Vidisha (9.3 %), Panna (9.5 %), Damoh (8.8 %) and Khandwa (5.7 %). In fact the information for Khandwa is somewhat hazy, as the district is carved out from East Nimar, which was identified under EAS. In fact Shajapur emerges as the most noticeable outlier, where treated area is only about 10 per cent despite having nearly 64 percent of the area as wasteland.

On the other hand, Bhind (28.6%) and Raisen (18.2%) districts have relatively larger coverage of treated area. While both these are IWDP-districts, we have not considered them for the analysis since both the districts are not covered under the most deprived districts. Incidentally, Bhind has 33 per cent of irrigated area whereas Raisen has 21 per cent area under irrigation.

It is thus, important to examine the reasons for the apparent neglect of the seven districts listed above. An obvious implication is that the next round of selection may focus on the remaining districts i.e., those with less than 10 % of its area treated) within the four categories. The overall findings from the analyses bring out two important findings: First, there is a fair amount of complementarity in coverage of districts between the two major projects. And second, there is a fairly good correspondence between economic deprivation and concentration of watershed treatment. The findings are further substantiated through a more disaggregated analysis among at blocks within Jhabua district in Chapter V.

Thus the analyses suggest that whereas the initial selection of the districts does correspond with the four indicators of prioritisation at district level, the ground realities are difficult to gauge in the absence of taluka/block level data. It is thus imperative that such information be made available in the public domain with a view to having a better

assessment of prioritisation followed in selection of WDPs.

Conceding that WDPs have already covered fairly substantial area in certain districts (e.g., Jhabua with about 40% coverage), efforts may have to be consolidated to seek convergence across various watersheds and also across other natural resource development programmes being implemented in the district. This may indicate the need for going beyond the micro- or milli-watersheds as a unit of planning and various interventions aimed at

integrated approach for natural resource development and livelihood enhancement within a larger area. As noted in Chapter 1, this may open up a larger number of options for resource management, resource transfer, market linkages, population movements, and interface between surface and ground water regimes. These issues have been highlighted in the report on 'From Hariyali to Neeranchal' of the Parthasarathy committee. It is in this context that the issues of prioritisation and convergence become integrated.

Performance of Watershed Programmes in Madhya Pradesh

The Tenth Plan Approach Paper of Government of Madhya Pradesh identifies 'recognition of agency of people as central to development' as the single most significant departure in the state's vision of development compared to that of the country as a whole. It perceives the relationship between the state government and the people as one of a partnership based on sharing of rights and responsibilities. Thus decentralisation has been seen as the 'premise for development in the state', and particularly as a process that aids the creation of a partnership between people and government. The 'changed' vision of governance explicitly promises a greater accountability on the part of the government and increasing space for community action. The paper further notes that 'development is measurable not just through creation of assets and resources, but through the effectiveness of the process of empowering communities to make choices and participate in creating those assets and resources'.

Even as the broad directions provided in the Tenth Plan Approach Paper are conducive to effective implementation of the second generation watershed development programmes, particularly in terms of the participatory principles adopted in the new guidelines of 2001 and subsequently in the *Hariyali* Guidelines in 2003, the broad objectives of the Plan appear to be

conforming to the 'sectoral approach'. For example, it aims to reduce poverty through income and employment generation schemes, and these objective figures prominently as the function of the Department of Rural Development. Similarly, it endeavours to increase the agricultural production through both extensive and intensive cultivation practices. One of the important ways in which the department of agriculture seeks to extend area under agriculture is by reclamation of wasteland. The conservation of water resources figures prominently in the function of the Department of Irrigation along with its main objective of expanding irrigation facilities. The Department of Forest undertakes a large number of activities consistent with that of the objectives of watershed programmes, but these are essentially restricted to the notified forest areas¹³.

It cannot be argued that the above compartmentalisation of functions is only a feature of the Government of Madhya Pradesh since it has its roots in the formulation of the plans of the Central Government and is similar to those in most other states. The strong emphasis on turning activities into a participatory mode, however, is a feature that sets apart the M.P. State Plan from many others. It could be used as a base to bring about a more integrated approach in the development plans which is more consistent with the watershed approach.

Watershed Development Programmes in M.P. are carried out by a number of agencies, as they are in other states. The two primary departments that carry out watershed programmes in the state are the Department of Rural Development and the Department of Agriculture. The former undertakes watershed programmes under DPAP and IWDP. Until the Ninth Plan, it took them up under the EAS¹⁴. The Department of Agriculture, as in

13 The activities include rural fuel wood plantation, area oriented fuel and fodder project, rehabilitation of degraded forests, soil and water conservation, compensatory afforestation and high-tech afforestation.

14 As per the guidelines of Ministry of Rural Development, Government of India, 50 per cent of the funds under this scheme were to be utilised for watershed programmes.

other states, carries out NWDPPRA. A cursory review of the Tenth Plan and its constituent annual plans of the state reveals that the watershed programme figures much more prominently in the plans of the Department of Rural Development under the RGMWM than in the plans of the Department of Agriculture.

of watershed programmes has been provided. The two ministries continue to harbour their biases which are manifested even more clearly in the state level. Here we attempt to look at the nature of the evolution of the programmes run under the MoRD from 1995 by comparing the stated objectives as provided in the different guidelines and try to contextualise this vis-à-vis the NWDPPRA guidelines of 2000. The purpose of this exercise is to create a basis for looking at the provisions made in the RGMWM in the context of Madhya Pradesh under the Department of Panchayat and Rural Development. It needs to be mentioned here that the Department of Agriculture in the state for the purposes of implementing NWDPPRA follows the guidelines provided at the Central level.

*Note: * with respect to both human and livestock population # special focus on increasing agricultural productivity @ the Common Guidelines, 2000, makes provisions for equitable sharing of resources with preferential treatment to the poor. Source: Gol, 1995; 2000; 2001; and 2003.*

4.1 Adaptation of Watershed Programmes in Madhya Pradesh

Though the stated objectives of any programme cannot be used as a yardstick for assessing the policy on which it is based, it does provide some indication of its thrust areas. Under the Common Guidelines for NWDPPRA and other watershed programmes undertaken by the MoRD, some path for convergence

Table 4.1: Comparison of Objectives of Watershed Programmes Undertaken by the Ministries of Rural Development and Agriculture

Stated Objectives	Department of Land Resource, MoRD			NWDPPRA, MoA, 2000
	1995 guidelines	2001 (Revised guidelines)	2003 (Hariyali Guidelines)	
Restoration of ecological balance	✓	✓	✓	✓
Conservation, development and use of natural resources	✓	✓	✓	✓#
Drought mitigation	✓	✓*	✓	
Employment generation and poverty alleviation	✓	✓	✓	✓
Community action to maintain assets	✓	✓	✓	
Simple, easy and affordable technological solutions using local knowledge	✓	✓	✓	
Attention to resource poor	✓	✓		✓
Equitable distribution of the benefits of land and water	✓	@		@
Site specific development		✓		
Stress on drinking water			✓	
Generating resources for <i>panchayats</i> through NRM			✓	
Reduction of disparity between irrigated and rain-fed areas				✓

It may be noted that the programmes can be more convergent or divergent in their spirit than their stated objectives convey. This exercise, nevertheless gives us a feel of the differences in thrusts over time and across programmes. Though by and large the MoRD has been consistent in terms of the objectives of the programmes run under its aegis a few changes have occurred over time (Table 4.1). It is easy to appreciate the rationale of common guidelines brought out by the Government of India from even a cursory look at Table 4.1. Though in spirit the watershed programmes undertaken by different ministries have sustaining livelihoods of the poor as an objective equitable distribution of benefits from land and water management activities is no longer an objective as per the 2001 guidelines. This does not necessarily mean that at the state level it becomes irrelevant as an objective since the 2001 guidelines makes allowance for the state government to implement the programmes as 'may be found suitable for local environment'. But given the fact that equity aspects, particularly with respect to access to incremental natural resources, have been one of the areas of failure in many watershed programmes, what the Central Government keeps in focus is of crucial importance.

Beginning with the formulation of the *Hariyaliguidelines*, no separate mention is made of the landless or the resource-poor, though the general objective of employment generation and poverty alleviation is retained. In these guidelines, there is a greater stress on improving the drinking water situation – a welcome addition to the list of objectives, given the severe competition for water for different purposes. Generating financial resources for the *panchayati raj* institutions through development and management of natural resources has become one of the explicitly stated objectives for WDPs in the *Hariyaliguidelines* for the first

time. Such resources can be generated either from additionally augmented water and/or from Common Property Land Resources (CPLRs). The latter seems to be a doubtful proposition on two counts. First, the evidence from WDP impact assessment by and large indicates that rejuvenation of common property resources has drawn a blank in most cases. Second, given the importance of village pastures and forests for the livelihood of the landless, additional competition for benefits generated from these resources could further weaken the possibility of the landless deriving gains from these programmes.

A comparison of the objectives given in the guidelines of the two ministries in 2000-2001 reveals that there exists a lot of commonality in the basic objectives of the two programmes. Restoration of ecological balance by strengthening the linkages between land, water, and vegetation is a common thrust. Similarly, conservation, development and sustainable use of natural resources are common goals. In this regard, the MoA primarily focuses on benefits from the crops and consequently aims to reduce disparities between the irrigated and rain-fed regions through improved performances in agriculture. The MoRD has probably a more broad-based focus.

a) Rajiv Gandhi Mission for Watershed Management

By creating a new institution of the Mission in the mid-nineties, the Government of M.P. sought to '*impart a sense of urgency to some of the unfinished tasks*', particularly which have crucial bearing on the lives of the common man (GoMP, 2003). WDPs form one of the five tasks carried out by the RGMWM; however the degree of importance accorded to the watershed programmes in the state is probably unparalleled among the states of India. The rationale for this emanates

15 The area of a watershed would depend, among other things, on the characteristics of the slope of an area.

from the understanding that rain-fed farming is crucially important for livelihood of the rural people. The state government recognises the potential of raising the living standards in rainfed farming areas by 'conserving the soil and water resources and optimising their use with a view to generating natural resource and increase agricultural productivity.' Given the poor employment prospects in the state, managing natural resources with a labour intensive strategy was considered a key objective. The watershed mission was an effort to 'unlock the physical (natural) and the human potential' of the state through 'people-centred activities', thus recognising the interconnectedness of the 'bio-physical and the social' through participation of the local community.

The objectives of RGMWM were in conformity with the central government guidelines for both the Ninth and the Tenth Plans. The Mission's articulation of the need to maximise *people's participation* stems from the vital purpose of making the scheme more effective and transparent. The key difference in the evolution of the central government and the Mission's thrusts is that while the former dilutes the equity principles in some sense over time, the Mission strengthens the same. The latter not only aims at sharing the benefits of

the programme, but also is committed to bringing about a more equitable distribution of the resources. It is not clear whether the equity principle is applicable to the stock or to the increment of resources. The mission documents are also somewhat unclear about the mechanisms to achieve equitable distribution of resources.

The issue of *scale of operation of watersheds* has been of concern to the researchers in the field. It is argued that first, a micro-watershed may be too small as a planning unit to efficiently capture the externality impacts (Joy and Paranjape, 2004). Secondly, given the vast variations in the topography in the country in general and in the state in particular, uniformly prescribing an average area of a watershed is probably not desirable¹⁵; it may induce the local implementers to deviate from the 'ridge to valley' principle.

Thus it needs to be noted that the centre and the state conceptualise *the planning unit* i.e., the watershed area, in distinctly different ways. The 1995 MoRD guidelines, based on the Hanumantha Rao Committee recommendations, stated that 'Watershed Development Programme in Drought Prone/ Desert/Non-forest wasteland areas will be implemented by taking up projects for development of watersheds of 500 hectares each

Table 4.2: Evolution of the Objectives of RGMWM

Source: GoMP (1995b)

Objectives	1995	2002
Augmentation, conservation and utilisation of soil and water	✓	✓
Drought mitigation	✓	✓
Develop repository of scientific and technological inputs for area specific planning	✓	✓
To restore ecological balance	✓	✓
To maximise peoples' participation in planning, implementation, and maintenance to make scheme more effective and transparent	✓	✓
To bring about equal distribution of resources and sharing of benefits to improve the disadvantaged communities		✓

(approximately) in every village in a phased manner.’ The 2001 guidelines by the same ministry, while not relaxing the actual norms, allowed for greater conceptual flexibility. To quote the 2001 guidelines,

“...the watershed approach is a project based, ridge to valley approach for in situ soil and water conservation, afforestation etc. Unit of development will be a watershed area of about 500 ha. each in watershed development projects. However, the actual area of a project may vary keeping in view the geographical location, the size of village etc.”

The RGMWM, in 1995, was cautious in accepting the 500 hectare norm of a micro-watershed verbatim. The Mission preferred to arrive at an optimal size for a planning unit even as it cautioned that the area of any watershed depends on many interrelated factors. It affirmed that ‘planning unit too small leads to problems in downward integration of schemes as the watershed cascades into the next unit, while a planning unit too large would tend to make the ground level plan too sketchy in its details’ (GoMP, 1995, p. 8). The Mission therefore suggested a planning unit of milli-watershed of 5,000 to 10,000 hectares as a base unit, which is then integrated downstream into the next plan unit of the sub-watershed of approximately 50,000 to 100,000 hectares. For execution of works, the Mission however tends to agree with the Gol guidelines and settles for units of 500 ha. each simply because it is only at this micro-scale that sufficient care can be given to the execution of the kind of works that are required in the farmers’ fields.

The Mission suggests *demarcation of three zones within each milli-watershed*: the recharge zone, the transition zone, and the discharge zone. The first zone with high gradients and greater susceptibility to

soil has been identified as the zone requiring the most intensive treatment (GoMP, 1995, p.9) ¹⁶.

There is thus an inbuilt principle of prioritisation within the milli-watershed in the Mission document of 1995, at least with respect to the intensity of work to be done. To some extent, this is consistent with the fund-allocation format of the central government, which allows for greater expenditure for an area with higher slopes. There is however, no mention about prior sequencing of micro watersheds located in the recharge zones, though this would have been a logical follow-up of demarcation of the three zones.

The Mission recognised that the *organisational multiplicity* working for watershed development is a hurdle in achieving an integrated approach. This is due to two reasons. First, the structure of the various departments legitimises their focusing on one or the other natural resource ¹⁷. Secondly, each agency works on a structure which is best suited to the ‘availability of resources and expertise’, which precludes the possibility of optimising the selection of structures keeping in view both the location and nature of the structure.

The Mission, at its very inception, pointed out the *futility of ‘prescriptive’ formats* handed down from the Centre given the importance of carrying out work to suit the topographic features of each watershed. It clearly recognises that the broad plans for the western hard rock, semi-arid regions have to be quite different from those in the relatively humid region dominated by limestone. The Mission points out that the groundwater conditions are extremely heterogeneous: whereas there is a high potential for trapping groundwater through artificial recharge structures in the Western region characterised by desaturated phreatic aquifers, the eastern region which on an average receives 140 cm. of rainfall, have more scope for

16 The recharge zone is an upstream region comprising lands with high gradients, the transition zone has gentler gradients, and the discharge zone has flat lands. The RGMWM recommends different kinds of activities for the three zones. Effective soil and water impeding structures and intensive catchment treatment is suggested for the first zone, in-situ moisture conservation is specified for the second zone, and efficient water-spreading techniques for the third zone.

17 ‘Typically all existing watershed plans with the agriculture department blank out all the forest land from their maps as untouchable areas even with the knowledge that these areas need critical treatment. The forest watershed plans are equally intractable with respect to the non-forest areas, no matter what the topographic realities may be. Similarly the geo-hydrologists... have little contribution to make to the terrestrial realities (GoMP, 1995b, p. 6).

18 Exploratory drills in Vindhya region suggest that there is scope for storing groundwater in some of the eastern districts which has the limestone in the Chhattisgarh plateau using water-spreading technology and injection wells.

19 Though the Hanumantha Rao Committee Report expresses concern about the lack of scientific database for watershed planning, the central government, in its subsequent guidelines has not made provisions for building one. The RGMWMM Documents of 1995 and 2002, remarkably, continue to give importance to building a repository of (digital and manual) database for watershed planning.

surface water storage¹⁸.

The *limitation of data available for scientific watershed planning* has been noted from the start and has led to an addition in the objectives of the mission, viz. to create a scientific database¹⁹. The mission thus has made provisions for preparing manual and digital watershed maps for all implementing agencies and line departments. The importance of generating thematic maps for the watershed pertaining to its geology, hydrology, land-use, topography, etc. has been recognised by the Mission at its very inception. The use of aerial photographs and satellite imageries has been suggested for updating the status of these maps.

The lack of *expertise, training, and motivation* is considered one of the weaker links in operationalising watershed projects in the state. The Mission has the provision for inviting consultants from NGOs and agricultural universities, and other experts for building better planning strategies; it has allocated 1 per cent of the total project cost for the purpose.

Some of the more recent changes (post-2002) undertaken either directly or indirectly under the institutional structure of RGMWMM have attempted to incorporate new aspects that minimise weaknesses and make missing elements good. An element of convergence has been brought about by bringing 18 districts – the districts that have received funds earmarked for the National Rural Employment Guarantee Scheme (NREGS) – of the state into the fold of the watershed programme. Major differences have come to the fore as a result of the convergence of funds; the convergence has enabled the state government to sidestep the *Hariyali* Guidelines. The MP government has appointed NGOs as PIAs and allocated Rs.8000/- per hectare for the programme as against Rs. 6500/- allowed under the

provisions of the *Hariyali* guidelines. Also, the allocation under the administrative head has been raised to 20 per cent to strengthen the training and community organisation component.

Kapil Dhara is a recent initiative that provides ‘functional irrigation source to proactive backward farmers with substantial operational rainfed landholdings in all NREGS district’. If the farmer belongs to a marginal social group, practices rain-fed agriculture, and has no source of irrigation, he is deemed “backward”. This scheme, however, is not available to small and marginal farmers as it is meant for farmers who have operational holding above 2 ha. Thus, while the principle of equity is applied to socially disadvantageous groups, it fails to make an impact on the economically disadvantageous groups.

A more recent drive towards promoting *jetropa* plantation may take care of the issue of treating CPLRs to some extent. This initiative proposes to treat not only 20 per cent of the wasteland in the state but also generate livelihood support at a later stage for the user groups of the plantation. It is not clear, however, whether the proposed plantation will be raised on private or common property wasteland.

The organisational structure of the Mission is in conformity with the MoRD as well as the Common Guidelines (Table 4.3).

<i>Level</i>	<i>Leading Official</i>	<i>Agency Responsible</i>	<i>Functions</i>	<i>Supporting Institutions</i>
State	Secretary, RGMWM (Mission Director)	Department of Panchayat and Rural Development	1. Information node 2. Facilitator for long term capacity building 3. Monitoring implementation	
District	Collector (Mission Leader)	Zila Panchayat	1. Implementing 2. Monitoring	1. Dist. Watershed Management Advisory Comm. (<i>Selection of watersheds</i>) 2. Technical Advisory Committee
Block *	Project Officer	Project Implementing Agency (PIA) and Watershed Development Team	1. Overseeing Action Plan 2. Action Research 3. Capacity Building 4. Aiding in execution of plan, record (activity and finance) maintenance	Project Coordinator (one for every 1500 ha.)
Micro-watershed/ village	Chairperson, Village Watershed Committee / Panch. GP	Village Watershed Committee and	1. Execution of Action Plan 2. Maintenance of Records 3. Disbursement of Fund for developmental Work	Community Based Organisations (CBOs) (UGs, SHGs, Women's Groups)
		Gram Panchayat #		<i>Vistarit Pani Roko Samiti</i> #

Table 4.3: Institutional Structure Adopted for RGMWM

** Usually one milli watershed is selected for every block in one plan period. However, due to incomplete work in many of these watersheds, many Ninth Plan milli-watersheds were taken up again in the Tenth Plan. # Post Hariyali Guidelines*

Source: Adopted from GoMP, 2003.

The concern for inadequate technical support since its inception gets mention in the Mission documents and has been attempted to be addressed by the provision of support to the Zilla (District) Parishad by the District Watershed Management Advisory Committee and the Technical Advisory Committee. This however, has become somewhat diluted under the *Hariyaliguidelines*, where responsibilities of the District Watershed Management Advisory

Committee, viz. selecting watersheds, sanctioning watershed action plans, and monitoring implementation have been entrusted to the Zilla Parishad. At the block level, the PIA is assisted by a multidisciplinary Watershed Development Team, which is appointed for the purpose of the watershed work. This consists of specialists from different line departments²⁰.

