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The World Bank

Report No: ICR00001205

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-35280 TF-26437)

ON A

CREDIT

IN THE AMOUNT OF SDR 79.0 MILLION

(US\$ 100.4 MILLION EQUIVALENT)

TO THE

GOVERNMENT OF INDIA

FOR THE

KARNATAKA WATERSHED DEVELOPMENT PROJECT

September 28, 2009

Sustainable Development Department
Agriculture and Rural Development Unit
South Asia Region

CURRENCY EQUIVALENTS

Currency Unit = Indian Rupee (INR)

At Appraisal INR47.27 = US\$1.00

At Completion (March 31, 2009) INR52.17 = US\$ 1.00

FISCAL YEAR

April 1 -- March 31

ABBREVIATIONS AND ACRONYMS

AD	Agriculture Department	MEL	Monitoring, Evaluation and Learning (program)
AG	Area Group	MIS	Management Information System
CAS	Country Assistance Strategy	MOU	Memorandum of Understanding
CBO	Community Based Organization	MT	Metric Tonne
CPI	Consumer Price Index	MTR	Mid-Term Review
CPR	Common Property Resources	MWMG	Micro-Watershed Management Group
DAHVS	Department of Animal Husbandry and Veterinary Services	MWS	Micro-Watershed
DRG	District Resource Group	MUV	Manufacturing Unit Value
DWDO	District Watershed Development Officer	NPV	Net Present Value
EC	Executive Committee (of Sujala Watershed Sanghas)	NGO	Non-Government Organization
ECDZ	East and Central Dry Zone	NRAA	National Rainfed Area Authority
EPA	Entry Point Activity	NTZ	Northern Transitional Zone
ERR	Economic Rate of Return	PAD	Project Appraisal Document
FAO	Food and Agriculture Organization (of the United Nations)	PBPS	Performance Based Payments System
FD	Forest Department	PDO	Project Development Objective
FM	Financial Management	PNGO	Partner Non-Government Organization
FNGO	Field Non-Government Organization	PRA	Participatory Rural Appraisal
GIS	Geographic Information System	RESA	Regional Environment and Social Assessment
GOI	Government of India	SATCOM	Satellite Communications
GoK	Government of Karnataka	SC	Scheduled Caste
GP	Gram Parishad	SCF	Standard Conversion Factor
Ha	Hectares	ST	Scheduled Tribe
IDA	International Development Agency	SDR	Special Drawing Rights
IGA	Income Generating Activity	SHG	Self-Help Group
ICRR	Implementation Completion and Results Report	SNGO	Specialist Non-Government Organization
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics	SWAP	Sujala Watershed Action Plan
INM	Integrated Nutrient Management	SWS	Sujala Watershed Society
INR	Indian Rupee	SWS-EC	Sujala Watershed Society–Executive Committee

IPPM	Integrated Production and Protection Management	UAS	University of Agricultural Sciences - Bangalore
IRR	Internal Rate of Return	US\$	United States Dollar
ISR	Implementation Status Report	VBT	Village Based Training
Kg	Kilogram	WDD	Watershed Development Department
KRSAC	Karnataka Remote Sensing Application Centre	WSM	Watershed Management
KWDP	Karnataka Watershed Development Project	ZP	Zilla Panchayat
M&E	Monitoring and Evaluation		

Vice President	:	Isabel Guerrero
Country Director	:	Roberto Zagha
Sector Manager	:	Simeon Ehui
Project Team Leader	:	Grant Milne
ICRR Team Leader	:	Jim Hancock (FAO)

INDIA
Karnataka Watershed Development Project

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A. Basic Information			
Country:	India	Project Name:	KARNATAKA WATERSHED DEVELOPMENT PROJECT
Project ID:	P067216	L/C/TF Number(s):	IDA-35280,TF-26437
ICR Date:	09/29/2009	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	GOVERNMENT OF INDIA
Original Total Commitment:	XDR 79.0M	Disbursed Amount:	XDR 59.0M
Revised Amount:	XDR 59.0M		
Environmental Category: B			
Implementing Agencies: Watershed Development Department			
Cofinanciers and Other External Partners:			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	09/29/2000	Effectiveness:		09/10/2001
Appraisal:	04/16/2001	Restructuring(s):		12/23/2003 04/29/2005 03/30/2007
Approval:	06/21/2001	Mid-term Review:		05/14/2003
		Closing:	03/31/2007	03/31/2009

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank	Satisfactory	Overall Borrower	Satisfactory

Performance:		Performance:	
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C.3 Quality at Entry and Implementation Performance Indicators

Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	Satisfactory
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes

	Original	Actual
Sector Code (as % of total Bank financing)		
Agricultural extension and research	6	5
General agriculture, fishing and forestry sector	57	56
Other industry	4	4
Other social services	30	31
Sub-national government administration	3	4
Theme Code (as % of total Bank financing)		
Environmental policies and institutions	25	32
Participation and civic engagement	25	18
Rural non-farm income generation	25	13
Water resource management	25	37

E. Bank Staff

Positions	At ICR	At Approval
Vice President:	Isabel M. Guerrero	Mieko Nishimizu
Country Director:	N. Roberto Zagha	Edwin R. Lim
Sector Manager:	Adolfo Brizzi	Ridwan Ali
Project Team Leader:	Grant Milne	Harideep Singh
ICR Team Leader:	Grant Milne	
ICR Primary Author:	Jim Hancock	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

A. The key development objective is to improve the productive potential of selected watersheds and their associated natural resource base, and strengthen community and institutional arrangements for natural resource management.