There has been a general

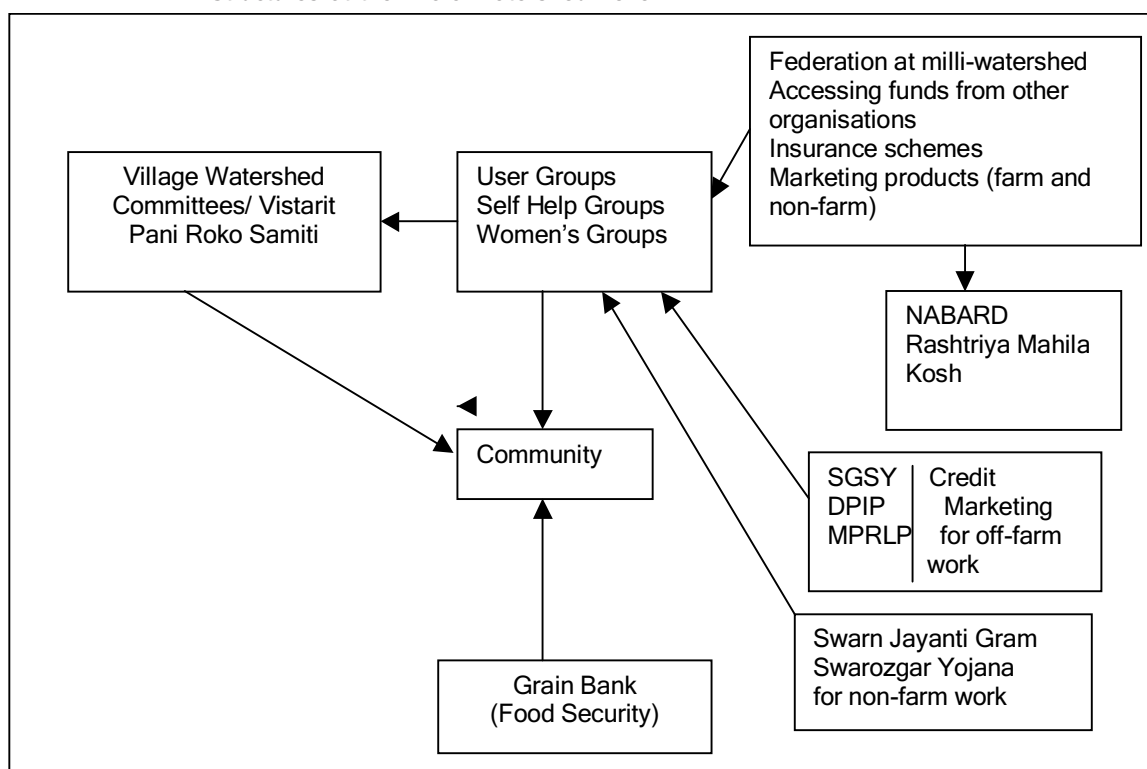
20 This team is composed of persons with background in Public Health Engineering, Forest, Agriculture, Horticulture, Sericulture, Animal Husbandry, etc. The representative from the forest department is mandatory if the selected watershed has area under forest land.

21 The Pani Roko Abhiyan (2001) (see the next section) and in the non-watershed villages Pani Roko Samiti are now expanded and renamed as the Vistarit Pani Roko Samiti. The latter has representation from all User Groups, Self Help Groups and Women's Thrift and Credit Societies.

apprehension that the increased importance of panchayats given in the *Hariyal* guidelines may do away with the Village Watershed Committees and bypass the interests of groups that are not powerful or vocal. The RGMWM has worked out some balance in the institutional structure, whereby an independent institution – Vistarit Pani Roko Samiti²¹ – will advise and guide the Gram Panchayat about the watershed work.

involved in the off-farm work like raising poultry, dairy industry, and managing fisheries and even non-farm traditional handicrafts (particularly in the tribal pockets) like working with terracotta or bell metal, and *chanderi* and *kosa* weaving. The off-farm work is further strengthened by parallel schemes like Swarnjayanti Gram Swarozgar Yojana (SGSY), District Poverty Initiatives Program (DPIP) and Madhya Pradesh Rural Livelihoods

Figure 4.1: Supporting Institutional Structures at the Micro-Watershed Level



The Community Based Organisations (CBOs) are set up to strengthen the linkages between natural resource management and livelihood. The user groups are the landowners who enjoy direct benefits of NRM activities. Other than soil and water conservation activities, such groups, which also include groups of small and marginal farmers, have also been linked with land-based activities like nursery development, horticulture, plantation, and floriculture. Self Help Groups (SHGs) of the land-poor classes have been

involved in the off-farm work like raising poultry, dairy industry, and managing fisheries and even non-farm traditional handicrafts (particularly in the tribal pockets) like working with terracotta or bell metal, and *chanderi* and *kosa* weaving. The off-farm work is further strengthened by parallel schemes like Swarnjayanti Gram Swarozgar Yojana (SGSY), District Poverty Initiatives Program (DPIP) and Madhya Pradesh Rural Livelihoods Project (MPRLP), while the marketing links for the non-farm category of work are facilitated by *Haat Bazar* or SGSY. Federations at the milli-watershed levels aid the SHGs to have greater access to credit for irrigation pumps, livestock, and equipment for non-farm activities. The federation also initiates insurance schemes to cover crop, assets, livestock, health, maternity, old age security measures, etc. Grain bank is another institution that aims to provide food security during lean

season to scheduled castes and scheduled tribes and other needy families on loan basis.

Thus it can be seen that the supporting institutional structure sanctioned by the provisions of the Mission has substantial scope to strengthen linkages between NRM and livelihood on the one hand and helping the landless who may not directly benefit from the NRM activities. The mission has also attempted to use the institutions created under watershed programmes to enhance the social quality of life in the rural areas, following the watershed plus approach of integrated development. Specifically, as per the mission document (GoMP 2003b), promotion of awareness about both natural and social environment through *panch tatwa*²² has been used as a criterion for selection of the watershed village within a milli-watershed.

There is also a provision for an external agency monitoring the Mission that uses yardsticks such as equitable sharing of resources, participation in planning and implementation, restoration of ecological benefits and socio-economic conditions of the village, optimisation of resource utilisation, etc. Evaluations are carried out once 45 per cent of the fund has been utilised to allow for mid-term corrections and the same is repeated at the end of the project. The guidelines for evaluation have been provided by the central government. What is innovative in the Mission's evaluation process is a system of social audit or *nirakh parikh* which is concurrent rapid participatory evaluation by beneficiaries. The multidimensional evaluation technique maps all the inputs and the outputs in a *khasra* (cadastral) map, validates the watershed committee's claims, and identifies the members and areas in the watershed that have been bypassed by the programme. This process of social auditing allows increased ownership of the

stakeholders in the project, transparency, and scope for further corrections even outside the parameters of the project.

b) Pani Roko Abhiyan

Pani Roko Abhiyan is a water-conservation and harvesting movement that was initiated after the widespread kharif drought in 2001. This movement was undertaken by the RGMWM in all non-watershed villages. These drought proofing efforts use simple, low-cost water harvesting methods and are undertaken by the community with its own resources with the aim of in-situ water conservation. Under the *Pani Roko Abhiyan*, old tanks and water harvesting structures have been renovated to make the efforts cost-effective. The following sources funded the water conservation movement:

1. Rural development programmes like EAS, SGRY, Tribal Development Fund, etc.
2. State and central finance commissions.
3. DFID funding routed through UNICEF

The two major initiatives that supported the action plans were water budgeting, i.e., assessment of the difference between water requirement and water availability, based on which the villagers made the plans. The water resource register, which is maintained by the villagers, contains relevant details about all surface and ground water sources in the village. Since the *Pani Roko Abhiyan* followed a disaster whose effects were etched in the minds of the people, this media-supported movement was said to be extremely successful. The *Abhiyan for water harvesting has now merged with the Panch Ja Abhiyan (Jal, Jan, Jangal, Jamin, and Janwar)*²³ incorporating other aspects of rural development. Though the watershed programmes run by the Panchayat and the Rural Development

²² The *panch tatwa* includes *kulaharbandi* (ban on felling trees), *charaibandhi* (ban on open grazing), *angutha bandi* (complete literacy), *nashabandi* (ban on liquor) and *nas bandi* (adoption of family planning measures).

²³ The *Panch Ja Abhiyan* aim at sustainable development encompassing *Jal* (water), *Jan* (Community), *Jangal* (forest), *Jamin* (land), and *Janwar* (livestock).

An Alternative Model

Lupin foundation, which is a voluntary organisation founded by a pharmaceutical firm started work in Madhya Pradesh (Raisen district) in 1988 along with Rajasthan, Maharashtra, and Uttanchal. It has adopted a total of 1600 villages in India and 60 in Madhya Pradesh. The foundation started work under the RGMWM framework, but withdrew later since it wanted to follow a different model. There were conflicts with the forest department and the Foundation was not allowed to work in the forest area while working with RGMWM funds. The organisation now independently undertakes natural resource management activities with its own fund and support from external (international) sources, which the organisation argues, gives them greater freedom.

The Lupin model is different from RGMWM framework in two major ways:

- 1. The foundation has not compromised with the ridge to valley approach and initially treated ridgelines in the milli-watershed (Varna, Raisen district), irrespective of micro-watershed boundaries.*
- 2. The Foundation believes that intervention lasting 5 years is not sufficient to make a long term impact and therefore it does not withdraw at the end of 5 years. Though the watershed programmes undertaken by it continues to operate for 7 years, the Foundation stays at least for 20 years in the village for the other programmes, which it feels generate multiplier effects in strengthening participatory institutional structures at the village level.*

Further, the foundation undertakes other human development programmes in the same villages along with the watershed programme (health, education, veterinary programmes, agricultural extension etc.). The complementarities in the different projects aid in making significant dent in rural livelihoods. The foundation acts only as a facilitator, while villagers take decisions in the village level committee and the various user groups. The foundation intervenes only when approached by the village committee for conflict resolution.

department and the *Pani Roko Abhiyan* are, strictly speaking, not comparable, the latter appear more significant in terms of the expenditure in only the last two years (2001-2003), compared to total expenditures on the watershed projects undertaken under EAS, DPAP, and IWDP put together since 1995 (up to 2003) (Rs. 1458 crore against Rs.1052 crore). In all probability this is due to the higher coverage of the *Pani Roko Abhiyan* which is operative in all non-watershed villages of the state. The peoples' share in the expenditure in the *Pani Roko Abhiyan* amounts to 17.6 per cent, which is higher than the general cost sharing norms effective in the watershed programmes. The most significant contribution of the *Pani Roko Abhiyan*, however, is in terms of creating community-based institutions in almost every village in Madhya Pradesh that are resource-literate and in tune with the concept of livelihood support through natural resource enhancement.

CAPART-Supported Projects

Madhya Pradesh is one of the important recipients of CAPART-funds for implementing Watershed Conservation and Development Projects. The approach adopted by CAPART is substantially different from the two discussed above. CAPART assistance is divided into four components: 75 per cent for watershed treatment/development work, 5 per cent each for community organisation and training and 15 per cent for meeting administrative overheads.

As per the guidelines, new voluntary organisations (VOs) are first put in 'B' track and only after they have successfully completed their training under one of the Support Voluntary Organisations (SVOs) is the approval for preparation of Action plan under track 'A' given. The emphasis is on the capacity building and involvement of people at every stage, right from planning and implementation to sharing of usufruct and maintenance of the watershed.

Besides watershed projects, CAPART has also funded 11 projects for drought proofing in the state. Experiences from these projects may have significant bearing on the approach for watershed development in drought prone areas in the state (<http://capart.nic.in/function.htm#WATERSHED>).

Samaj Pragati Sahyog (SPS), located in Bagli in Dewas district, has been functioning as an SVO in Madhya Pradesh. The role of the SVO is to reach out to a large number of sincere groups in civil society who are scattered and provide them support right from the stage of resource mobilisation to project implementation. An SVO would support 200 partners over a period of 20 years; each partner could implement 10 watersheds of 2,500 ha each. SPS, has made a significant contribution in this direction though, we do not have further details on their outreach as well as activities for including it in the review. The report by the Parthasarthy Committee has strongly endorsed the approach of SVOs especially, for up-scaling participatory watershed development, based on the CAPART guidelines (See, 'From Hariyali to Neeranchal', Gol, 2006).

Apart from functioning as an SVO to about 23 partners in 11 districts in the state, SPS has implemented drought proofing project covering 6000 ha. in 20 villages in Dewas district of M.P. The project, over the past 10 years, has made a significant impact: there has been almost three-fold increase in the irrigated area whereas out migration from the project villages and their peripheries have come down.

4.2 Aspects of Implementation of Watershed Projects in Madhya Pradesh

There have been two broad based evaluation studies of watershed

projects in MP, both have looked at the performance of RGMWM projects. One has been carried out by TARU Leading Edge (2001) (Delhi/Hyderabad) in association with Sanket and has been submitted to UNICEF²⁴. The other has been undertaken by the Centre for Advanced Research and Development (CARD), Bhopal, for the Government of India, Ministry of Rural Development, Monitoring Division (2002).²⁵ In this section, we have depended a great deal on these two studies, primarily because of the extent of their spatial coverage and a large number of samples. In addition, a large number of other studies that refer to separate single micro-watersheds/ milli-watershed, have also been used²⁶. These also include a large number of mid-term evaluation reports of various projects submitted to the Panchayat and Rural Development Department of the Government of Madhya Pradesh. To the extent possible, we have tried to include a variety of reports that cover not only projects from different parts of Madhya Pradesh, but also projects implemented by different agencies. However, scant material is available on NWDPPRA projects, and this is one of the limitations of our review at this stage. We have, however, tried to supplement the review with some field visits primarily to comment upon some of the process variables, though these are by no means representative of the state.

24 A total of 58 project villages spread over 30 milli-watersheds – two in each study district, with the exception of Jabalpur, Jhabua, and Sarguja where three milli-watersheds have been studied – covering a total of 13 districts spread across 12 major agro-ecological zones of M.P. Preference was given to milli-watersheds where interventions were initiated in or before 1996-97; there were 25 such cases milli-watersheds. In addition to the project areas, 13 control villages spread over 7 agro-ecological zones/ districts were also taken into consideration.

25 The CARD study had representatives of both the DPAP and the IWDP programmes. It was undertaken in 29 districts of MP covering a total of 121 blocks, 372 micro-watersheds and 383 villages. Under DPAP, 105 blocks of 21 districts were covered and under IWDP, 16 blocks from 12 districts were covered. A total of 2926 beneficiaries and 718 non-beneficiaries were covered under DPAP, whereas under IWDP, 274 beneficiaries and 89 non-beneficiaries were covered. Both beneficiaries and non-beneficiaries were from the same villages. According to the report, most of the non-beneficiaries were below the poverty line.

26 Two of these include studies of NWDPPRA and Rural Development projects compiled by The Energy Research Institute (TERI) for a large number of states in India.

27 TARU (2001) study takes control samples from villages outside the milliwatersheds covering 7 agro-climatic zones and to that extent takes care of this methodological limitation.

a) Limitations of Review of Assessment Studies

An assessment of the first generation watershed programmes on the basis of published and unpublished documents can provide useful insights into some of the elements of our normative framework. However, two issues are important in this context. First, the quality of such an exercise would depend upon the nature of documentation, its methodological strengths and coverage, both in terms of spatial and of issues dealt with. Secondly, the degree of achievement is expected to vary from project to project depending on the location, institutional framework, the prevailing class and caste structure in each project area, and the time-caveat in which the impact analysis was done. There are some inherent limitations in drawing systematic conclusions from studies that adopt different methodologies or frameworks of analysis. In many cases, there is a problem of sifting out the impact of watershed programme. To isolate the impact of watershed programme, a control

sample is required not only from a non-watershed area, but preferably from a location which does not enjoy positive externality impact from the watershed work undertaken in the broader catchment²⁷. At the same time, the general socio-economic characteristics in the pre-project period of the watershed and control sample have to be comparable. In most of the project evaluations, the analyses have depended on recall surveys, and some mention this as a limitation of their analysis. As previously explained, regional issues in the state with regard to watershed development are different; a comparison of different regions will not be possible from the available information.

b) Administration and Funding:

Most of the studies agree that delays in release of funds reduce efficacy of the project. (TARU Leading Edge, 2001; CARD, 2002d). Since the funds from the state are not released before mid-term reviews which take place after the second year, analysis of expenditure patterns show that only about three-

Table 4.4: Phases of Financial Disbursement to PIA and VWC from RGMWM State Office

Period	Types of Work	Share of Total Fund (%)
<i>Release to PIA</i>		
Year 1	Administration, Community Organisation, Village Level Training, Entry Point Activity	15
Year 2	Administration, Community Organisation, Village Level Training	5
Year 3	Administration, Village Level Training	5
<i>Release to VWC</i>		
Year 1	Watershed Works	10
Year 2		
Instalment 1		15
Instalment 2		20
Year 3		
Instalment 1		10
Instalment 2		10
Year 4		10

Source: Taru Leading Edge, 2001

fourth of the sanctioned funds are spent by the end of the fifth year. Also, a large part of the fund is spent towards the end of the project, thus presumably compromising on nature of activities undertaken towards the end of the projects. The pattern of release of funds is given in Table 4.4. It can be seen that at least 30 per cent of the fund to be released to the VWC for the developmental activities are likely to be delayed if the mid-term review is delayed.

The actual expenditures is not very different from the share of the sanctioned funds except the fodder development and 'other' activities, which primarily include financial support to the CBOs, spend substantially less than their average share of the sanction (Table 4.5). Also, the variations in expenditure under these heads in different micro-watersheds are far greater than the deviations under other heads. While the fodder development possibilities could vary substantially across locations, given the factors like availability of common pastureland, the need for strengthening CBOs is expected to have a more similar demand pattern. It has been observed by different studies, consequently, that these are two areas that the projects have often failed to address.

It needs to be re-emphasised at this stage that this review is not meant to be an assessment of the watershed projects in the state. Given our normative framework, we would restrict our review to the three aspects of sustainability, livelihood, and equity and finally deal with the process indicators of institutions and participation that would not only ensure success in terms of the above criteria, but also are crucial for sustenance of the project after the formal withdrawal of the project funding.

Table 4.5: Heads of Activities and Variability in Expenditures

Activity	Average share of sanction	Average share of expenditure	Standard Deviation	CV
Soil Conservation	30	33	16	48
Water Conservation	40	46	9	20
Afforestation	10	11	6	55
Fodder Development	10	3	3	100
Others	10	6	7	117

Source: Computed from Taru Leading Edge, 2001

c) Environmental Sustainability

The systemic linkages between the three important natural resources of land, water, and vegetation within the watershed offers the potential to enhance all three resources, provided that the soil and water conservation technique adopted within the programme is sound and suited to the local conditions. This potential, according to the discussions held with key informants²⁸, is not fully actualised in Madhya Pradesh. In most cases the forest areas within the watershed cannot be treated as they come under the forest-working plan²⁹. Though soil and moisture conservation treatment is one of the components of forest conservation under the forest-working plan, this treatment does not follow the ridge to valley approach. It emerges from the discussions with our key informants that the benefits of work done in one forest range or compartment could accrue to another range or compartment as the ranges cut across watershed boundaries. Since the forest cover is so extensive in the state, maintaining association between land and water with this resource is particularly important.

In a majority of currently documented cases of watershed programmes in M. P., the benefits of soil and water conservation works are clearly

28 These key informants were from the state government and from the Indian Institute of Forest Management, Bhopal.

29 Work is carried out as per working circles demarcated by the forest departments. Forest circles are divided into divisions, which are separated into sub-divisions, further into forest ranges and finally into compartments. The two kinds of forest circles that are demarcated are production circles for the dense forests and conservation circles for the degraded forests. Only 5.4 per cent forest area is demarcated as conservation circles (GoMP, 1998).

30 CARD (2002) reports that there has been an increase of about 24 ha. in the area under plough per micro-watershed under DPAP projects (assuming the area of a micro-watershed to be roughly 500 hectare, this works out to be nearly 5 per cent), of which about a third is reportedly contributed by barren and wasteland.

31 In such cases, small farmers who do not have the capital to access ground water have started buying water from large farmers.

visible, particularly in terms of positive land-use changes due to improved water availability. According to Taru Leading Edge (2001), while 80 per cent of the watershed villages have reported increase over the project period, only 60 per cent of the control villages have done the same. It has been reported that the increase in the area has been fed not only from the cultivable land (i.e. fallows and cultivable wasteland), but also from the land that was previously classified as barren and unculturable wasteland (CARD 2002d)³⁰. Similarly, non-crop biomass increase has been reported in 14 per cent of the watershed villages. In comparison, none of the control villages showed such improvements.

The water availability, particularly from drinking and irrigation has experienced both a horizontal increase, i.e., in numbers and catchments of water sources, as well as vertical increase i.e., the rise of the water table in existing ground water sources (CARD, 2002d; TARU, 2001; CSWCRTI, 2004). Existing literature indicates that, at times, a comparison of beneficiaries and non-beneficiaries in terms of agricultural parameters resembles the comparison between irrigated and unirrigated agriculture. The multi-state review of NWDPRAs finds that in M. P. (Chanderi Nala, Khargaon District) the difference in the extent of irrigation between watershed and control households was very large: 75 per cent in the

former and 23 per cent in the latter (Deshpande and Narayanmoorthy, 1999). The availability of groundwater in wells and from hand-pumps shows a distinct improvement in the watershed villages when compared with the control villages (Table 4.6). Although all the water problems in the watershed villages have not been taken care of, definite improvements in the dry months of March and April have been noted. There is only marginal increase in the availability of water in May and June. In some western parts of the state, water markets have emerged with the increase in water availability, as noted from DANIDA experiences. (Cohesion 2005)³¹.

The CARD study, which conducted a survey in 2001, the year of extensive kharif drought, is less optimistic about the general increases in the water table. The survey showed a decline in the sown area in parts of the Jhabua Hills and Malwa Plateau, and attributed it to both drought and low efficiency of watershed projects. This probably indicates that the objective of drought proofing has not been addressed adequately in the state.

The general increase in both the extent and intensity of agricultural land-use as a result of better water availability has been reported from extensive surveys, both through primary surveys and satellite imageries (CARD 2002d; TERI

Table 4.6: Percentage of Sample Villages Reporting Dry Ground Water Sources in Pre- and Post-Watershed Periods

Months	Per cent of Sample Watershed Villages			Per cent of Sample Control Villages		
	1995	2000	Difference in per cent	1995	2000	Difference in per cent
March	37.9	24.1	-13.8	38.5	38.5	0
April	63.8	53.4	-10.3	53.8	53.8	0
May	89.7	87.9	-1.7	92.3	92.3	0
June	81.0	81.0	0.0	92.3	92.3	0

Source: Calculated from Taru, 2001

2001). Table 2.6 presents the results of one of the surveys of DPAP districts in the state. However, there are some doubts about attributing these changes completely to watershed work since the gap between watershed and control villages is not substantially high. As per the study, 60 per cent of the non-watershed villages have had expansion of net area sown without watershed interventions, as against 80 per cent in the watershed villages. There could be a number of reasons for the expansion of irrigation in the non-watershed areas such as investment from other funds, private efforts of moisture conservation, and demand related factors like high

pressure of population over time.

We attempt to analyse this point further using the existing data from the CARD survey. First, as far as both horizontal and vertical increases in land-use are concerned, we expect the watershed villages to behave as a group since they are all RGMWM projects and have the same programme (DPAP).

Secondly, since the two changes mentioned above are both a result of enhancement in water resources, we expect to observe some degree of correspondence between the two variables, provided that positive changes in both variables have occurred due to the same water and soil conservation efforts.

Table 2.6: Changes in Extent and Intensity of Agricultural Land-use in Sample Watersheds in DPAP Districts

Districts	CI1	CI2	Change	NAS1	NAS2	Change
Betul	126.2	130.3	4.0	96.1	92.6	-3.5
Dhar	126.0	128.9	3.0	90.5	89.5	-1.0
Seoni	107.6	107.0	-0.6	97.0	96.9	0.0
Bhind	102.4	103.0	0.5	100.0	100.0	0.0
Ratlam	141.1	164.6	23.6	87.4	87.8	0.4
Jabalpur	111.7	111.8	0.0	94.5	94.9	0.4
East Nimar	116.1	123.9	7.7	95.2	95.8	0.6
Damoh	100.0	100.6	0.6	87.0	87.9	1.0
Rewa	105.8	112.1	6.3	92.8	93.9	1.1
Shivpuri	104.1	107.9	3.8	91.9	93.4	1.4
West Nimar	117.9	120.8	2.9	96.9	98.7	1.8
Guna	104.2	106.6	2.4	89.7	91.6	1.9
Panna	105.2	114.6	9.5	86.3	88.2	1.9
Shahdol	102.7	104.9	2.2	83.7	86.4	2.7
Raisen	113.2	114.9	1.7	88.2	91.0	2.7
Sidhi	111.7	111.8	0.0	83.1	85.9	2.8
Shajapur	108.0	111.8	3.8	95.8	98.7	2.9
Dewas	148.6	163.2	14.6	87.9	91.2	3.4
Jhabua	116.7	114.9	-1.8	85.5	90.7	5.2
Chhindwara	122.3	114.6	-7.7	87.2	93.2	6.1
Rajgarh	100.0	100.0	0.0	78.8	85.9	7.1

Notes: CI1 and CI2 indicate cropping intensity in the pre- and post-project periods respectively. NAS1 and NAS2 indicate percentage under net sown area to total cultivable land in the pre- and post-project periods respectively. Source: Computed from CARD (2002d).

Figures 4.2 and 4.3 show that in terms of the increases in both expansion of net sown area and cropping intensity, the selected micro-watersheds in the 21 DPAP districts follow a consistent pattern. However, there is no association between the changes in the two variables, indicating that some of these changes may have occurred due to processes other than watershed management efforts (Figure 4.4). This raises the question of attribution in a study, which seeks to compare pre-post situations where several interventions are taking place simultaneously.

One of the missing links in the efforts at environmental sustainability is the failure to address the CPLR degradation. Inadequacy of fund spent under this head and its variability across villages has been identified as one of the reasons for neglecting CPLRs.. The other problem is that CPLRs have been encroached upon by the powerful members of the village community. It is not easy to handle the issue within the framework of the VWCs as they have no regulatory powers. It is to be hoped that such problems would be dealt with better through the panchayats under the Hariyali guidelines. Some instances of success have been observed in this regard in homogenous tribal communities, for example, in DANIDA project in Jhabua.

The need for intervention in common land is probably greater in upstream areas than in downstream, on account of both natural and social reasons. The degraded forest area in the upper catchments, particularly in the tribal dominated regions is extensive due to deforestation. Since the slopes are greater, the need for afforestation and pasture development in these areas is more urgent. Also, such soil and moisture conservation work would have positive externalities in the micro-watersheds located downstream. Moreover, the people in the upper

catchment usually have access to less land and it is of a poorer quality (Hooja and Puskar, 2005). They depend primarily on livestock and hence their fodder requirement is intrinsically linked to their livelihoods.

Some of the weaknesses that have been identified by the existing documentation that lead to reduced efficacy in terms of environmental sustainability are:

- Delays in release of fund (CARD 2002d)

- Inadequacy of allocated funds under certain heads and the scale of operations

- Priorities and attitude of the community not in tune with the action plans

- Problems of planning and technical weaknesses in watershed works (ANARDe Foundation 2005b, CARD 2002a³²).

- Social conflicts over sites of water harvesting structures (CARD 2002c).

d) Livelihood Enhancement

The benefits of watershed projects, especially supporting and enhancing livelihoods, need to be related closely to the activities undertaken within the watershed. Much of the livelihood benefits are supposed to originate from the natural resource management, for example, the increase in agricultural production and greater availability of fodder and fuel from afforestation, plantation and pastures. Some of the livelihood changes can occur through the institutions created in the course of watershed work like SHGs and Women's Thrift and Credit Societies. While strengthening the former source of livelihood would primarily benefit the landed class (other than the income coming from the CPRs), enhancement from the latter is usually geared towards the land-poor and the landless. Both sources are

32 The experience in Betul of DPAP projects show that there has been a preference for constructing bigger structures when smaller structures can serve the purpose. Also, similar structures had varying costs.

33 The watershed guidelines specify that these structures should be constructed using local labour as far as possible. In Madhya Pradesh, given its high rates of poverty and unemployment, most of the direct benefits are expected to accrue to the local population.

expected to bring about moderate to long-term changes. Other than these self-employment opportunities, watershed activities generate wage employment also, both directly and indirectly. The direct employment effect comes from demand for work created by the watershed activities of construction of water harvesting and soil conservation structures³³. The indirect employment effect is linked with increased agricultural production – primarily from the increase in cropping intensity - which creates additional demand for agricultural labour. While the direct employment would last at best till the end of the project and marginally after the project period for repair and maintenance work, the indirect employment may last, under normal circumstances, for a longer duration, provided that the natural resources are maintained and developed even after the completion of the project.

Benefits from agricultural area expansion are fairly clear and have been reported from the majority of watershed villages (CARD, 2002d). The expansion of Kharif and Rabi crops as well as a more remunerative crop-mix, both in comparison to pre-project period and the control villages enable us to say with some degree of confidence that there has been an increase in the agricultural income within the project villages and has accrued to all categories of farm size. In some cases, high value crop diversification was found to be the major component of an increased agricultural income (Rajput and

Verma, 1997; Deshpande and Narayanmoorthy, 1999).

Crop diversification is reported to be far higher in the rabi than in kharif season (Cohesion, 2005; CSWCRTI, 2004). While the shifts have taken place towards primarily wheat and gram, the major crops that farmers have preferred in the kharif season are cotton and soyabean over coarse cereals like jowar. The only coarse cereal whose production has gone up in the watershed catchments is maize. Though in most cases, the success of horticultural crops was reported to be meagre, there were some success stories. For example in Bajni Watershed, in Datia under an IWDP project, the survival rate of horticultural crops varies between 66 to 100 per cent (CSWCRTI, 2004).

The cost of cultivation appears to have increased due to the changes in the cropping pattern but net returns are nevertheless significantly higher for watershed beneficiaries (Deshpande and Narayanmoorthy, 1999). It appears that yield increases have come primarily from shifts towards high yielding crops due to availability of irrigation. In fact, in some cases there is an observed decline in the yield of dry crops (Table 4.7). The positive effect of cropping pattern and productivity appear to vary, however, across regions and projects; DPAP, for example, appears to have been more successful compared to IWDP on this count (TERI, 2004).

Table 4.7: Yield (per Ha.) of Major Crops of Beneficiaries and Non-beneficiaries in Chanderi Nala, 1998

Crops	Beneficiaries	Non-Beneficiaries
Jowar Local	1414	864
HYV	751	845
Groundnut Local	622	661
HYV	560	605
Maize	1000	-
Wheat	1624	1227
Cotton	1261	920

Source: Deshpande and Narayanmoorthy, 1999

Given the methodologies adopted in many of the studies, the problem again is whether the positive changes in farm livelihoods can be justifiably attributed to watershed soil and conservation work. It may be noted that most of the changes in cropping pattern observed in primary surveys are similar to the changes at the state level. The increase of area under wheat and soyabean is clearly a state level phenomenon. Studies with more cautious approaches, in fact, are doubtful as to whether increases in yield, land values, and the number of livestock have resulted from the watershed activities since similar increases have been observed in areas outside the watershed.

The direct wage employment from the project has been significant and the landless in most cases have got substantial relief from the additional income. There is also some evidence that the rate of migration has temporarily gone down in many of the villages. Also, the wages paid from the watershed projects have been reported to be higher than the existing wage rates. About a third of the sample household from the DANIDA funded projects in the western districts of the state have reported 50 per cent rise in employment. The long-term indirect employment effect from increased agricultural production is less clear. There is no major difference between the watershed and control villages in this respect, except in isolated cases.

An assessment of impact on migration is complex as migration occurs due to both, push and pull factors. The push factors may have weakened, without resulting in any significant change in out-migration. Some districts have experienced a reduction in seasonal out-migration, but the overall impact on this aspect is mixed. Our field visits in Jhabua (for both NWDPRRA and RGMWM projects) reveal that migration of young couples to states like Gujarat

and Rajasthan (Kota, in particular) continue in spite of increases in productivity and employment. The elderly and the children stay back, the former looking after the fields and the latter to attend schools. The DANIDA-funded projects under NWDPRRA programme, report a significant reduction in migration both in the number of family members migrating and the duration of migration as a result of an increase in employment opportunities spread over a greater period of the year.

The objective of drought mitigation, according to the CARD study, has been more or less fulfilled in some districts. Examples of districts where DPAP has alleviated the effect of drought are Guna, Khargaon, Shajapur, and Shivpuri (CARD 2002d). However, in spite of high intensity of watershed work in low rainfall and high variability areas like Jhabua, Dhar and Ratlam, the programme has failed to offer relief during drought in three successive years from 1999 to 2001. The failure to address drought in these cases may be on the one hand related to the nature of work done as a part of the project but on the other, may also be due to the severity and frequency of drought in these districts. The DANIDA experience from the same districts, interestingly, does not show significant reduction in income during the same period (Cohesion, 2005). Thus, changing the model of operation somewhat may provide encouraging results.

Though a lot of livelihood-enhancing variables have undergone positive changes at the village level, one of the issues of concern is that interventions have bypassed a large number of village community members. The study carried out by CARD (2002d), which uses non-beneficiaries from the watershed villages as control samples, states that most of them are from BPL families. This, in itself, raises a question about equitability in the

distribution of benefits from the project.

The missing links of forest treatment, afforestation in the revenue land, and lack of investment and work in pastures indicate that livelihood issues have only been partially addressed.

e) Equity

Equity issues are particularly important within the current framework of watershed programmes. The programme has a spatial focus on rainfed semi-arid areas where incidence of poverty is high. These programmes thus are expected to have a crucial impact on poverty through the process of sustainable natural resource management. However, the expectation is unjustifiable given the following realities: First, access to land in rural India is a primary determining factor of the level of economic welfare and access to

capital. Secondly, most of the land in the villages is privately owned; only a small proportion is under community ownership. Finally, efforts at resource enhancement are much more successful on privately owned lands. As a result, the landless and the land-poor tend to be almost left out; the benefits of watershed programmes do not reach them. The direct ways of benefiting the poor are through increased employment and through focusing on rejuvenation and maintenance of CPRs – both pastures and forests.

Due to a high incidence of poverty and high rates of unemployment in the rural areas, demand of wage labour is extremely high in the state. In free labour markets, this depresses wages, particularly when associated with low labour productivity. The watershed projects have successfully created a dual market for labour with their significantly higher wage rates, which may induce some buoyancy

Source:
Calculated from
CARD survey
data, 2001, and
Census 2001.

Table 4.8:
Disparity Ratios in Female Employment with Respect to Female Population

DPAP districts	Per cent of female employment to total workdays (1)	Per cent of female population (2)	Disparity ratio (1/2)	IWDP districts	% of female employment to total workdays (1)	Per cent of female population (2)	Disparity ratio (1/2)
Jhabua	62.0	49.8	1.2	Jhabua	63.5	49.8	1.3
West Nimar	40.0	48.8	0.8	Mandsaur	60.0	49.0	1.2
Ratlam	53.9	49.1	1.1	Ujjain	33.3	48.6	0.7
Rajgarh	35.3	48.3	0.7	Tikamgarh	39.8	46.9	0.8
Betul	41.6	49.4	0.8	Datia	73.5	46.1	1.6
Bhind	3.1	45.2	0.1	Guna	36.3	46.9	0.8
Shivpuri	38.5	46.1	0.8	Narsinpur	53.3	47.6	1.1
Guna	81.1	46.9	1.7	Bhopal	30.0	47.0	0.6
Damoh	32.1	47.4	0.7				
Raisen	36.1	46.9	0.8				
Rewa	40.0	48.8	0.8				
Jabalpur	5.3	48.1	0.1				
Panna	42.0	47.5	0.9				

to the general wage rates. This aspect needs to be looked at in greater detail in future field-based research.

Some elements of gender equity are visible in the watershed areas both in direct and indirect forms. While there is a significant difference in the male-female rural wage rates in the state, women get equal wage rates in all the project areas. Also, documentation of watershed projects in the state notes a change in the attitude of government officials towards women due to the importance accorded to them within the framework of the project. Some of the indirect benefits have affected women positively because they are the members of beneficiary households or on account of the gender division of labour. For example, both the existing literature and our field visits confirm that improved natural resource situation have led to reduced drudgery of fetching water, fodder and fuel in a number of project villages.

A quantitative analysis of the women work-participation ratio of the watershed area with respect to the district as a whole would have given us some idea about the effect of watershed projects on gender equity. Since the requisite information is not available, we have attempted to analyse the share of female workdays with respect to the share of female population in the area. This ratio, it may be noted, is not the ideal way of looking at gender dimensions of work. Due to patriarchal hierarchies that are embedded in most of rural India, the women are disproportionately engaged in household activities and are less available to take up work opportunities available around them. Since watershed projects are located within such social realities, to start with, we do not expect ratios of unity on an average. In tribal societies, such hierarchies are known to be less pronounced about 33 per cent (6 districts with Jhabua figuring for both

IWDP and DPAP) of the villages have a disparity ratio above unity (Table 4.8). Out of these only Jhabua and Ratlam have tribal concentration higher than that of the state as a whole. Another 40 per cent of the districts exhibit ratios close to unity (between 1 and 0.8). This indicates that watershed programmes have succeeded in bringing about gender equity to some extent.

The phenomenon, however, confirms the general trend of relatively higher participation by female workers in employment generation programmes as has been amply evidenced in the case of Employment Guarantee Scheme in Maharashtra. In this context, the move by the state government to link up watershed programmes with the recently enacted National Rural Employment Guarantee Act (NREGA) has special significance from the viewpoint of women's work participation.

As mentioned earlier, in its present format, the watershed programmes in MP – or for that matter in any other state – is heavily biased towards the landed class. It can be argued that a more equitable distribution of land would lay a strong foundation for an equitable distribution of watershed benefits. Land reforms, though not successful in most parts of the country in their previous form, would be complementary to the long-term objectives of watershed projects. The earlier experiences of land reforms have demonstrated the difficulties in improving the skewed distribution of land ownership through either redistribution of land or imposition of ceilings. Given this situation, it is necessary to review the possibilities of liberalising land-lease markets, which have the potential to reduce inequities in distribution of operational land.

Our field visits reinforce what is found in literature: in scheduled tribe dominated areas, both broad-based

participation and equitable distribution of benefits has been achieved (CSWCRTI, 2004; Gate 2001). In mixed communities, particularly where there is a dominant land-owning class or caste and where the section of land-poor and landless depends primarily on agricultural wages, the in-built social hierarchy prevents effective participation from some quarters. In many cases, such hierarchies are expressed in terms of spatial segmentation within the village; the landless live in the fringes of the village settlement, and hence they feel only weakly connected to any activity that takes place in the central part of the village.

The current documentation of the assessment of watershed projects in M.P. is in agreement with the findings of the evaluation of watershed programmes in other states about tackling equity issues. Economic inequalities are only marginally tackled at best, through these projects (CARD 2002c; Datar and Prakash, 2001), though there is some evidence that agricultural income has risen, in the absolute sense, even for the small farmers (Rajput and Verma, 1997). However, in relative terms, there are adequate indications that larger farmers have benefited more from the soil-water conservation works. One of the reasons is that most such work is carried out on private land, whereas common lands, with which the livelihood of the land-poor is intrinsically linked, are in most cases addressed in a half-hearted manner. In fact, there are studies that indicate that WDPs, while leading to increased crop production and productivity, appear to have accentuated inter-household inequities by ignoring, or sometimes adversely affecting, the interests of the landless and livestock (Puskar, Bouma, and Scott, 2004).

One of the inherent flaws in the current form of watershed models in the state is the modality of

contribution to the development fund of the watershed. The fund is meant to be used for the repair and maintenance of watershed structures. It is a common practice to retain part of the wages as contribution for the watershed fund, even from landless labourers who have no stake in the watershed structures aimed at benefiting private land. The practice tends to undermine equity in watershed projects.

f) Participation

The importance of the watershed programmes in the state can be gauged by the fact that by virtue of watershed projects in general, and RGMWM in particular, the village community, particularly those who have been associated with the Village Watershed Committees (VWCs), have become more resource-aware. Water has been brought in the mainstream discourse, *albeit* with the support from the media. Through the VWCs, a pool of community leadership has emerged that has the potential to complement democratisation of PRIs and challenge the existing power structure of the villages (see Box 4.1). Through the *Pani Roko Samities*, there has been a scaling up of similar institutional structures in terms of spatial coverage.

The reach and influence of village-level watershed institutions, however, has been limited in many cases. There is also some evidence of watershed institutions becoming an extension and expression of the existing social hierarchy in the community. There often has been limited appreciation and conviction of NRM principles in the village communities, with the exception of homogenous tribal societies.

A feature of the RGMWM framework in the state encouraging participation is *Nirakh Parikh*, i.e., social audit, of the programme by

Box 4.1
**Watershed Institutions Strengthen Panchayati Raj Institutions
in Jhilela**

Jhilela micro-watershed in Dudhi-nadi milli-watershed in Sehore district is an example of a robust participatory process establishing strong linkages between watershed work and enhancement of agricultural livelihood. The village has used leadership approach of institution building rather than building block approach. A previous gram panchayat member was nominated as the chairman of the VWC by the gram sabha. Decisions appear to have been taken in relatively broad based manner and consultative meetings between PIA and VWC, and between the VWC and gram sabha have been fairly regular. Cost-sharing principles were followed rigorously and by prioritising irrigation availability through construction of 14 tanks and one stop dam (tanks in private land and stop dam in common land with a number of beneficiaries). This resulted in single maize cropping pattern transforming into double-cropped area (maize-wheat) for almost the entire village. The VWC chairman Phul Singh has been elected as the president of the gram panchayat and the villagers hope that he would carry on the good work in the years to come.

the community (GoMP, 2003b). This is undoubtedly a positive step towards enhancing the sense of ownership and hence participation in the projects. There is not too much documentation available that would enable us to comment on the effectiveness of such evaluation at length. From the limited evidence available, it appears that data collection and holding of monthly meetings have been done regularly (EDSS, 2005 a and b; CARD, 2005b).

Some elements of administrative functioning crucially affect participation at the grass-root level. Training and capacity-building components in watershed programmes, for example, are meant to initiate participation and make the watershed institutions more effective, particularly at the village level. It emerges from broad-based as well as micro level surveys that these components have been limited to specifying procedures and administrative requirements of the projects (WALMI, 2003; Jaiswal, 1999). Less attention seems to have been paid to elements of participation which take long time to develop and whose effects also last long such as building consensus around the programme approach, analysing links between resources and social realities, visualising community and market interface, and preparation of CBOs for future

responsibilities (Cohesion 2005; CSWCRTI, 2004; CARD 2002c; Rajput and Verma, 1997).

Another lacuna in the institutional mechanism that has developed in most projects is that a top-down approach has been taken at the village-level. The PIA consults the VWCs first and then the CBOs. This, to a large extent, reduces the effectiveness of the participative process as the action plans and the changes therein primarily represent the viewpoint of the articulate members. After allocating expenditure and time on the lines of a building-block approach for participation, the advantages of such an approach are nullified by the 'VWC-first' approach.

One of the elements of a building block approach is a fair representation of each community group in the decision-making process. This is more crucial in areas characterised by high levels of social heterogeneity where groups diverge with respect to their livelihoods and their position in the society. For this reason, it is particularly important that the more deprived groups are represented in village level institutions. This may, in some cases, give rise to social conflicts (CSWCRTI, 2004), but it has the potential to form a basis for a more meaningful process of democratisation. We have attempted

to analyse the representation of disadvantaged social groups such as scheduled castes, scheduled tribes, and women in the village level institutions, for example in VWCs, in relation to their proportion in the population of the district.

Data given in Table 4.9 reveal that the social category of women is extremely under-represented in the village level institutions in the selected RGMWM districts under DPAP and IWDP. Women's

representation on VWCs is between 15 to 25 per cent in most districts, whereas their share in the population is almost 48 per cent (at the state level). In Panna, the sole exception, the share of women representation is nearly 80 per cent. Thus, gender equity issues do arise under watershed approach. Thus the observation that 'watershed programmes have failed to address concerns of the women as they have not been allowed to access the resource or make decisions about

Source:
Calculated from
CARD survey
data, 2001, and
Census 2001.

Table 4.9:
Comparative Representations of Social Groups in Village Watershed Committees
vis-à-vis Their Shares in Population at the District Level

Sl No.	Selected Districts	Population share of SC and ST in district (rural)	Deviation of share in VDC membership from population share of				Per cent share of SC and ST in VWC as	
			SC	ST	SC+ST	Women	Presidents	Secretaries
1	West Nimar	52.1	-10.3	25.0	14.7	-21.2	67	39
2	East Nimar	50.5	2.0	-6.3	-4.3	-30.4	17	17
3	Dhar	68.0	-0.2	17.9	17.7	-33.5	89	78
4	Shajapur	27.4	-8.3	-0.4	-8.7	-24.4	100	100
5	Rajgarh	22.3	-0.5	23.8	23.3	-20.7	50	50
6	Tikamgarh	29.8	-21.8	8.6	-13.2	-26.9	0	0
7	Bhind	22.4	-13.9	-0.2	-14.1	-24.3	0	0
8	Shivpuri	32.3	2.7	4.0	6.6	-29.2	NA	NA
9	Guna	33.0	10.3	10.9	21.2	-21.5	68	9
10	Narsimhapur	31.2	-16.0	13.9	-2.2	-33.4	0	0
11	Bhopal	25.1	-18.2	22.7	4.5	-19.7	0	0
12	Damoh	34.5	-3.4	1.8	-1.6	-24.2	6	18
13	Raisen	35.5	-5.8	11.5	5.7	-17.9	20	15
14	Dewas	39.9	-2.8	-6.3	-9.2	-24.1	25	17
15	Rewa	30.5	-3.0	-12.9	-15.8	-26.0	20	0
16	Jabalpur	40.4	7.7	1.0	8.7	-27.6	100	100
17	Panna	37.5	-11.7	-17.0	-28.7	32.5	33	22
18	Shahdol	61.3	12.5	-20.7	-8.2	-23.1	45	50
Per cent of districts having positive deviation			28	61	44	6		
Per cent of districts having negative deviation			72	39	56	94		

improving their livelihood' seem to be substantiated to a large extent (Datar and Prakash, 2001: p-223).

The scheduled tribe population has been represented favourably (more than their share in the population) in 61 per cent of the villages. However, since the scheduled tribe population has high concentration even at the micro-level, it is likely that the selected watershed villages have higher concentration of the tribal population than that in the districts. However, it is clear that in majority of cases, except for three districts out of eighteen, the under-representation of scheduled tribe is not of a significant nature.

The under-representation of scheduled castes, though not as significant as that of women, is substantial (72 per cent districts showing negative deviation). Literature indicates that the convergence between schedule caste population and the landless and land-poor is considerable (Chadha *et al.*, 2004). Thus under-representation of scheduled caste population indirectly has unfavourable implications with respect to equitable distribution of benefits in watershed programmes.

It has been observed from a large number of studies that though SHGs have been formed in most cases, they have not been functional in majority of the villages. Women's Thrift and Credit Societies have functioned somewhat better, but even in these cases (Gate, 2001), there has only been a marginal impact on the livelihoods. Some failures of these institutions have been attributed to the insufficiency of funds and their delayed release and inadequate capacity building. As a result, the programmes have failed to generate a sense of ownership among the poor and the vulnerable. The DANIDA experience in the Comprehensive Watershed Development Programme (CWDP) (under the umbrella of NWDPR)

indicates that success in micro-credit work requires professional involvement in the complex issues of repayment and profit sharing principles. These institutions have to be enabled to serve as catalysts of watershed work for effective livelihood linkages. Such treatment needs to be scaled-up to the general watershed programmes carried out solely by government institutions. In spite of the relatively successful efforts of community organisation in DANIDA projects, sustaining micro-credit groups has been recognised as one of the gaps in the CWDP (Cohesion, 2005). Lack of repayment has been one of the major reasons for the failure of the micro-credit institutions (the success rate in DANIDA projects has been estimated to be only 25 per cent).

It has been pointed out that the participatory planning process, on the whole, has failed to address three important aspects:

1. Scale and protection arrangements of forest and fodder development and thus long-term livelihood enhancement needs of the landless and land-poor.
2. Technical aspects of water harvesting structures as choice of location, capacity and maintenance of water harvesting structures.
3. The frameworks of action plans are stereo-typed and not in accordance with the baseline surveys and PRAs conducted at the inception of the projects.

4.3 Summing Up

Natural resource management under the watershed approach is expected to have a long term positive impact on rural livelihoods which should ideally be sustained long after the project is completed. This is expected to be achieved through access to improved quality and enlarged natural resources base. The benefits from the enhancement

of privately owned natural resources like the cultivated land would accrue to those who have access to land. Successful treatment of CPRs can correct the imbalance to some extent by creating benefits for those who have no land.

MP, like other states, has two major departments, Panchayat and Rural Development, and Agriculture handling the watershed projects. While the latter follows by and large the guidelines of the Ministry of Agriculture at the Centre, the former has a clear framework of its own at the state level, which is consistent with the focus of the Tenth Plan—empowerment and strengthening of local level democratic institutions. The RGMWM under the Department of Panchayat and Rural Development appears to be more progressive in its conceptualisation of the watershed programme, for instance, its conceptualisation of scale of a watershed project. However, in some ways the Mission has been constrained by the central level guidelines and funding patterns.

Madhya Pradesh has a more equitable land distribution compared to most other states, and hence accrual of incremental benefits from agricultural income may not be as skewed as it is in other parts of the country. In spite of some problems, environmental benefits and the rise in agricultural incomes, both resulting from increased availability of water, have been fairly widespread in the state. The land distribution scenario, however, is worsening rapidly, with the increase in the number of landless in the rural areas over the last two decades being much larger than the increase in the country as a whole. It is hoped that the watershed programmes would be in a position to diminish non-viability of small farms to some extent and halt displacement of small farmers due to economic reasons in turn. Treatment of forests and pastures, nevertheless, is of crucial importance for sustaining the

livelihoods of the growing population of the landless. One of the important gaps in watershed programmes in India is the total lack of co-ordination between the forest and the revenue department on the issue of treating the forest area within the watershed. This lack of harmony hampers the efficacy of watershed projects in the state more than in any other part of the country. The resultant large areas of degraded forests without a doubt diminish the efficacy of environmental rejuvenation efforts, given the extensive forest cover in the state.

Participation of the local community in the watershed projects in the state is weak and has, in turn, undermined the objective of equitable distribution of the benefits of the project. Like other states, there are some success stories, but these efforts have not been scaled-up adequately. From the existing documentation, it appears that feeble interaction between the PIAs and the local community as well as inadequate training and entry point activities have affected participation potential adversely. However, one of the strengths of the state is creation of village level institutions in the form of *Pani Roko Samitis* in a large number of villages through the RGMWM. These institutions, even under the Hariyali guidelines are being used as supporting agencies to the *gram panchayats*, thus retaining the essence of broad-based participation. An increased representation of women, scheduled caste and the landless in the decision-making process in the watershed programmes of the state can be tied up systematically with development of common property resources, both forests and pastures, on the one hand, and improved livelihood conditions for the marginalised population, on the other.

Watershed Programmes in Jhabua District

A Sub-Regional Analysis

5.1 Jhabua District: A Profile

Jhabua district, located in the westernmost semi-arid agro-climatic zone is one of the five most backward districts of the country. Jhabua's relative position in the state is somewhat like Madhya Pradesh's relative position in the country.

Information given in Table 5.1 helps in positioning the district with respect to the state. Jhabua has a very high

concentration of tribal population, and this has given the district most of its characteristic features. The district has a high share of area under barren and unculturable wasteland; on the other hand, urbanisation and literacy rates are much lower. Due to high pressure on agricultural land, the forest resources of the district have been rapidly declining. Though 87 per cent of the workers are engaged in the agricultural sector, neither the natural resource base nor the existing infrastructure is conducive to generating high incomes from the sector. The district is prone to frequent consecutive droughts. (The variability of rainfall is 42 per cent compared to 26 per cent in the state as shown in Table 5.1.) Thus the average annual rainfall, which is about 750 mm, is extremely erratic (Figure 5.1). Farmers report a crop failure in 3-4 years out of ten, and serious shortfall occurs in 4 to 5 years out of ten (ASA, 2005). The yield levels are much lower than that of the state, which, in turn, are much lower than the country average. These very features are also the

<i>Indicators</i>	<i>Madhya Pradesh</i>	<i>Jhabua</i>
Population Density	196	205
0-6 Sex Ratio	932	974
Share of ST population	20.3	87
Total Literacy Rate	52.4	28.4
Female Literacy Rate	41.2	19.9
Level of Urbanisation (%)	26	9
Marginal to Total Worker (%)	25.9	33.4
Non Worker to Population (%)	57.3	47.5
Agricultural Workers to Total Workers (%)	71	87
Barren and Uncultivable Wasteland (5)	4	12
Average Rainfall (mm)	977	868
Rainfall variability (%)	26	42
Irrigated Area (%)	11	27
Yield of Kharif Food-grain (kg/ha)	901	688
Yield of Wheat (kg/ha)	1392	1092
Cropping Intensity (%)	128	112

Table 5.1: Comparison of Madhya Pradesh and Jhabua: Some Indicators

Source: Census, 2001 and District Statistical Profile, Jhabua, 1997-98

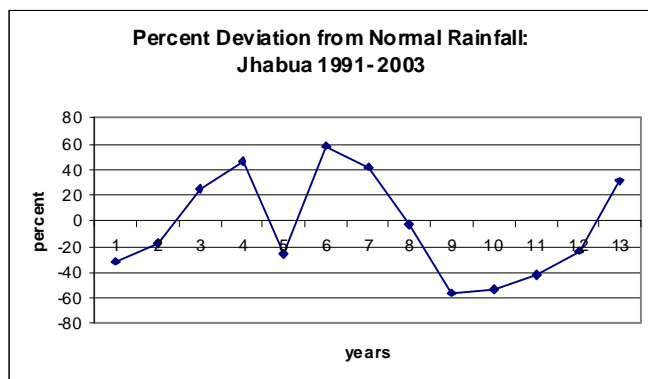


Figure 5.1
Source: Indian Meteorological Department

reasons for a clear connection between the livelihoods of the people and natural resource management and conservation activities in the district.

The entire district has witnessed deterioration in natural environment which has resulted in the decline in farm yields. As a result, the ability of the average households in the area to maintain a stable access to resources to fulfil basic human needs has gone down (ASA, *op cit*). Once forested extensively, the degradation of the environment has been caused by a combination of factors. The denudation of forest cover has led to extensive soil erosion in the generally undulating topography of the area and reduced the livelihood base of many tribals³⁴. According to existing literature, declining farm productivity in the district has added to the pressure on natural resources and further accelerated degradation by inappropriate agriculture practices. The contribution of livestock to the livelihood is significant which can be further enlarged if forests and pastures become the focus of natural resource management activities.

The terrain of the district is hilly and undulating and is typically known as 'Jhabua hills topography'. In this topography, the difference between the highest and the lowest points varies between 20 to 50 meters (jhabua.nic.in). The variation in relief rises as one moves towards the south of Jhabua – towards Alirajpur Subdivision. Jhabua Hills agro-climatic zone (Refer to Chapter 1)

³⁴ Tribals commonly supplemented their income from agriculture with minor forest produce such as honey, gum, and medicinal plants while also using the forest areas for pasture and firewood.

can be further subdivided into three sub-regions. Towards the north, the Petlawad sub-region including Petlawad, Thandla, Megnagar and parts of Jhabua block comes under Malwa region and is characterised by relatively higher rainfall, deeper soils and a large number of rivers. Jhabua region with parts of Jhabua Rama, Ranapur, Bhabra, Udaigarh and most of Jobat block constitutes the second subdivision with moderate rainfall and soils of moderate depth. The third sub-region consisting of Alirajpur subdivision is the most deprived in terms of resource base. It has low and erratic rainfall, and is almost entirely hilly and intersected by narrow valleys and low Vindhya ranges covered with degraded forest areas. Though notified forest area is large in the third subdivision, the area is devoid of vegetation cover except in Katthiwada block and a few other patches and is full of hilly areas; the area suffers from skeletal soils with shallow to very shallow depth.

According to ASA (2005), two distinct agro-climatic conditions of the area are favourable for strategising comprehensive land and water resources development. First, the geological formation of the area consists of compact basalt rock which favours discharge of water in the form of base flow as a result of various mechanical measures of soil and water conservations in the ridges of the watersheds. Due to increased sub-surface recharge, there is a potential for substantial rise in the availability of water in streams and valleys. Secondly, the area has innumerable small streams draining into rivulets flowing through the area. These streams and small rivers are seasonal in nature and are alive only during the monsoons. The network of these streams and rivers are part of the basins and sub-basins of the bigger rivers of the region. This condition creates capacity to store water during the monsoon which can support

livelihood base in the dry months. The above two conditions holds enormous potential if a mechanism of ridge to valley treatment is adopted for the development of natural resources.

The purpose of this chapter, as mentioned in our framework of analysis, is to focus on a region, where first, concentration of watershed work has been very high, and secondly, which has been widely recognised as a success story (Gol, 1995; Tiwari and Amezaga 2005). Therefore, information available on this district is more extensive than information on other districts. Further, some information available to us was at the micro-level and could have been meaningfully analysed only at the district level³⁵. Thus, analysis enables us to comment on aspects that we have not dealt with at the state level.

5.2 Spatial Spread of WDPs in Jhabua

This section deals with the spatial spread of both RGMWM and NWDPRAs projects in the district and comments on prioritisation of watershed activities at the block level for the district³⁶. In the third section, a comparison of the NWDPRAs and RGMWM projects primarily in terms of administrative functioning has been attempted using data available from the DRDA and agricultural office in the district, interviews with key persons and field visits. The purpose of this exercise is to bring out the positive elements from both type of projects, and comment upon the issue of convergence of watershed projects. Next, the nature of involvement of NGOs in RGMWM projects is analysed for the pre-*Hariyalis* RGMWM projects. Though in the post-*Hariyalis* set up, the scope for NGO involvement is limited they can still be involved at the training and capacity building stage. Also, government projects addressing livelihood and safety-net issues for

the rural poor (for instance, Food for Work Programmes) can be carried out using approaches similar to that of watershed projects³⁷. Lastly, some NRM based models are presented as practised by independent organisations (including NGOs within the RGMWM framework) and public-private partnerships from Jhabua.

As in other districts of the state, the RGMWM and the state DoA are the two major agencies carrying out watershed projects. The Mission takes up three kinds of projects in the district, DPAP, IWDP, and EAS³⁸ under the broad guidelines and funding from the MoRD, Government of India. The state DoA takes up NWDPRAs using the funds available in the MoA, Government of India. The latter has two types of projects in the state; some are funded entirely by the MoA, and others funded partly by DANIDA³⁹ and implemented on a partnership basis with an NGO called Sampark. There are other sporadic efforts at natural resource management funded from non-governmental sources, such as the Ratan Tata Trust, Christian Children's Fund, and Church's Auxiliary for Social Action. They are implemented by NGOs like the NCHSE and they are not expected to be significant in terms of the area covered.

At the outset, it needs to be mentioned that information available at the district level for RGMWM and NWDPRAs projects is not comparable for a variety of reasons. While the former allocates funds as per the geographical area of the watershed, the latter does it on the basis of treated area, which excludes area under water bodies, protected forests, area under non-agricultural uses, etc. Consequently, data provided by one agency relates to the geographical area under watershed and that supplied by the second concerns treated area under the watershed. Correction of RGMWM project data as per treatable area would have been ideal

35 A lot of the information presented at the block level in the district is the aggregation of micro-watershed level information. This exercise has enabled us to make certain corrections that were not possible when one dealt with the chapters on state

36 A similar exercise has already been attempted at the district level, but it is expected that the basis of prioritisation is likely to be different at the district and block levels, as they involve different agencies. Also, Jhabua being a success case may throw up lessons for the rest of the state.

37 Some of our field visits in Jhabua showed that this indeed was the case; a number of NGOs are replicating watershed models under other government programmes.

38 As per the central government directive, 50 per cent funds available under EAS could be used for watershed work.

39 The MoA provides 40 per cent of administrative expenses and DANIDA, 60 per cent. The entire expenditure for the watershed activities (works) is borne by DANIDA.

40 Since this exercise is extremely time consuming, it could not be attempted at the state level for each district. Thus in Chapter 3, we have presented the uncorrected figures.

and more scientific. However, since these estimates are not available, we have corrected the NWDPPRA data as per its geographical area by considering the geographical area under each watershed under each block⁴⁰. The uncorrected data thus underestimates the relative spatial coverage under the NWDPPRA programme substantially. For example, in Jhabua, the coverage of the total watershed work by NWDPPRA is 6 per cent according to uncorrected data and 13 per cent as per corrected data.

As per the guidelines brought out in the *Common Approach for Watershed Development* in 2001, it has been specified that NWDPPRA will not operate in the blocks

demarcated for DPAP. All the 12 blocks in Jhabua are demarcated as DPAP blocks. While this explains the reason for Jhabua having minimum coverage by NWDPPRA among all districts in Madhya Pradesh, it appears odd that NWDPPRA continues to operate under the Tenth Plan in all the blocks. Discussions with state level officials in the DoA reveal that incomplete work in the original milli-watersheds demarcated during the Eighth Plan for watershed work continued in the area through the Ninth and the Tenth Plans. This appears to be logical, given the ridge to valley approach, as partially treated watersheds may not generate the expected impact on the livelihoods of people.

41 Location Quotient (LQ) shows concentration of watershed area. $LQ = (\text{watershed area in block} / \text{geographical area in the block}) / (\text{watershed area in district} / \text{geographical area in the district})$.

Table 5.2: Spatial Extent of Watershed Projects Taken up by the DoRD and DoA after 1995-96¹

¹ Excludes the Eighth Plan projects as they were not taken up after 1995-96.

² Includes all the projects taken up between 1995-96 and 2004-05.

³ WP: watershed project

⁴ TGA: total geographical area.

⁵ LQ- Location Quotient (index of relative concentration) ⁴¹.

Source: Calculated from data collected from the DRDA and the District Agriculture Office, Jhabua.

(Figures in hectares, unless otherwise mentioned)

Blocks	Geog. Area	RGMWM ²			NWDP RA ²	Geographic Area (GA) taken up under WP ³	Per cent area for treatment to TGA ⁴	LQ ⁵ (ratio)
		EAS	IWDP	DPAP				
Petlawad	95700	525		19671.09	6344	26540.09	27.7	0.68
Thandla	54500	6727.08		17757.79	2635	27119.87	49.8	1.22
Meghnagar	50000	11917	2051.34	13637	2251	29856.34	59.7	1.47
Jhabua	43700	8197.13	4478.36	8572.51	2849	24097	55.1	1.36
Ranapur	40000	3380.82		13918.51	2573	19872.33	49.7	1.22
Rama	59800	10950.29		12302.69	2210	25462.98	42.6	1.05
Udaigarh	36800	8900		13837.16	2643	25380.16	69.0	1.70
Jobat	39100	3626		11591.23	2683	17900.23	45.8	1.13
Bhabhra	33800	16225.45		6864.45	4776	27865.9	82.4	2.03
Katthiwara	72000	7361.36		7493	3617	18471.36	25.7	0.63
Alirajpur	61600	4334.93		7981.35	1780	14096.28	22.9	0.56
Sondwa	90000	8091.57		8302.95	1987	18381.52	20.4	0.50
Total	677000	90236.63	6529.7	141929.7	36348	275044.1	40.6	1.00

Spatial coverage in the different blocks of the district is given in Table 5.2 and Figure 5.2. Due to the lack of information and comparability across projects *before* the 1994 guidelines, the information regarding the projects taken up *after* 1995-96 have been compared. For RGMWM projects, they include projects taken up between 1995-96 and 2004-05; and for NWDPRAs, the projects taken up under the Ninth Plan and the Tenth Plan. The Malwa and Jhabua sub-regions (refer to Chapter 4.1), barring Petlawad block, have a high concentration while the fragile ecological zone of Alirajpur sub-region including the blocks of Alirajpur, Sondwa, and Katthiwara have extremely low concentration index (between 0.6 to 0.5). To an extent, this is due to a higher proportion of forest area in these blocks. The relative importance of watershed treatment carried out by RGMWM and NWDPRAs is shown in Table 5.3. Except for Petlawad and Jobat, NWDPRAs covers less than 15 per cent of the WDP coverage under all blocks. In Petlawad, it is the DANIDA project which is extensive

and covers 49 villages out of the 70 villages in the Lakdinadi watershed.

Spatial spread of RGMWM project across time is given in Table 5.4 and Table A-I. The coverage has reduced over comparable time periods, from 1995 to 2001 under common guidelines, and post-2001 to 2006 including projects under 2001 and 2003 guidelines. Interestingly, the relative importance given to the otherwise neglected blocks of Katthiwara and Alirajpur has increased compared to the average district coverage. However, this does not have much to do with planned allocation of area. There has been a tendency to allocate over a period of time equal area in absolute terms irrespective of the size of the block without reference to any criterion (Table A-1). While some effort was made under DPAP1 to allocate more area in some of the bigger blocks, under the Hariyali guidelines, 1500 hectares have been taken up every year almost in all the blocks. Other than the issue of spatial concentration and prioritisation, this raises another serious concern:

Table 5.3:
Relative Importance of NWDPRAs and RGMWM Projects across Blocks in Jhabua

Block	Total NWDPRAs Area	Total RGMWM Area	Total Area under both Programmes	% NWDPRAs	% RGMWM
Petlawad	6344	20196	26540	23.9	76.1
Thandla	2635	24485	27120	9.7	90.3
Meghnagar	2251	27605	29856	7.5	92.5
Jhabua	2849	21248	24097	11.8	88.2
Ranapur	2573	17299	19872	12.9	87.1
Rama	2210	23253	25463	8.7	91.3
Udaigarh	2643	22737	25380	10.4	89.6
Jobat	2683	15217	17900	15.0	85.0
Bhabhra	4776	23090	27866	17.1	82.9
Katthiwara	3617	14854	18471	19.6	80.4
Alirajpur	1780	12316	14096	12.6	87.4
Sondwa	1987	16395	18382	10.8	89.2
Total	36348	238696	275044	13.2	86.8

(Figures in hectares, unless otherwise mentioned)

Source:
Calculated from data collected from DRDA and District Agriculture Office, Jhabua.

uniform allocation goes against the principles pertaining to watershed boundaries and the very spirit of ridge-to-valley approach. It appears that the principle of watershed approach is being sacrificed to simplify administrative procedures; even different combinations of micro-watershed sizes have been allowed.

Though the geographical area covered by NWDPRAs has gone up marginally in the Tenth Plan compared to the Ninth Plan, the treatable area has gone down in the district, from 1,877 hectares to 892 hectares. This is to be expected as NWDPRAs are being phased out from the district (all 12 blocks are DPAP blocks). In terms of relative importance, on aggregate, NWDPRAs follow the same pattern as RGMWMS project, except that its focus is on Petlawad. However, except for a few blocks, the project has shifted spatial focus over a period of time.

Thus there have been no systematic efforts to prioritise watershed activities at the block level, although natural resource bases in the blocks or agro-climatic regions vary. Evidences from the RGMWMS projects show that there is little effort to follow norms based on either requirements or geographical area. At the milli-watershed level, there is prioritisation based on socio-economic deprivation. DANIDA, for example, has used indicators like percentage of scheduled tribe population and local knowledge about incidence on poverty in the selection of villages for treatment.

Due to limited funds prioritisation is vital not only at district level, but also at block and watershed levels. Also, selecting watersheds on the basis of objective criteria would make the administrative operation of watershed activities more transparent. Our discussions with the officials at various levels

Source:
Calculated from
data collected
from the DRDA
Office, Jhabua.

Table: 5.4
Area taken up under RGMWMS Watershed Projects Different Stages (1995-96 onwards)

Blocks	Under 1995 Common Guidelines		Under 2001 Revised Guidelines		Under Haryali (2003) Guidelines		Total Area Allotted under RGMWMS
	Area (ha.)	Share in total GA	Area (hac.)	Share in total GA	Area (hac)	Share in total GA	
Petlawad	12771	13.3	4625	4.8	2800	2.9	20196
Thandla	18835	34.6	2475	4.5	3175	5.8	24485
Meghnagar	22355	44.7	2150	4.3	3100	6.2	27605
Jhabua	14183	32.5	4015	9.2	3050	7.0	21248
Ranapur	12379	30.9	2195	5.5	2725	6.8	17299
Rama	18038	30.2	2115	3.5	3100	5.2	23253
Udaigarh	15712	42.7	4225	11.5	2800	7.6	22737
Jobat	9817	25.1	2275	5.8	3125	8.0	15217
Bhabhra	18265	54.0	2250	6.7	2575	7.6	23090
Katthiwara	9229	12.8	2475	3.4	3150	4.4	14854
Alirajpur	6466	10.5	2450	4.0	3400	5.5	12316
Sondwa	11145	12.4	2250	2.5	3000	3.3	16395
Total	169196	25.0	33500	4.9	36000	5.3	238696

Blocks	Ninth Plan ^{*1}		Tenth Plan		GA covered In Ninth and Tenth Plans
	GA covered	Share to total GA	GA covered	Share to total GA	
Petlawad	2661	2.8	3683	3.8	6344
Thandla	1502	2.8	1133	2.1	2635
Meghnagar	1400	2.8	851	1.7	2251
Jhabua	1443	3.3	1406	3.2	2849
Ranapur	1014	2.5	1559	3.9	2573
Rama	874	1.5	1336	2.2	2210
Udaigarh	1273	3.5	1370	3.7	2643
Jobat	1007	2.6	1676	4.3	2683
Bhabhra	1844	5.5	2932	8.7	4776
Katthiwara	2857	4.0	760	1.1	3617
Alirajpur	428	0.7	1352	2.2	1780
Sondwa	983	1.1	1004	1.1	1987
Total	17286	2.6	19062	2.8	36348

Table 5.5:
Area Taken
up under
NWDPR
Watershed
Projects at
Different
Stages

¹ Excludes the unfinished area from old watersheds again taken up for Tenth Plan to avoid double counting.
Source: District Agricultural Office, Jhabua

revealed that no systematic database on technical variables such as sediment-yield index is available, which many feel should be the primary basis for prioritisation. The RGMWM office is presently engaged in creating a geo-spatial database for the state of Madhya Pradesh, which could be utilised as a basis for prioritisation.

In the absence of database on some of the more relevant variables, we have used the available information to work out a scheme of prioritisation for Jhabua. Given the integrated thrust of watershed projects, we have derived an overall index of prioritisation based on a simple methodology using criteria of land-access, resource-base and socio-economic indicators. (A note on the methodology of prioritisation used for Jhabua district is given in Appendix I). Since the index is positively related to the degree of deprivation, ideally, the coverage of watershed activity should also be positively related to the index (in terms of area under watershed activity as a share of geographical area of the individual blocks). The indices at the block level are provided in Table A II.

Using the indices of deprivation, we have attempted to identify the blocks that have been neglected in relative terms. The derived indices of deprivation have been ranked and subtracted from the rank as per the watershed work (the most deprived district has a rank of 1). A positive deviation of rank means that a block is better placed in terms of its relative need, whereas a negative deviation indicates that the block has been neglected.

The variability of resource variables is the maximum, followed by that of land-access. It is noted, however, that while resource and socio-economic variables are highly correlated, spatial distribution of land access has a weak relationship with resource and socio-economic variables (Table A.2). According to our index of overall as well as resource and socio-economic deprivation, Sondwa and Katthiwara are the two most deprived districts (Table 5.6 and Figure 5.3). They have also received the least attention; they have been bypassed largely and their needs are not met⁴². On the other hand Udaigarh and Bhabhra have got more attention compared to their need (positive deviation of 8 and 7 respectively).

41 Sondwa has the highest possible negative deviation, as it is the most deprived block according to the deprivation index. It has also got the least attention in terms of watershed activities.

Table 5.6:
Deviations of Rank between Deprivation Indices and Concentration of Watershed Work

Blocks	Watershed Work	Overall Deprivation		Land Access Deprivation		Natural Resource Deprivation		Socio-economic Deprivation	
		B	b-a	c	c-a	d	d-a	e	e-a
	a								
Bhabhra	1	8	7	4	3	10	9	10	9
Udaigarh	2	10	8	11	9	7	5	8	6
Meghnagar	3	3	0	1	-2	3	0	9	6
Jhabua	4	4	0	3	-1	5	1	4	0
Thandla	5	5	0	2	-3	4	-1	6	1
Ranapur	6	7	1	7	1	6	0	11	5
Jobat	7	11	4	10	3	11	4	7	0
Rama	8	6	-2	6	-2	8	0	5	-3
Petlawad	9	12	3	9	0	12	3	12	3
Katthiwara	10	2	-8	5	-5	2	-8	2	-8
Alirajpur	11	9	-2	12	1	9	-2	3	-8
Sondwa	12	1	-11	8	-4	1	-11	1	-11

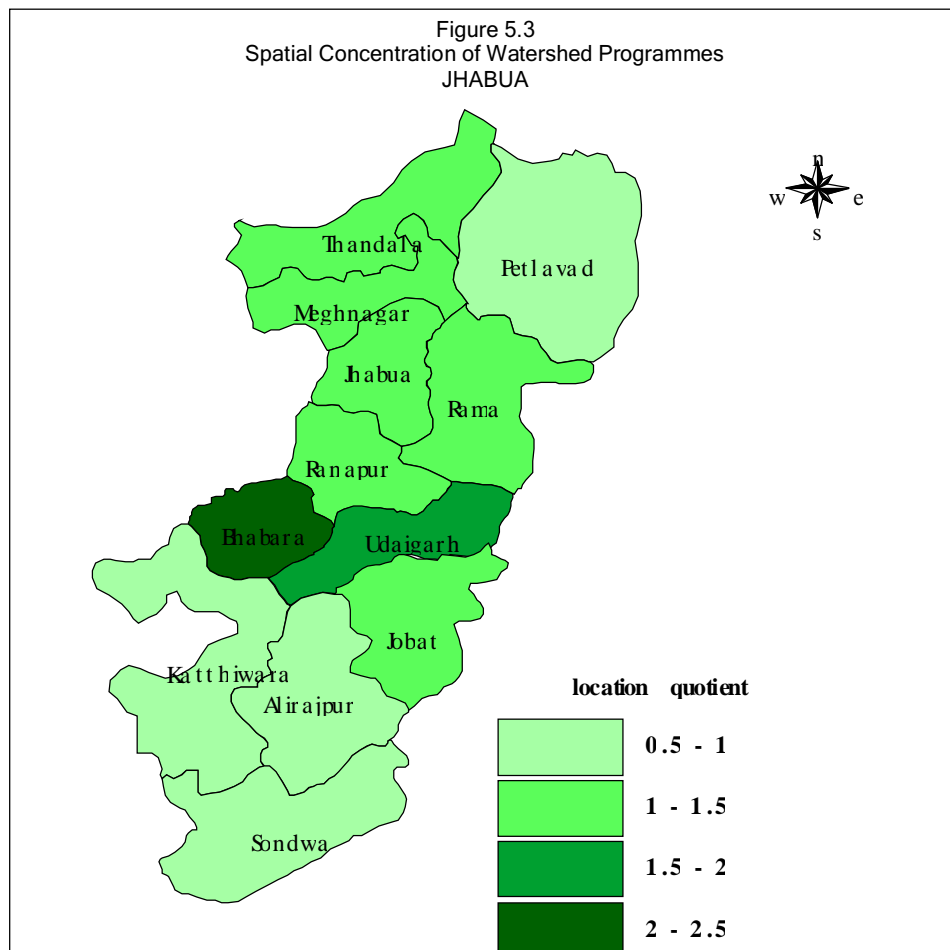


Figure 5.3

Source:
Calculated from data collected in
DRDA and
District
Agriculture
Office, Jhabua.

5.3 Comparison of RGMWM and NWDPRAs Projects

A comparison of projects by the two major agencies in the state as well as the district is undertaken with the limited purpose of learning lessons. These lessons will be crucial as

inputs if the future policy is to move towards convergence of all watershed projects. This analysis would primarily be restricted to administrative functioning of the projects, and therefore some of the elements discussed here would be relevant for the state as well.

Table 5.7:
Projects Administered by RGMWM and DoA—A Comparisons

Features	RGMWM projects	NWDPRAs	
		General	DANIDA
<i>Funding Mechanism</i>	By geographical area under micro-watershed	By treatable area under micro-watershed	
<i>Funding criteria</i>	Flat	Slope criteria- higher for steeper slopes	
<i>Funding amount (current)</i>	Rs. 6000/- per hectare	Rs. 4500 to 6000/- per hectare	
<i>Implementing Agency</i>	NGO and GO, now under Hariyali guidelines, NGOs' role limited	GO	GO-NGO partnership
<i>Technical Capability in PIA</i>	Project officer not necessarily (often not) trained in SMC techniques	Mandatory that Project Officer is trained in soil moisture conservation techniques	
<i>Participation</i>	Very important -- regular meetings of VWCs and PIA	Important, but technical details of soil-moisture conservation first. Meetings of VWCs and PIA less regular.	Extremely important- does not undertake work in the first two years before confidence building.
<i>Cost limits for water harvesting structures (current)</i>	Preferably should not go up beyond minor irrigation structures - flexible	Rs. 35000/- per structure	Rs. 25000/- per structure
<i>Thrust /primary objective</i>	Livelihood enhancement	Increase in agricultural income	Livelihood enhancement and control of social expenditure
<i>Operation of VWC Account</i>	By president and secretary of VWC	By one VWC representative and block level agricultural development officer	By two members of VWC
<i>Financial Monitoring</i>	Social Audit	Accountant general, NWDPRAs	Social audit and accountant general, NWDPRAs

Interviews with the key officials as well as the existing documentation enable us to build a comparative picture of the frameworks adopted by the two agencies. Since some aspects of the comparison, presented in Table 5.7, are of a qualitative nature and based on limited interactions, there may not be complete agreement on the features presented here. In general, it may be observed that while RGMWM projects are stronger in terms of their thrust on participation; NWDPRAs put technical details first. Thus though the latter has a somewhat top-down approach, the quality of the NRM work done tends to be better. Usually there is a trade-off between technical details and participation. Unless the training and capacity building components are extremely strong, allowing people to select activities, sequence them, and choose sites without guidance from technical personnel may fail to generate expected benefits and in turn may affect participation in the long run. On the other hand, a top-down non-participatory approach may show results, but due to the lack of sense of ownership, all arrangements tend to collapse after the project is over. The DANIDA model, in some ways seems to have struck a balance between the two.

There appears to be some elements of rigidity in the NWDPRAs projects. It may be argued, however, that this very rigidity that makes administrative processes rigorous is probably due to the adoption of more scientific methods in prioritisation and fund allocation. For example, since the fund allocation for these projects is worked out by slopes characterising treatable areas, soil moisture conservation plans are worked out differently for more adverse parts⁴³. The fund allocation for NWDPRAs is according to the topography of the place, while RGMWM allocates funds at a flat rate (See Table A.III). Also, if fund allocation criterion is made comparable for both projects, i.e.,

allocated fund per unit of geographical area of watershed is worked out, NWDPRAs has much lower allocation per hectare of area (Table A.III).

In addition, while the cost limits for watershed structures may seem to be somewhat rigid in these projects, this could ensure a better distribution of resources among beneficiaries and probably serve the equity purpose better. Finally, according to the officials at the state level office, block level monitoring of accounts prevents financial malpractices to a large extent.

We have compared the physical and financial performance of completed projects carried out under RGMWM and NWDPRAs. The projects implemented by the two agencies are compared using the criterion of physical efficiency and two criteria for financial efficiency (Table 5.8).

Though projects are not strictly speaking comparable across watersheds some general trends can be discerned from Table 5.8. In terms of completion of the allotted work, RGMWM has performed far better than NWDPRAs projects. This could be due to the lack of funds and insistence on the rigour in work done in NWDPRAs projects.

From Eighth Plan onwards, NWDPRAs has been taking up unfinished work within watersheds as part of subsequent plans. In terms of money actually spent per unit of area treated, NWDPRAs has spent much less. This may not be a fair comparison, as the fund allocated under this programme is also lower. However, even in terms of the ratio of fund spent to fund allocated per unit of area, NWDPRAs has been relatively inexpensive. In all the blocks, it has actually spent less than its allocation norm, whereas RGMWM has spent more than its fund norms. The ratio of fund spent to the fund allocated does not indicate efficiency of expenditure in any case; the ratio has to be seen

43 During our field visit to Amphiphalia watershed in Jhabua block implemented under NWDPRAs project, we found that differential NRM measures for different slopes are carried out with rigour.

Table 5.8:

Comparison between RGMWM and NWDPR: Some Aspects of Efficiency

Source: Compiled from various offices in Jhabua

Project Implementing Agencies	Districts	Share of treated area to allotted area	Average fund spent per hectare of completed work (by GA covered)	Average fund spent per hectare of completed work (by treated area)	Ratio of spent fund per hectare to allocation norm
DPAP 5 (1999-00 to 2004-05)					
NGO					
BAIF	Petlawad	80.14	4874		1.22
Sadguru	Thandla	88.45	4469		1.12
	Ranapur	79.10	3211		0.80
ASA	Ranapur	91.68	4121	-	1.03
GVT	Udaigarh	30.06	6568		1.64
ASA	Jobat	53.24	4055		1.01
<i>ALL NGOs</i>		<i>78.21</i>	<i>4231</i>		<i>1.06</i>
GO,					
Petlawad	Thandla	85.41	3480		0.87
GO, Thandla	Thandla	72.24	5281		1.32
GO, Petlawad	Meshnagar	77.43	5194		1.30
<i>ALL GOs</i>		<i>76.97</i>	<i>4881</i>		<i>1.22</i>
NWDPR, Ninth Plan					
	Petlawad	36.70	557	2116	0.63
	Thandla	48.91	1365	2186	0.65
	Meghnagar	49.12	1430	2659	0.79
	Jhabua	47.28	1225	1867	0.55
	Ranapur	54.12	1587	2073	0.61
	Rama	41.26	1636	2634	0.78
	Udaigarh	35.01	957	2064	0.61
	Jobat	47.96	1528	2097	0.62
	Bhabhra	32.15	422	2061	0.61
	Katthiwara	34.14	363	1887	0.56
	Alirajpur	31.66	2474	2474	0.73
	Sondwa	14.77	396	2005	0.59
GO, Agriculture					

vis-à-vis benefits. Also, it is possible that the projects under NWDPR could have performed better with fuller utilisation of funds available to them.

In sum, RGMWM projects appear to be more flexible. This has its advantages, particularly in terms of adjusting to location-specific circumstances. The PIAs' interactions with VWCs are vibrant, and there appears to be greater

potential for local participation within the framework of these projects. However, the earlier analyses in Chapter 2 points towards weaknesses in the training and capacity building activities in all watershed projects, except in a few cases. The rigour of NRM practices appears to be somewhat diluted within the RGMWM framework, which is the strength of NWDPR projects. Thus, combining elements from both projects may result in

greater efficacy in watershed projects.

5.4 NGO Participation in Watershed Programmes

NGOs have been widely accepted to be equipped with skills of social mobilisation, which is an important component of watershed programmes. Specifically, literature is abundant with examples of NGOs' successes in training and capacity building, which is one of the areas where the state of Madhya Pradesh has been found to be weak. After 2003 with the *Hariyal* guidelines in operation, the role of NGOs' has become extremely limited. However, they can still be involved in training and capacity building, towards which 10 per cent of the project cost is allocated. While NGOs do not feel that such limited fund is adequate to support their staff working with the community, *Hariyal* projects does provide some opportunity for Government-NGO partnership, the DANIDA model adopted in the

Petlawad block of Jhabua is a case in point.

Jhabua has been one of the districts where NGOs' participation has been extensive with active support from district administration. A detailed list of NGOs with sanctioned area and amount working in Jhabua has been provided in Table A.IV. In some cases the NGOs accounted for almost 30 per cent of both allocated fund and area for the district as a whole (Table 5.8). Further, they accounted for a larger share of the number of micro-watersheds – nearly 40 per cent. This means that in general, the NGOs have handled smaller watersheds than the GOs. This, in some sense disadvantages the NGOs as the time and money spent in community mobilisation efforts are very weakly related to the size of the watersheds. There is also a clear spatial clustering in terms of NGO activities (Table 5.9). Our fieldwork and interactions with several NGOs in Jhabua support this observation. Usually the better known NGOs prefer to work in the

Table:5.9
Relative
Importance of
NGOs in
DPAP (II/5-8)
Watershed
Work in
Jhabua
District

Blocks	Total Number of Micro Watersheds	NGOs' Share in Numbers of Micro Watersheds	NGOs' Share of Sanctioned Amount	NGOs' Share of Sanctioned Area
Petlawad	16	68.8	78.0	71.3
Thandla	23	26.1	37.9	39.7
Meghnagar	13	15.4	18.6	24.9
Jhabua	9	11.1	6.8	10.6
Rama	15	80.0	77.3	78.8
Ranapur	24	79.2	80.6	80.2
Udaigarh	16	43.8	39.3	43.7
Jobat	10	20.0	15.7	16.6
Sondwa	8	0.0	0.0	0.0
Bhabhra	8	0.0	0.0	0.0
Alirajpur	8	12.5	7.7	11.5
Katthiwara	8	12.5	25.9	29.2
Total	158	39.2	30.1	30.3

Source:
Document
submitted for
district level PIA
meeting held on
October 17, 2005

same area for a long period; this enables them to build upon the confidence gained from the local community.

Even in pre-Hariyali period, from DPAP-II 5 to 7, the share of micro-watersheds being handled by the NGOs went down steadily (Table 5.10). This trend may be indicative of increasing general disillusionment with NGOs in M.P. (Taru, 2001).

However, their share recorded a sudden jump just the year before the *Hariyali* guidelines were announced. From the field experience it was found that some difficult projects - involving communities with high levels of social conflicts and crime rates - handled by the GOs were passed on to NGOs in 2002-03. Many of these NGOs were reportedly newly set up.

Table 5.10:
Relative Importance of GOs and NGOs in Phases of DPAP Project in Jhabua

Stages of DPAP	Inception	MWS ² with NGOs as PIAs	MWS with GOs as PIAs	Total	% of MWS with NGOs as PIAs
DPAP 5	1999-2000	37	18	55	67.3
DPAP 6	2000-2001	3	4	7	42.9
DPAP 7	2001-2002	6	19	25	24.0
DPAP 8	2002-2003	18	18	36	50.0
DPAP 9 ¹	2003-2004	0	36	36	0.0

¹- First batch under Hariyali Guidelines

² MWS: Micro watershed

Source: Document submitted for district level PIA meeting held on October 17, 2005

Table 5.11: Comparison of GOs and NGOs with respect to Financial and Physical Progress of DPAP 5 and DPAP 7 in Jhabua District (as on October, 2005)

Programme	PIA	No. of MWS	Blocks	% of Sanctioned Fund Spent			% of Allotted Area Treated
				PIA	VWC	Total	
DPAP 5 (starting 1999-2000)	NGOs: BAIF, Sadguru, ASA, GVT	37	Petlawad, Jobat, Thandla, Ranapur, Udaigarh	97.0	92.6	93.4	78.2
	GO: CEO, Jan Panchayats	18	Thandla Meghnagar	89.8	94.3	93.5	77.0
DPAP 7 (starting 2001-2002)	NGO: BAIF, NCHSE	6	Petlawad Meghnagar	86.3	80.1	81.4	45.4
	GO: CEO, Jan Panchayats, Agriculture Department, BDO	34	Thandla, Jhabua, Jobat, Sondwa, Alirajpur	71.6	92.8	88.9	60.6

Source: District level PIA meeting held on October 17, 2005

It is quite evident that delayed release of funds from the state government has hampered the efficacy of watershed projects to a large extent. The delay leads to a large share of funds being spent in the last two years. This adversely affects - for both GOs and NGOs - selection of activities, sites for activities, and quality of work done. Watershed projects undertaken under DPAP 5 which are nearing completion, and the ones under DPAP 7, which were due to be completed during 2005-06 (data pertain to October 2005) have been compared in Table 5.11. While there is no significant difference in terms of any of the indicators for GOs and NGOs with respect to DPAP 5 projects, the NGO implemented projects in DPAP 7 appear to be significantly worse off. By the end of third year, or the first half of the fourth year, the NGOs had spent 80 per cent of the total fund for watershed work from the VWC account, but had covered only about 45 per cent of the area (the respective figures for GOs were 92 per cent and 60 per cent). In terms of the spending on entry point activities and community mobilisation, however, the NGOs were better off than the GOs (as reflected by the percentage of PIA expenditure spent, Table 5.11). This analysis lends support to the general observation that while GOs are better in terms of work implementation, NGOs are more skilled in the field of social mobilisation. Though more systematic fieldwork is required to substantiate this point for Jhabua, our finding points towards possibilities of collaborative efforts of GO and NGOs. Such observations also appear in existing reviews of the state, where it has been suggested that NGOs can effectively fill up the gap existing in line departments in the field of community mobilisation undertaken with the help of women professionals.

5.5 Alternative Models

Till now our discussion has centred on the broad-based programmes which are fully or partially funded and implemented by the government agencies. It is equally important to review some of the existing models in the district. The mode of functioning of these models reveals interesting differences in a number of ways when compared with the government funded models, most of which operate under a set of given guidelines. Some case studies and alternative models are presented in this section based on our field visits.

a) DANIDA - NWDPRRA Project (collaboration of block agricultural office and Sampark (NGO) , Petlawad)

The framework of DANIDA model has been briefly presented in Table 5.7. As mentioned earlier, this represents a case of successful Government-NGO partnership. It is important for future policy directions, given the evolution pattern of the second generation watershed projects. At DANIDA's insistence Sampark was involved in the project. There were initial disagreements about the mode of functioning of the project which was later resolved by demarcation of areas of work to be taken up by the two agencies. Sampark has taken up community mobilisation and has allowed watershed activities only after the participatory institutions are in place and the community is considerably motivated. One VWC was made for each hamlet, rather than a village, thus achieving broad-based participation. Information about the government activities such as technical support, agricultural extension services as well as distribution of better variety seeds for vegetables, initiation of crop diversification, and selection of non-water-intensive crops has been communicated successfully through the NGO to the local community. The vibrant micro-credit institutions

created have offered freedom of choice to the farmers, who were earlier exploited through input-credit linkages by traders. For cereals and cotton, the SHG loans have enabled the farmers to choose traders who would offer seeds and fertiliser at fair price. Sampark norms for repayment are quite rigid, and a defaulter does not have access to loan a second time. The contribution norms for watershed works are lower than many other cases, given the poor economic status of the local community (10 and 5 per cent for work done in the private and common land respectively). The community mobilisation depends upon the motivation of the local population (See Box 5.1).

The initial disagreement Sampark had with the government officials was about the scope of social mobilisation. The NGO strongly believes, based on the work it had done for the local population earlier, that income generation activities have to be supplemented by mobilisation to control social expenditure so that the expected increase in incomes can be achieved. With development, the tribals are rapidly adopting non-tribal customs like incurring large expenditures on the occasion of a marriage and death and during religious festivals. Sampark has initiated revival of a custom called *Arji-Parjior* labour-sharing in fields which had died down with time.

According to both GO and NGO workers, two factors other than the functioning of the programme contributed to its success. First, communities in these villages are homogenous and therefore there are hardly any clash of interests. Secondly, the level of landlessness is extremely low, thus the resource enhancement has benefited most of the community.

b) Approach adopted by ASA, Jobat-
The organisation was initiated in 1996 and works in the districts of

Box 5.1

The Bhils in Petlawad block (Sat Rundi hamlet of Karravat village) of Jhabua district through their own efforts revitalised large parts of CPRs. Each household planted and maintained one tree on the village commons. They also planted fodder grass on the pastureland and adopted social fencing of these lands for at least two years. Even after that, they say, there would be no open grazing on these lands and would adopt stall-feeding. They are confident that the pasture they have developed would sustain their cattle in future.

An interesting aspect of this experience is that before the community embarked on the process of management of the pasture, there was encroachment on this land by a villager from an adjoining village. The villagers from Karravat called the tehsildar to ascertain the rights on the common land. The ensuing conflict was tackled by the villagers by offering to make the encroacher a member of their user group and share in the benefits.

Dhar, Jhabua, Khargone, and Vidisha. It worked for RGMWM till the initiation of *Hariyali* Guidelines. It now continues with similar work but obtains funds from other funding agencies. The organisation believes that the two reasons why general watershed project benefits are not sustained are the sudden withdrawal of the implementing agency and the adoption of a non-integrated approach that fails to tie up natural resource management works with socio-economic aspects like livelihoods, health, and education.

Like the Lupin Foundation, this organisation builds on the confidence of local community it enjoys. It works in the same village on different aspects, which enables it to stay on in the village for a longer time (Table 5.11 and 5.12).

Table 5.12:
ASA's Multi-
Faceted
Activities in
Jhabua

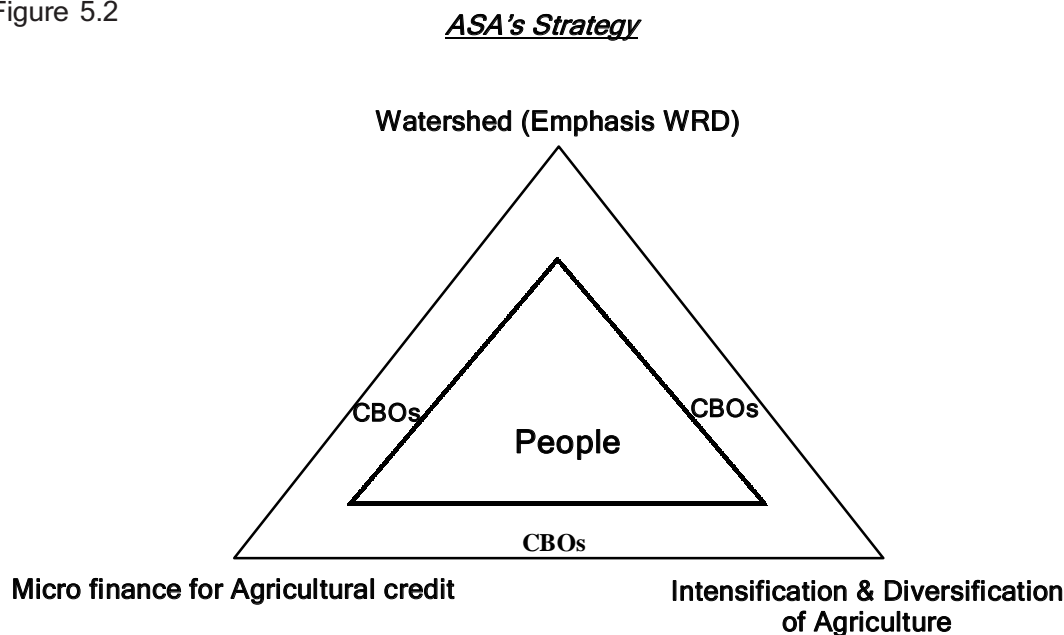
Thematic area	Geographic location
Community Based Natural Resources Management (Watershed)	Working since 1996 in 4 small river basins comprising 42 villages across 4 blocks.
Micro-Finance (MF)	Since 1996 for 110 villages (some watershed villages . overlapping)
PRR Capacity Building on livelihood issues	Since 2003 for 23 villages in 1 block
Participatory Selection of Crop Varieties & Promotion	Since 1996 for more than 60 villages. (overlapping watershed & MF villages.) Providing technical support and inputs to MP-DPIP to implement in 7 districts for 320 villages since 2003.

Source: ASA, 2005.

Regarding the watershed work, it believes in putting first those works that have an important income component. It emphasises developing small irrigation works, which increases the area under irrigation and generates income. Like Sampark, it ensures that at least one member is included in the VWC from each hamlet. The user groups for the irrigation work levy user charge on all beneficiaries though the mode of payment (crop-

wise or area-wise) varies between groups. A diagrammatic representation of ASA's strategy is given in Figure 5.2. The development of water resources is complemented by creation of micro-credit institutions for providing credit for agricultural inputs. It also aids in capacity building needed for adopting new technologies and provides hybrid seeds from the project funds.

Figure 5.2



c) Case of Gramin Vikas Trust, Jhabua

Though it has undertaken some work under the auspices of the RGMWM, it works primarily with funds from DFID for Western India Rain-fed Farming Project. Its focus is to disseminate knowledge about appropriate technology suitable for the area the Trust is working in. Some volunteers in the village are trained by the Trust in natural resource management techniques and they represent the link between the village and the Trust. Major activities are undertaken only after confidence building in the local community is completed. Community is organised in homogenous groups of people with similar interests and usually work is carried out to benefit each group separately on the basis of their priority. Among the activities, making drinking water available is always the first priority, followed by the repair of existing wells and tube wells. However, after facilitating participatory institution building and carrying out the watershed work, the trust offers limited support. In other words, the Trust withdraws, unlike ASA and Lupin, at the completion of the project. Though the *shramdan* principle for soil-moisture conservation work is comparatively high (25 per cent for common land and 50 per cent for private land), the Trust provides 100 per cent funding for capital expenditures of water harvesting structures. The user group, however, is expected to raise fund for operation and maintenance. Water Users Associations (WUAs) usually gain from the water harvesting structure. The trust has not found it difficult to generate initiatives for maintenance. The training provided to the user groups is technical in nature and usually they can undertake the repair work themselves.

Several useful insights emerge while comparing the current models and the alternative models with the standard ones implemented at a

larger scale by the different government departments. First, the community mobilisation aspect gets much greater emphasis in the alternative models compared to the standard ones both in terms of methods of initiating participation and norms of completing community mobilisation before starting watershed works. Secondly, the withdrawal norms adopted are much more gradual in the former set of projects. Thirdly, most of the alternative models are more holistic in the sense that they tend to tie up natural resource management programmes with activities in health, education, animal husbandry, etc. The efforts put in community mobilisation generate much greater results in these models. The norms for user charges are stricter in the alternative models.

There are a number of ways in which the alternative models differ in their forms and functioning. One aspect is the mode of sequencing watershed works. While some models, for example, ASA, believe in carrying out the income-generating activities first, others like GVT focus on work requiring lower levels of investment (like repair works of existing structures) first. The nature of capacity building varies among different models. GVT, for example, from the beginning, trains a core group in the village in NRM and related repair works.

5.6 Overall Impact: What do Secondary Data Tell?

The rich and diverse experience from various watershed projects in Jhabua depicted above leads one to expect certain tangible impact at district level. We have tried to ascertain this in the light of the changes that have taken place in the indicators like area under crops, yield, and cropping pattern. Based on the secondary data, the analysis tries to examine the changes in a comparative framework where the

scenario in Jhabua is compared with two other districts viz; Khandwa and Khargaon which belong to the same Agro-Ecological Region, i.e., Nimar Plains. However, while Jhabua has a WDP coverage of almost 40 per cent, the Nimar Plains have about 10 per cent coverage, making them a suitable case for comparison across space and time.

The recent study by Shankar (2006) highlighted two special features of agricultural growth in Nimar region. First, the size of gross cropped area per capita is relatively smaller in the region (0.34 as compared to 0.41 ha. at the state level). Cropping intensity is also lower (111 as against 126 for the state), which is next only to Chhattisgarh Hills. Moreover, with six per cent share in the gross cropped area, it accounts for only five per cent share in the gross irrigated area in the state. While this is not a highly asymmetric scenario, the region represents a situation of very high proportion (76 % as compared to 50 % for the state) of ground water as source of irrigation. The second important feature is that notwithstanding the lower extent of irrigation and cropping intensity, the region has performed relatively well in terms of productivity per hectare. The estimates suggest that the land productivity increased from Rs. 2583 in 1983 to Rs. 4702 in 2002 (at constant prices of triennium ending 1993). This is an important achievement, which improved the rank of the region from ninth (the lowest) to fifth.

It is plausible that a part of the improvement in land productivity (vis-à-vis some other regions in the state) is contributed by large-scale

implementation of watershed projects especially, in Jhabua. In order to ascertain this, we tried to examine some of the important indicators of agricultural growth across three districts in Nimar region. The results of the exercise are presented in Tables 5.13 through 5.15, (secondary data are used). It is observed that from 1994-6 to 2000-1, the proportion of net sown to geographical area had declined marginally in all three districts. Similarly, cropping intensity had undergone a decline in all three districts. What is however, noteworthy is that the decline in cropping intensity was steepest, with the lowest level, i.e., 105.4 in Jhabua. (See Table 5.13).

With respect to crop yield, the picture is somewhat similar: not only Jhabua had a relatively lower yield in most of the crops when compared to the yield in the other two districts in the region, in several cases there has been a decline in the yield in Jhabua. whereas the yield has remained stagnant or increased in the other two districts (Table 5.14). For instance, in terms of total cereals (rabi), while yield levels in Khargaon has increased, that in Jhabua has declined sharply, and the decline in Khandwa has been marginal. The decline in wheat yields has been steeper in Jhabua as compared to other two districts.

One remarkable feature of yield levels in the region has been that while the yield of water intensive crops has declined, that of dry crops, particularly maize and jowar, has risen. The analysis of yield levels adjunct to our earlier analysis of cropping intensity shows an

Table 5.13:
Land-use
Pattern in
Jhabua and
Nimar Plains

Source:
Department of
Agriculture, Govt.
of MP

TE	NSA as share of Total Area			Cropping Intensity		
	1991	1996	2002	1991	1996	2002
Jhabua	52.8	53.3	53.1	112.7	128.0	105.4
Khargone	47.0	47.9	47.5	111.2	113.6	109.9
Khandwa	40.0	39.0	38.8	111.2	119.0	114.5

increasing trend in the second period and then decline in the third period. One plausible explanation for such a trend could have been the widespread drought in the state in 2002, however the 2002 drought in the state did not affect these three districts⁴⁴.

44 None of these three districts figures in the notifications of the Revenue Department of the state government that notified the drought affected tahsils in various districts. (Ref. Nos. F 6-35/2002/VII/S-3, F 6-2/2003/VII/S-3, F 6-2/2003/VII/S-3, F 6-2/2003/VII/S-3 and F 6-2/2003/VII/S-3?)

Table 5.14:
Yield Levels in Jhabua and Nimar Plains

TE	Jhabua			Khargaon			Khandwa		
	1991	1996	2002	1991	1996	2002	1991	1996	2002
Total Cereals (Kharif)	824.3	744.0	1076.3	941.7	968.7	1051.2	798.3	678.3	1060.3
Total Cereals (Rabi)	1865.3	1958.0	1095.0	1989.3	2847.0	3237.7	1696.7	1815.7	1519.7
Total Oilseeds	551.7	605.0	522.0	639.7	698.3	556.0	532.3	599.0	431.3
Total Pulses (Kharif)	284.7	337.0	292.0	306.7	364.3	314.3	357.3	603.0	560.0
Paddy	489.3	482.0	274.7	642.3	579.0	418.7	866.7	845.7	745.3
Wheat	2012.3	2065.7	1450.3	2134.0	2874.7	2415.0	1781.7	1909.7	1665.0
Jowar	523.7	471.3	527.7	923.0	925.7	873.8	833.0	613.0	1105.7
Soyabean	699.3	660.3	457.0	647.0	728.0	496.2	560.0	561.7	419.7
Maize	1181.0	929.7	1503.3	1475.0	1230.3	1797.8	1306.0	1416.7	2224.0

Source: Department of Agriculture, Govt. of MP

Lastly we tried to look at the change in cropping pattern. It is observed that whereas Khargaon has registered an increase in the area under crops like cotton, oilseeds, and soyabeans, the crops that have gained in terms of area in Jhabua are subsistence crops like Maize and Pulses [Table 5.14]. This, once again, suggests relatively low level of dynamism in agricultural scenario in the period when watershed development had taken place on a large scale in Jhabua. It is likely that the other two districts may have gained from certain initial advantages in terms of socio-economic parameters including irrigation.

In absence of other evidence, the above analysis may suggest that at best, watershed projects in Jhabua, have exerted selective and/or limited

impact on agriculture till now. To an extent the observation confirms the findings from data based on remote sensing methods, which indicated absence of any perceptible improvement in vegetation in the district. Together the evidence, though tentative, calls for further investigation so as to get a more realistic picture of the likely impact of watershed projects on a larger scale.

5.7 Summing Up

To sum up, Jhabua as a spatial entity represents a fascinating case study in itself for watershed projects for a number of reasons. The undulating topography creates a number of small 'ideal' micro-watersheds which are relatively less

Table 5.15:
Cropping
Pattern in the
Jhabua and
Nimar
Plains⁴⁵ (in
decreasing
importance of
crops)

*45 Weaver's
Method has
been followed to
calculate the
cropping pattern.*

	TE 1991	TE 1996	TE 2002
Jhabua	<i>Kharif Pulses, Maize</i>	<i>Kharif Pulses, Maize, Rabi Pulses</i>	<i>Maize, Kharif Pulses, Tot. Oilseeds</i>
	Tot. Oilseeds, Jowar, Paddy, Rabi Pulses, Cotton, Wheat	Tot. Oilseeds, Wheat, Paddy, Soyabean, Jowar, Cotton	Soyabean, Cotton, Paddy
Khandwa	<i>Cotton, Jowar, Kharif Pulses</i>	<i>Cotton, Tot. Oilseeds, Jowar, Soya beans, Wheat</i>	<i>Oilseeds, Soyabean, Cotton, Wheat*</i>
	Tot. Oilseeds, Wheat, Paddy	Kharif Pulses	--
Khargaon	<i>Cotton, Jowar, Kharif Pulses</i>	<i>Cotton, Jowar, Kharif Pulses, Tot. Oilseeds</i>	<i>Cotton, Jowar, Tot. Oilseeds, Soyabeans,</i>
	Tot. Oilseeds, Wheat	Wheat, Maize	Kharif Pulses, Maize

linked with functionalities of the larger watersheds. A large percentage of population lives just above or below the poverty line and there is a high incidence of unemployment or underemployment and thus has the characteristics common to a seasonally migrant population (to adjoining states of Gujarat and Rajasthan). Thus even the temporary employment opportunities created by watershed projects at substantially higher wages have the potential to attract the attention of the population towards the watershed projects. A relatively small incremental income can generate interest and motives for participation in the long run. Our field surveys confirm that the nature of seasonal migration has changed a great deal in project areas. The elders who are left behind are more productively engaged in raising a second crop from the field, while a lot of children who are also left behind regularly attend school. The young couples migrate, but for a shorter time, even after the project is over as there is more work in the fields. The joint decisions about the watershed structures of SHGs are taken more easily compared to other parts of the state due to the homogenous tribal population. Above

all, Jhabua has a group of highly motivated government officials who have been involved in watershed work for many years. There are also some very efficient NGOs which have been able to pursue their own models in many cases despite the fact that their method of work is different from the governmental method,.

The following issues emerge from the case study of Jhabua specifically, from which lessons can be drawn for the rest of the states.

1. There appears to be no systematic way of prioritising resources at the sub-district level. Our analysis reveals that a norm of a flat area allocation under RGMWM projects has been followed from the post-Haryali projects. In this context developing watershed level information base that can at least be used at the sub-district level is important.
2. The importance of NGOs had been declining even before the Haryali guidelines began to be used in the district. However, the NGOs have accepted the more difficult watershed works in which the GOs have not achieved results. It needs to be examined whether in these cases the NGO

results are significantly different after the completion of these projects.

3. In general, our findings are in conformity with the general perception that while the GOs have done better in terms of watershed works, the NGOs have been more successful in terms of community organisation. This provides a scope to look into GO-NGO partnerships in future, both within and outside the Haryali framework, since each has its own area of core competence and the two are to a large extent complementary.

Some thought needs to be given to the possibility of incorporating a few features of the existing models in the states within a broader institutional framework. For example, whether a longer and a more gradual withdrawal strategy should be adopted by the implementing agencies needs to be considered particularly as the added cost of the change seems justified vis-à-vis the results achieved. Also, there could be a scope for tying up with some of the complementary programmes already running in the states which can benefit from the community mobilisation incorporated within the framework of watershed projects.

Summary and Major Findings

6.1 The Context

Watershed Development Programmes (WDPs) have traversed through fairly rich experiences culminating into variety of learning experiences and a mix bag of successes and failures. A number of studies have tried to summarise and synthesise experiences and outcomes from different watershed programmes across different parts of the country. The recent report 'From Hariyali to Neeranchal' prepared by the Parthasarathy Committee is build on this vast and varied set of experiences and outcomes and thereby sets a stage for the next (say, the third) phase of watershed development in India. Whereas the first phase of watershed development in the mid-nineties had focused mainly on conceptualisation, the second phase seems to have consolidated the experiences with respect to processes and mechanisms of project implementation. The next phase therefore, is to find synergies and achieve convergence across resources, projects, and other developmental initiatives. It is against this backdrop that the study has reviewed the experiences of various watershed programmes in Madhya Pradesh. Rather than being evaluative, the analysis has tried to look at the various projects in the light of the specific concerns pertaining to convergence.

The process of convergence essentially requires creating a larger picture so as to be able to gauge the nature, magnitude, and the interconnectedness of the issues and solutions- many of them may go beyond the scope of micro/milli watershed projects. In this context, issues like prioritisation within earmarked areas for each programme, upstream-downstream dynamics, impact on water balance and ground water profile, promotion of sustainable farming practices, equitable benefit-sharing, cross-subsidisation, and cost-sharing, sustainability of watershed treatments and institutions and upward linkages with markets are relevant.

A first step towards creating such a larger picture on watershed development involves a number of activities in terms of preparing a broad data-base; reviewing various experiences, understanding the administrative problems, exploring alternative institutional mechanisms, and creating multi-stakeholder platforms for exchange of information, experiences, and policy feedback.

It is towards this larger goal, that Forum for Watershed Research and Policy Dialogue (ForWaRD) - a consortium of three organizations viz. Society for Promoting Participative Eco-system Management (SOPPECOM), Gujarat Institute of Development Research (GIDR), and Centre for Interdisciplinary Studies in Environment and Development (CISED) - has undertaken some initiatives in Maharashtra, Madhya Pradesh, and Karnataka. The present paper is a part of the larger set of studies being undertaken by ForWaRD. The paper, besides collating the finding from already existing literature covering specific project in specific areas of the state, seeks to focus on the issues raised above. The idea is to go beyond the stock taking and at least highlight

some of the new challenges that are likely to assume critical importance while scaling up and at the same time, enhancing effectiveness of the programmes in the times to come.

Methodology and Approach

The purpose of this study was to carry out a broad review of status of watershed programmes in Madhya Pradesh. The fact that WDPs are being carried out by numerous agencies, each having their own individual model and way of functioning, probably points to the notion that these are seen as just one of the numerous rural development programmes also carried out by the same departments/agencies. In other words, the importance of watershed 'approach' as it deviated from the 'sectoral' approach, is in some way undermined, if not negated. This however, makes a case for comparing the different models being practised in the state using the guidelines of our normative approach - to review and validate the rationale of convergence of these programmes.

The report has been dealt with at two levels. Initially, an attempt to review the WDPs for the state as a whole has been made. Since the available material is inadequate to develop a comprehensive review, a case study of Jhabua district has been added to fill in some of the gaps, primarily because of high (almost 38 per cent) coverage of watershed projects in the district as well as typology of projects.

The database of this report has been a) collection of documented material with respect to the state as well as the district of Jhabua, b) Interview with key persons, and c) preliminary field visits in Raisen, Sehore and Jhabua for arriving at a qualitative assessment of the nature of implementations of the projects. It may be noted here that carrying out a systematic survey was not within the scope of our review. The review,

as may be understood from the underlying approach, is expected to be broadly qualitative, and probably will not enable us to say anything in a conclusive manner. Nevertheless, since published material available is extremely scant, even a skeleton status report would lay a base for a policy dialogue between practitioners and policy makers. Also, it is hoped that it would provide some directions for future research in this field.

6.2 Scope and Coverage of WDPs in M. P.

Madhya Pradesh constitutes a significant part of the vast tracts of dry-land farming land in India, which in turn, consists of almost two-thirds of India's cultivated land; such areas remain vulnerable to risk and uncertainty, degradation of natural resources and problems of low productivity. The topography and other agro-climatic conditions in the state however, offer a fairly promising opportunity for watershed development, as compared to the predominantly dry land states e.g. Rajasthan, Gujarat, and Maharashtra located on the western part of the state. For instance, a fair part of M.P. enjoys sub-humid conditions with average annual rainfall exceeding 1000 mm, a substantial part of the region constitutes upper catchments where checking soil erosion may assume significant importance for sustaining and improving soil productivity. Further, with almost one-third of land as forest area, and fairly substantial proportion of cultivated land having been converted from erstwhile forest area, the natural productivity is likely to be fairly good in most parts of the area where poor, especially tribal communities are located.

Besides these, factors like relatively low level of commercialisation of agriculture, especially with respect to use of chemical inputs and substantial achievements in terms of strengthening decentralized

governance through reforms in *Panchayati Raj* system has significant bearing for watershed development in the state.

Given the scope, the Government of MP recognized the need to harness the potential of its relatively rich natural resources for simultaneously achieving the dual goals of environmental regeneration and poverty reduction in the state. The state is perhaps the pioneer in the country in terms of setting up a special Mission (i.e. RGMWM) for implementing watershed development projects (funded through the MoRD). Implementation of WDP in a mission mode is perhaps a pointer to official recognition of the need as well as scope for watershed development in the state, which otherwise has remained fairly dormant in terms of agricultural growth and the associated poverty reduction.

Besides RGMWM, which has a distinction of implementing the largest number of watershed projects in the state, there are other agencies / programmes that have made significant contribution towards watershed development. The other major programme is National Watershed Programme for Rainfed Agriculture (NWDPR), which till recently, had covered less than one third of the area covered by RGMWM. To a large extent, relatively higher coverage of WDPs by RGMWM is due to the fact that a good number of districts in the state have been identified under various area specific programmes under MoRD like EAS, DPAP and IWDP out of which EAS has a substantial coverage.

RGMWM and NWDPR together with RVP account for more than five million hectares of area covered covering more than 15 per cent of the total area in the state (the figure might not be accurate due to inconsistencies in information between RGMWM and NWDPR)

wherein the former has the information of the total area covered the latter gives the figure of only the actual treated area).

It is observed that the WDPs under RGMWM have concentrated mainly in twelve districts, constituting about 56 per cent of the total area covered under the programme. These are: Jhabua, Dhar, Chhindawada, Khargaon, Ratlam, Sidhi, Shahdol, Satna, Sheoni, Shivapuri, Raysen, Bhand. All these districts have more than one lakh ha. of treated land under the programme. Similarly, NWDPR has higher concentration in eleven districts, accounting for 39 percent of the total treated area under the programme. These are: Jhabua, Jabalpur, Chhindwada, Satna, Mandasaur, Guna, Betul, Mandla, Indore, Khargaon, Shajapur. Each of these districts has more than 30,000 ha. of treated area under NWDPR. Together these are 17 districts having larger area under the two major watershed programmes with four appearing in both the lists, viz. Jhabua, Chhindwada, Satna and Khargaon.

The three programmes have been, by and large, implemented in a manner that avoids duplication of efforts; each one of them caters to specific areas on priority basis. However, it is likely that there is not much of synergy between the various programmes because first, the projects are being planned within the context of departmental priorities; and secondly, the unit for planning is generally milli and/or micro watershed rather than a stream or river basin. The Forest Department also undertakes soil water conservation treatment on degraded forest area, constituting major part of the upper catchments of watersheds. However, in general they don't implement the conservation measures on a watershed basis and we don't have much information about that, except for a few cases where they act as a PIA for RGMWM.

WDPs implemented by agencies like CAPART and Donor Agencies as DFID, EU, ICEF etc. also couldn't be taken into consideration due to lack of information regarding them in the public domain.

Although most of the WDPs have been implemented by the government agencies there are a number of NGOs (numbering about 100) who have been involved as PIA under RGMWM and CAPART. The NGOs vary widely in terms of the past experience, capabilities, and presence in the area before and after completion of the WDPs. However, only half of the NGOs seem to have a fairly good understanding as well as capability in terms of implementing WDPs. A large proportion of these NGOs have experience in implementation of Government as well as externally funded projects.

In absence of synergy across the programmes the actual achievements may have remained sub-optimal, notwithstanding the effective implementation of the micro/milli watershed projects. It is therefore likely that: (a) the impact of the various programmes may have remained localized; and (b) cross learning may have remained limited. Hence, a more holistic picture therefore is needed to address the above limitations.

6.3 Jhabua District: A Disaggregated Analysis

Jhabua district is located in the westernmost semi-arid agro-climatic zone and is in fact one of the five most backward districts of the country. Jhabua's relative position in the state is somewhat like Madhya Pradesh's relative position in the country. The district has been a main focus of attention from various agencies implementing watershed projects in the state. The district also has a group of extremely motivated government officials, who have been

involved in watershed work for many years. There are also some extremely efficient NGOs which despite having different ways of working compared to the government's way of functioning have been able to pursue their own models in many cases. In that sense, it provides a platform for examining the central issues of the study at a more disaggregated level.

Following issues emerge from the case study of Jhabua:

There appears to be no systematic way of prioritising resources at the sub-district level. Our analysis reveals that a norm of a flat area allocation under RGMWM projects has been followed from the post-Haryali projects. In this context developing watershed level information base that can at least be used at the sub-district level is important.

The importance of NGOs has been declining even before the Haryali Guideline in the district. However, the NGOs have accepted the more difficult watershed works where the GOs have not achieved results. It needs to be examined whether in these cases the NGO results are significantly different after the completion of these projects.

In general, our findings are in conformity with the general perception that while the GOs have done better in terms of watershed works, the NGOs have been more successful in terms of community organisation. This provides a scope to look into GO-NGO partnerships in future, both within and outside the Haryali framework, as clearly, their areas of core competence is different and to a large extent complementary.

Some thought needs to be given to the possibility of incorporating a few features of the existing alternative models in the states within a broader institutional

framework. For example, a longer and a more gradual withdrawal strategy of the implementing agencies needs to be given some consideration particularly as the added cost of this seem to be justified vis-à-vis the results achieved. Also, there could be a scope for tying up with some of the complementary programmes already running in the states which can benefit from the community mobilisation incorporated within the framework of watershed projects.

6.4 Implementation and Achievements

There is vast set of grey literature that has gone into examining the implementation process and the achievements or impact of the various watershed projects in the state. While most of these studies/ reports are project specific, one could identify common features cutting across the major programmes especially, RGMWM and NWDPR. In what follows we have tried to summarise some of the important features pertaining to project implementation and achievements. These are of course, fairly generalist in nature, nevertheless recapitulating them may help raising relevant issues and drawing lessons thereof.

The major benefits of the implementation of watershed programmes in the state can be summarised in terms of:

Increased availability of water through water harvesting structures and enhanced crop survival during mild drought.

Significant awareness for harvesting and conserving water, inducing private initiatives.

Positive demonstration effect of the relatively more successful and sustaining WDPs.

Given the hilly and undulating terrain, the watershed structures have by and large yielded substantial benefits to about 8-10 farmers per structure. The benefits have resulted in increase in number of waterings, increased cropping intensity, and change in cropping pattern in favour of more water intensive crops.

The following observations can be made about the mode of project implementation in the state by various agencies:

Given the earmarked area, selection of milli and micro watersheds generally appears to be based on socio-political considerations, rather than taking connectivity and continuity in a geo-hydrological sense.

'Pani Roko Abhiyan' being a precursor, watershed approach in the state also got to be seen more within a micro context, without looking into the issues of upstream-down stream within a larger watershed or river basin.

Although most of the programmes function with objectives that are fairly common (especially among RGMWM, NWDPR, CAPART, Donor Funded), there are substantial differences in the manner in which these programmes are being visualized and thus in turn, implemented.

Whereas institutional development assumes a more important place in the WDPs implemented by RGMWM, agronomic practices and crop management remain central to NWDPR.

The treatment in the forest areas are focused more on vegetative measures and regeneration as well as conservation of forest. In that sense the intervention does not directly link watershed treatment or soil water conservation to the people who live inside or in the periphery of the forest.

There is little clarity about the micro watershed projects to be taken up within the area already treated under RVPs.

The problem of delay in disbursement of fund is common to most of the programmes. This obviously has a significant bearing on the manner in which project is implemented especially in terms of mobilizing people's participation.

The ridge to valley approach is difficult to follow especially, within the time frame of the project. The obvious preference for water harvesting structures plays a critical role in getting people involved in the project. Negotiating this against other treatments therefore requires substantial skills in the form of social engineering. Most of the Govt. agencies may not get into this difficult process, given the other responsibilities on hand. At the same time, NGOs may lack the requisite skills to steer the process. As a result the programme remains centred round water harvesting structures.

WDCs and SHGs are formed in the case of most of the WDPs. These institutions however often do not last beyond the project. In case of WDCs, utilization of funds after completion of the project is difficult especially in the light of the fact that the recent regulation under RGMWM that the committee can use only the interest of the development fund vested with that. In the case of SHGs, most of them cease to function after the PIA withdraws or many a time even before that. The individual savings are also withdrawn.

The size of the water harvesting structures seems to be a contentious issue. The areas with high slope as well as erosion may require substantially larger structure that may not be feasible without compromising the equity issue, given the financial allocation.

Although the water harvesting structures have been made fairly well and most of them have survived at least till 3-4 years after completion of the project the future management however is a big question.

Drinking water continues to remain a missing link in large number of WDPs. Hand pumps/ stand posts and water tanks including tankers supplied by other schemes for provisioning of drinking water remains the major source. Adopting integrated approach to augmentation and allocation of water across different uses and users is an unresolved aspect in most of the WDPs, including some of those implemented by NGOs.

Forest and pastures within micro watersheds are rarely treated and protected. Managing a fodder supply system during the initial phase when the pastures are being protected, and regulating the use subsequently, is often found unaddressed. Unless this aspect is brought to the forefront right from the beginning of participatory processes of planning and implementation, management of CPLRs remains the most difficult challenge.

Little attention is being paid towards agricultural extension except for distribution of seeds and other inputs. Water use efficiency is yet to be taken up on board as an important issue for negotiation.

Availability of wages during the project period is an important benefit reaching to landless. Using the fund generated out of the wage income could potentially be utilised by forming SHGs. Such groups seldom sustain as noted earlier.

6.5 Emerging Issues and Future Directions:

The experience, till now suggest that whereas there is increasing

awareness and interest among peoples in WDPs, the project by and large suffers from clear result orientation. The very reason, which prompted adoption of multifunctional and participatory approach instead of merely activity specific intervention in the earlier schemes implemented by the line department, seems to be blocking the way towards a result (if not target) oriented mechanism for project implementation. It seems that the projects attempt to address, in bits and pieces, most of the aspects envisaged by the project - productivity enhancement, employment generation (if not equity), environmental sustainability, democratic decentralization, and setting up of backward-forward linkages (Watershed-plus). And yet, the actual achievements especially in terms of sustenance of benefits appear to be limited.

At this juncture when the Rural Employment Guarantee Act is already in place, and WDPs is one of the most important thrust areas for the activities to be planned under the employment programme, it is essential that the lessons learnt from the past experience be incorporated in future planning. Following issues need special attention in this context:

Adopting a holistic approach by coordinating various watershed programmes taking a larger watershed unit for perspective planning. The present state level coordination committee should be made more broad-based. Coordinated efforts are should be made to create a public database on the various important aspects for watershed development.

Putting information about treated and planned micro watersheds in public domain so as to help enhancing transparency in planning and implementation.

Link with RVP and Forest watersheds should be established

keeping the upstream-down stream perspective in place.

Setting up priority of treating CPLRs including the degraded forestland within a micro watershed as an important pre-condition for undertaking the WDP-implementation. This would require sorting out the legal hitches.

Introducing administrative and financial flexibility on a result oriented basis.

PIAs may not immediately withdraw after completion of the project. There is a need to dovetail other programmes where the NGOs/PIAs could continue their interaction with the village communities, especially in order to hand hold the community based organisations created under the project. The PIAs should be around at least till the first three rounds of repair/maintenance or regulating the use of pastures are completed.

The scope for creating larger water harvesting structures or regenerating degraded forest/other land could be linked with minor irrigation and forest department respectively; same may apply for schemes for providing drinking water in the WDP villages.

A multi-stakeholder platform may help identifying and addressing conceptual as well as practical issues such as these. While there a couple of networks of WDP-parishioners, these networks need to be strengthened and represented in the state level coordinating committee as part of the process of broadening its base.

List of Abbreviations

ASA: Action for Social Advancement

ANARDe Foundation: ACIL-Navasarjan Rural Development Foundation

ADB: Asian Development Bank

BAIF: Bharatiya Agro Industries Foundation

CAPART: Council for Advancement of People's Action & Rural Technology

CARD: Centre for Advanced Research and Development

CBO: Community Based Organisations

CGWB: Central Ground Water Board

CISED: Centre for Interdisciplinary Studies in Environment and Development

CPLR: Common Property Land Resource

CSWCRTI: Central Soil and Water Conservation Research and Training Institute

CWDP: Comprehensive Watershed Development Programme

DANIDA: Danish International Development Assistance

DFID: Department for International Development

DPAP: Drought Prone Areas Programme

DPIP: District Poverty Initiatives Program

DRDA: District Rural Development Agency

EAS: Employment Assurance Scheme

EDSS: Eco Development Solution Society

FAO: Food and Agriculture Organisation

ForWaRD: Forum for Watershed Research and Policy Dialogue

GIDR: Gujarat Institute of Development Research

GVT: Gramin Vikas Trust

ICAR: Indian Council for Agricultural Research

ICEF: India-Canada Environment Facility

ICRISAT: Indian Centre for Research in Semi-arid Tropics

IIFM: Indian Institute of Forest Management

IWDP: Integrated Wastelands Development Programme

MoA: Ministry of Agriculture

MoRD: Ministry of Rural Development

MPRLP: Madhya Pradesh Rural Livelihoods Project

NCHSE: National Centre for Human Settlements and Environment

NREGA: National Rural Employment Guarantee Act

NRSA: National Remote Sensing Agency

NWDPRA: National Watershed Development Programme for Rainfed Areas

PIA: Programme Implementation Agency

PRA: Participatory Rural Appraisal

PRI: Panchayati Raj Institutions

RGMWM: Rajiv Gandhi Mission for Watershed Management

RVP: River Valley Programme

SGRY: Sampoorna Gramin Rozgar Yojna

SGSY: Swarnjayanti Gram Swarozgar Yojana

SHG: Self Help Group

SPS: Samaj Pragati Sahyog

UNICEF: United Nations International Children's Emergency Fund

VDC: Village Development Committee

VWC: Village Watershed Committee

WALMI: Water and Land Management Institute

WDP: Watershed Development Programme

WUA: Water Users Association

References

- ADB (2001), 'Madhya Pradesh Integrated Water Management Strategy', Asian Development Bank, September.
- ANARDe Foundation (2005a), 'Evaluation Study of Watershed Development in District Ujjain'.
- ANARDe Foundation (2005b), 'Evaluation Study of Watershed Development in District Ratlam'.
- CARD (2002a), 'Evaluation of DPAP in Betul District (6th Batch) of Madhya Pradesh', submitted to RGMWM.
- CARD (2002b), 'Evaluation of DPAP in Panna District (6th Batch) of Madhya Pradesh', submitted to RGMWM.
- CARD (2002c), 'Evaluation of DPAP in Seoni District (6th Batch) of Madhya Pradesh', submitted to RGMWM.
- CARD (2002d), 'Impact Assessment Study of Watershed Programmes in Madhya Pradesh', Sponsored by Monitoring Department, Ministry of Rural Development, Monitoring Division.
- CARD (2005a), 'Mid Term Evaluation of Drought Prone Area Programme (9th Batch) in Jhabua district of Madhya Pradesh'.
- CARD (2005b), 'Mid Term Evaluation of Drought Prone Area Programme (9th Batch) in Mandla district of Madhya Pradesh'.
- CARD (2005c), 'Mid Term Evaluation of Drought Prone Area Programme (9th Batch) in Khandwa district of Madhya Pradesh'.
- Chadha, G. K., Sucharita Sen, and H. R. Sharma (2004), 'Land Resources',²Volume 'State of the Indian Farmer: A Millennium Study', Department of Agriculture and Cooperation, Government of India and Academic Foundation, New Delhi.
- Chopra, Kanchan (1999), 'Evaluation of Watershed Programmes in India: A Review' in Farrington, J; Cathryn, T., and James, A.J. (eds) *Participatory Watershed Development: Challenges for the Twenty First Century*, Oxford University Press, New Delhi
- Cohesion (2005), Draft Report on 'Study on Impact of Project Intervention on the Socio-Economic Condition of Poor Beneficiaries of the Project', Comprehensive Watershed Development Project Madhya Pradesh, submitter to DANIDA advisor.
- CSWCRTI (2004), 'Participatory Watershed Management for Sustainable Development in Bajni Watershed, Datia, Madhya Pradesh, under IWDP', Central Soil and Water Conservation Research and Training Institute.
- Dar, William (2003), 'Maximising Impacts for Natural Resource Management Research: Overcoming Methodological Changes' in Bekele Shiferaw and Ade Freeman (eds), *Methods for Assessing the Impacts of Natural Management Research*, ICRISAT, Hyderabad
- Das, Keshab (2006) 'Drinking Water and Sanitation in Rural Madhya Pradesh: A Review of Policy Initiatives', Draft Report, September, Gujarat Institute of Development Research, Ahmedabad

- Datar, C., and A. Prakash (2001), 'Engendering Community Rights: A Case for Women's Access to Water and Wasteland' *Indian Journal of Gender Studies* 8(2), 223-246.
- Deaton, 2003 Deaton, A and J. Dreze, (2002), 'Poverty and Inequality in India: A Re-examination', Working Paper No. 107, Centre for Development Economics, Delhi School of Economics, New Delhi.
- Deaton, A. (2003), 'Regional Poverty Estimates for India, 1999-2000' Research Program in Development Studies, Princeton University, August 22, 2003.
- Deshpande, R.S. and A. Narayanmoorthy (1999), 'An Appraisal of Watershed Projects Across Regions', *Artha Vijnana* 41(4), pp. 315-415.
- Deshpande, R.S. and G. Thimmaiah (1999), 'Watershed Development Approach and Experience of National Watershed Development Programme in the Country' *Journal of Rural Development*, 18(3), pp. 453-469.
- EDSS, (2005), 'Mid-term Evaluation Report, 9 Batch Hariyali D.P.A.P., Shajapur; Bhopal, M.P'.
- EDSS, (2005), 'Mid-term Evaluation Report, 9 Batch Hariyali D.P.A.P., Shivpuri, Bhopal, M.P'.
- Fan, Shenggen, and Peter Hazell (2000), 'Should Developing Countries Invest More in Less-Favoured Areas? An Empirical Analysis of Rural India' *Economic and Political Weekly*, Vol. 35 (, No. 17). , April 22, pp. 1455 - 1464
- Farrington, J.C., Turton, and A.J James (eds) (1999) *Participatory Watershed Development: Challenges for the Twenty-First Century*, New Delhi, Oxford University Press.
- FAO (1998), 'Bihar Madhya Pradesh Tribal Development Programme', Socio-economic and Production Systems Study, Food and Agricultural Organisation
- Gate, S. (2001), 'Empowerment of Women in Watershed Management: Guraiya Panchayat, Madhya Pradesh', *Indian Journal of Gender Studies* 8(2), pp. 247-256.
- Gol (2000), Warasa-Jan-Sahbhagita Guidelines for National Watershed Development Project for Rainfed Areas (NWDPR), Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi.
- Gol (2006), 'From Hariyali to Neeranchal: Report of the Technical Committee on Watershed Programmes in India', Department of Land Resources, Ministry of Rural Development
- Gol, (1995), 'Common Guidelines for Watershed Development Programmes', Department of Land Resources, Ministry of Rural Development, New Delhi
- Gol, (2001), 'Guidelines for Watershed Development (Revised)', Department of Land Resources, Ministry of Rural Development, New Delhi.
- Gol, (2003), Guidelines for Hariyali, Department of Land Resources, Ministry of Rural Development, New Delhi.
- GoMP (1995a), 'Madhya Pradesh Human Development Report', Bhopal.
- GoMP (1995b) 'Mission Document, Rajiv Gandhi Mission for Watershed Management', Panchayat and Rural Development Department.
- GoMP (1998), 'Madhya Pradesh Human Development Report', Bhopal.
- GoMP (2003a), 'Pani Roko Abhiyan', Rajiv Gandhi Mission for Watershed Management, Panchayat and Rural Development Department.
- GoMP (2003b), 'Status Paper, Rajiv Gandhi Mission for Watershed Management', Panchayat and Rural Development Department.
- GoMP, (2000), 'Madhya Pradesh Environmental Status Report', Bhopal.
- Hooja, R., and R. Puskar, (2005), 'Policy Interventions and Administrative Instruments for Sustainable Livestock Development in Watersheds: Some Suggestions Based on the Lead Study of Five Watersheds' *Indian Journal of Public Administration* 51(1), pp.70-93.

- Jaiswal, A.K. (1999), 'Capacity Building in Watershed Development Programme: An Anatomy', *Journal of Rural Development*, 18(4), pp. 597-611
- Joshi, P. K., V. Pangrave, B. Shiferaw, S. P. Wani, Jetske Bouma, and Christopher Scott (2004), 'Watershed Development in India : Synthesis of Past Experiences and Needs for Future Research', *Indian Journal of Agricultural Economics* 59(3), pp. : 303-320.
- Joy, K. J., A. Shah, S. Paranjape, S. Badiger and S. Lele (2005):, 'Reorienting the Watershed Development Programme in India', Presentation before the Technical Committee on Watershed Programmes in India (Parthasarathy Committee) by K. J. Joy, July 25, Pune Forum for Watershed Research and Policy Dialogue Occasional Paper, February Forum for Watershed Research and Policy Dialogue, Pune
- Joy, K.J. and Suhas Paranjape (2004), 'Watershed Development Review: Issues and Prospects', Technical Report, Centre for Interdisciplinary Studies in Environment and Development, Bangalore
- Kerr, J, Pangare, V.L., and Pangare, G. (2002), 'Watershed Development Projects in India', an Evaluation. Research Report 127, International Food Policy Research Institute, Washington, D.C.,
- Kerr, J. (2002), 'Watershed Development, Environmental Services and Poverty Alleviation in India', *World Development*, 30 (8), pp. :1387-140
- Khanna, A. and C. Khanna (2006), 'Water and Sanitation Programmes in Rural Areas of Madhya Pradesh', WaterAid India, New Delhi
- Puskar, R., J. Bouma, and C. Scott (2004), 'Sustainable Livestock Production in Semi-Arid Watersheds', *Economic and Political Weekly* 39 (31), July 31, pp. 3477-3483.
- Radhakrishna, R and S. Ray, (2005), 'Handbook of Poverty in India: Perspectives, Policies and Programmes', Oxford University Press, New Delhi.
- Rajput, A.M., and A.R. Verma (1997), 'Impact of Integrated Watershed Development Programme in Indore District of Madhya Pradesh' *Indian Journal of Agricultural Economics*, 52(3), pp. 537-539.
- Rao, C.H.H. (2000), 'Watershed Development in India: Recent Experience and Emerging Issues', *Economic and Political Weekly*, Vvol. 35 (45), No. 32, pp. 3943 - 47.
- Ravindra, A (2004), 'Compilation and Assessment of Impact Monitoring Indicators and Systems of Comprehensive Watershed Development Project, Madhya Pradesh, Final Report', Submitted to RGMWM, Bhopal.
- Reddy, V. Ratna, and John Soussan (2003), 'Assessing the Impact of Participatory Watershed Development: A Sustainable Rural Livelihoods Approach', in B. Shiferaw and H. A. Freeman (eds), *Methods for Assessing the Impacts of Natural Resource Management Research*, Summary of the Proceedings of the ICRISAT-NCAP/ICAR International Workshop, ICRISAT, Patancheru
- Shah, Amita (1998a), 'Watershed Development Programmes in India: Emerging Issues for Environment Development Perspective' *Economic and Political Weekly*, Vol. 32, No. (26), pp. A66-80.
- Shah, Amita (1998b), 'Impact of Watershed Programmes in Dryland Regions: Evidences and Policy Imperatives', paper presented at the National Workshop on Watershed Approaches for Wasteland Development: Challenges for 21 Century, Ministry of Rural Areas and Employment, New Delhi, April 28-30.
- Shah, Amita (2004), 'Rapporteur's Report on Watershed Development' *Indian Journal of Agricultural Economics*, 59(3), pp. 664-670
- Shah, Amita (2005), 'Poverty and Natural Resources: Understanding the Dynamics in Context of Dry Land Regions in Western India', Working Paper No. 25, Chronic Poverty Research Centre and Indian Institute of Public Administration, New Delhi
- Shah, Amita and D. C. Sah (2004), 'Chronic Poverty in a Remote Rural District in South West Madhya Pradesh: A Multidimensional Analysis of its Extent and Causes', Working Paper No. 5, Chronic Poverty Research Centre and Indian and Indian Institute of Public Administration, New Delhi

Shah, Mihir, D. Banerji, P.S. Vijayshankar and P. Ambasta et al; (1998), Ch2, p8 'India's dDrylands: Tribal Societies and Development through Environmental Regeneration', Oxford University Press, New Delhi

Shankar, P. S. Vijay (2005), 'Four Decades of Agricultural Development in MP: An Agro-Ecological Sub-Region Approach' *Economic and Political Weekly*, Vol. 40, No. 48, Nov. 26, pp. 5014-5024

Shiferaw, Bekele, and Freeman Ade (2003), 'Methods for Assessing the Impacts of Natural Management Research', ICRISAT, Hyderabad.

Taru Leading Edge (2001), 'Executive Summary of Evaluation of RGMWM Watersheds in Madhya Pradesh, Final Report', prepared for the United Nations Children's Emergency Fund (UNICEF), in association with SANKET, Bhopal.

TERI (2001), 'Compendium of Impact Evaluation Studies of the National Watershed Development Project for Rainfed Areas', The Energy and Research Institute, Submitted to Rainfed Farming System Division, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India.

TERI (2004), 'Impact Assessment Study of Watershed Development Programme, A Compendium', Submitted to Department of Land Resources, Ministry of Rural Development, Government of India.

Tiwari, S and J. Amegaza, (2005), Watershed Management in Madhya Pradesh: Examining Research-Policy Interactions, DFID.

WALMI (2003), 'Mid Term Evaluation of Milli Watershed Project Area Programme (6 Batch), Rajgarh District, Madhya Pradesh', submitted to RGMWM.

A note on Methodology of Prioritisation of Watershed Activities in Block Level used for Jhabua District

Using available information from the Census and District Statistical Handbook, Jhabua, we have derived three broad criteria, i.e. deprivations in terms of land-access, resource base and socio-economic development. The following variables have been used for obtaining the above criteria.

- A. Land-access deprivation:
 - a. Ratio of rural population to agricultural land
 - b. Percentage of small and marginal farmers to total farmers
- B. Resource Deprivation:
 - a. Reciprocal of average annual rainfall
 - b. Reciprocal of percentage of net area irrigated
 - c. Percentage of underutilised agricultural land (culturable waste and fallows as a percentage to total cultivable land).
- C. Socio-economic Deprivation
 - a. Reciprocal of female literacy rate
 - b. Reciprocal of cropping intensity
 - c. Percentage of non-workers to total population.

(We have not used the criteria of percentage of tribal population used commonly in Jhabua as there is very little variation at the block level of this indicator).

First we have aggregated the respective variables to arrive at the three above-mentioned criteria and further aggregated these three indicators to arrive at the overall index of deprivation.

A simple methodology has been used for aggregation due to the small numbers of observations. To make the indicators scale-free, ratio of the individual variables with respect to the district average has been worked out. To combine, we have simply averaged these ratios in the manner specified above.

The index derived is directly related to deprivation, i.e., higher the index, the higher should be the watershed coverage (i.e. share of watershed area in proportion to the geographical area).

Appendix Tables

A.1 Area Sanctioned under RGWM Projects over Time across Blocks

(area in hectare)

Blocks	DPAP1 (95- 96/96- 97/97-98)	EAS (95- 96/96- 97/97- 98)	IWDP (95- 96/96- 97)	DPAP5 (1999- 00)	DPAP6 (2000- 01)	DPAP7 (2001- 02)	DPAP8 (2002- 03)	Hariyali 1 (2003- 04)	Hariyali 2 (2004- 05)
Petlawad	9471	525	0	2775	1600	1325	1700	1300	1500
Thandla	4522	6727	0	7586		850	1625	1675	1500
Meghnagar	5937	11917	2051	2450		950	1200	1600	1500
Jhabua	1508	8197	4478	0		1315	2700	1550	1500
Ranapur	1068	3381	0	7930		1020	1175	1225	1500
Rama	3238	10950	0	3850		965	1150	1600	1500
Udaigarh	5149	8900	0	1663	1900	850	1475	1300	1500
Jobat	5446	3626	0	746		825	1450	1475	1650
Bhabhra	2039	16225	0	0		825	1425	1575	1000
Kaththivada	1868	7361	0	0		1125	1350	1300	1850
Alirajpur	2131	4335	0	0		1000	1450	1900	1500
Sondwa	3053	8092	0	0		950	1300	1500	1500
Total	45429	90236	6530	27000	3500	12000	18000	18000	18000
Average per block	3786	7520	544	2250	292	1000	1500	1500	1500
C.V.	64	57	252	128	235	17	28	13	13

Table A.II: Indices of Deprivations across Blocks in Jhabua

Districts	Overall Depriva- tion	Districts	Land Access deprivation	Districts	Re- source depriv- ation	Districts	Socio- economic deprivation
Sondwa	1.22	Meghnagar	1.30	Sondwa	1.53	Sondwa	1.15
Kathhiwara	1.15	Thandla	1.10	Kathhiwara	1.31	Kathhiwara	1.14
Meghnagar	1.12	Jhabua	1.04	Meghnagar	1.11	Alirajpur	1.13
Jhabua	1.08	Bhavra	1.03	Thandla	1.10	Jhabua	1.09
Thandla	1.07	Kathhiwara	1.01	Jhabua	1.10	Rama	1.08
Rama	1.03	Rama	0.98	Ranapur	1.08	Thandla	1.01
Ranapur	0.99	Ranapur	0.98	Udaigarh	1.03	Jobat	0.98
Bhavra	0.96	Sondwa	0.97	Rama	1.02	Udaigarh	0.97
Alirajpur	0.96	Petlawad	0.93	Alirajpur	0.99	Meghnagar	0.95
Udaigarh	0.94	Jobat	0.85	Bhavra	0.96	Bhavra	0.90
Jobat	0.91	Udaigarh	0.82	Jobat	0.91	Ranapur	0.90
Petlawad	0.87	Alirajpur	0.75	Petlawad	0.80	Petlawad	0.87

Table: A-III Comparison of Allocated Fund per Hectare of Treatable Area/Geographical Area

NWDPRRA, 9 th Plan		NWDPRRA, 10 th Plan		Rajiv Gandhi Watershed Mission (allocated fund/ hac. Geographical Area)				
A.Fund/hac TA	A.Fund/hac GA	A.Fund/hac TA	A.Fund/hac GA	DPAP1	EAS	IWDP	DPAP 5	DPAP6 to Haryali2
3499	1784	4515	1811	Rs.3600/- per hectare as per guidelines in all blocks	3600	Rs.3600/- per hectare as per guidelines in all blocks	Rs.3600/- per hectare as per guidelines in all blocks	Rs.6000/- per hectare as per guidelines in all blocks
3393	3175	4501	2006		3630			
3506	2388	4498	1729		3632			
3335	3335	4504	3142		3906			
3308	3041	4505	1895		4000			
3159	3159	4500	2176		3600			
3476	3145	4498	2991		3600			
3500	3198	4499	2140		3600			
3500	1391	4500	1225		3600			
2802	1246	6262	3741		3600			
3500	3404	4495	1410		3600			
3500	3280	4499	3414		1932			
3373	2712	4648	2307		3525			

Note: A. fund-allocated fund; TA- treatable area; GA- geographical area
 Source: DRDA and District Agriculture office, Jhabua.

Table A-IV:
Government and Non Government Organisations Participating in DPAP (II/5-9) in Jhabua District

SI No	Block	Project Implementing Agencies	Number of Micro Watershed	Sanc. Amount	Sanctioned area
				(Rs. Lakh)	(hectare)
1	Petlawad	NGO (BAIF, Petlawad)	10	203.5	5700
	Petlawad	NGO (Vasudha Vikas Samiti, Bamania)	1	10.2	500.00
	Petlawad	GO, (Petlawad)	5	60.17	2500
2	Thandla	NGO(Sadguru WS D, Dahod)	3	102.92	2650.00
	Thandla	NGO (CARD, Bhopal)	3	34.43	1625.00
	Thandla	GO (Petlawad and Thandla)	17	225.35	6492.02
3	Meghnagar	NGO (Sahara)	1	11.32	600.00
	Meghnagar	NGO(NCHSE)	1	34.91	950.00
	Meghnagar	GO(Petlawad and Meghnagar)	11	202.37	4678.70
4	Jhabua	NGO(HSRDI, Jhabua)	1	13.96	588.00
	Jhabua	GO (3 in Jhabua)	8	192.01	4977.00
5	Rama	NGO (NCHSE, Jhabua)	12	228.06	5965.00
		GO (Rama)	3	66.80	1600.00
6	Ranapur	NGO (ASA, Jobat)	6	96.32	3230.22
	Ranapur	NGO (GVT, Jhabua)	10	179.81	4700.00
	Ranapur	NGO (Prayas, Bhabhra)	3	34.57	1175.00
	Ranapur	GO (Jhabua and Ranapur)	5	74.63	2245.00
7	Udaigarh	NGO (ASA, Jobat)	4	49.90	1663.32
	Udaigarh	NGO(HSRDI, Jhabua)	3	34.39	1475.00
	Udaigarh	GO (Jobat, Udaigarh, Bhabhra)	9	130.44	4050.00
8	Jobat	NGO (ASA, Jobat)	2	22.35	745.68
	Jobat	GO (Jobat)	8	120.41	3750.00
9	Sondwa	GO (Sondwa)	8	112.65	3750.00
10	Bhabhra	GO (Bhabhra)	8	759.15	23554.00
11	Alirajpur	NGO (Gramin Vikas Shodh Sansthan, Indore)	1	10.67	500.00
	Alirajpur	GO (2-Alirajpur)	1	128.70	3850.00
12	Katthiwara	NGO (Kalyani Samudayik Sansthan, Indore)	1	12.02	525.00
		GO (Udaigarh and Kaththiwara)	7	34.37	1270.68

Source: District level PIA meeting held on October 17, 2005