B. An associated objective is to strengthen the capacity of communities in the project districts for participatory involvement in planning, implementation, social and environmental management, maintenance of assets emanating from local level development program, and to have the implementing department operate in a more socially inclusive manner, with the framework of a convergent watershed development plan.

Revised Project Development Objectives (as approved by original approving authority)

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increase in average crop yields			
Value quantitative or Qualitative)	2-4 quintals per acre for a range of crops	+15% for rainfed and +10% for irrigated crops, from economic analysis in PAD		+24% for Phase I and +26% for Phase II, averaged across crops and relative to control groups
Date achieved	09/10/2001	09/10/2001		02/28/2008
Comments (incl. % achievement)	M&E data from Phases I and II; revised by FAO team. Investment pattern for Phase III is skewed more to in-situ moisture conservation; field observations suggest Phase I and II results should be reached or be exceeded in Phase III.			
Indicator 2 :	Increase in household income			
Value quantitative or Qualitative)	Rs.14,280 Phase I, and Rs.29,560 Phase II.	No end of project targets were set in PAD		+54% in Phase I and +53% in Phase II relative to control group
Date achieved	03/10/2003	03/31/2007		02/28/2008
Comments (incl. % achievement)	While noting some survey and control group issues with M&E data, a detailed FAO assessment of the data, quality of treatments, and other information supports conclusion of important increase in household income.			
Indicator 3 :	Project-created community organizations involved in broader community affairs			
Value quantitative or Qualitative)	Baseline of zero	No numerical targets set for involvement in broad community		Self-help groups have been largely sustained and built up around US\$5

		affairs. Also indicator specification very open to qualitative interpretation.		million in savings and links to commercial banks. Area groups and watershed societies have had mixed results for sustainability.
Date achieved	09/10/2001	09/10/2001		03/10/2009
Comments (incl. % achievement)	Project successfully demonstrated the capacity of community organizations to be involved in planning, managing funds and implementing SWC activities. Female empowerment and role of women in local leadership has improved significantly.			
Indicator 4 :	Cropping pattern diversified to high value crops			
Value quantitative or Qualitative)	% area planted with cash crops and oilseeds: Phase I: 39% Phase II: 31% Phase III: N/A	No numerical targets set in PAD		% area planted with cash crops and oilseeds: Phase I: 45% Phase II: 42% Phase III: N/A
Date achieved	09/10/2001	09/10/2001		03/10/2009
Comments (incl. % achievement)	M&E data suggests 8.2% and 7.4% reduction in area planted to food grains with a corresponding increase mainly of oilseeds, but also cash crops in addition to an increase in the number of crops being grown. Case studies suggest similar trends in Phase III			
Indicator 5 :	Groundwater recharged			
Value quantitative or Qualitative)	No baseline in PAD	No targets set in PAD		Increase in ground water level by 50 ft, 61 ft and 90 ft is observed in the 3 agro-ecological zones respectively. Improvement in ground water discharge from 250 to 325 gallon per hour.
Date achieved	09/10/2001	09/10/2001		03/10/2009
Comments (incl. % achievement)	Based on M&E data from sample borewells. No baseline data on groundwater or longer-term studies were available to quantify the wider hydrological impacts of project activities. Hydrology specialists during SPN confirmed positive hydrological improvements			
Indicator 6 :	Milk, fuel and fodder production increased			
Value quantitative or Qualitative)	Zero baseline	No targets set in PAD		Overall average increase in milk productivity of around 20% across all project areas.

				Reduction in share of fuelwood and fodder collected from Common Property Areas (20% for fuel and 37% for fodder)
Date achieved	09/10/2001	09/10/2001		03/10/2009
Comments (incl. % achievement)	Data reported for a sample of MWS only in Phases I and II, excluding Phase III. Total MWS sampled is of only about 6% of total MWS treated by the project. Case studies and other qualitative information on Phase III impact suggest a similar trend.			
Indicator 7 :	Production of non-arable lands improved			
Value quantitative or Qualitative)	Zero	% decrease in private fallow lands but no targets set in PAD		Phase I: 10 to 15% relative to control group Phase II: 6 to 14% relative to control group Phase III: N/A
Date achieved	09/10/2001	09/10/2001		03/10/2009
Comments (incl. % achievement)	Data from sample surveys for Phase I and II. Results likely applicable to Phase III. Horticulture and agro-forestry activities in terms of areas planted have exceeded PAD targets both on arable and non-arable areas.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Treatment of lands for soil and water conservation			
Value (quantitative or Qualitative)	0 ha	435,000 ha		Results suggest actual achievement of 72% of original area targeted in PAD, which is a solid achievement for this type of project.
Date achieved	09/10/2001	09/10/2001		03/10/2009
Comments (incl. % achievement)	Based on more detailed microwatershed plans.			
Indicator 2 :	Creation of effective community organizations			
Value	Zero baseline	Formation of		Formation of 4,394

(quantitative or Qualitative)		4,394 area groups, 6,648 self-help groups, 742 watershed societies.		area groups, 6,648 self-help groups, 742 watershed societies. Targets for group establishment fully met. Nearly 300,000 members of all groups received training.
Date achieved	09/10/2001	03/31/2007		03/10/2009
Comments (incl. % achievement)	Groups were monitored regularly each year for performance based on 12 criteria. SHGs performing well. Mixed results for sustainability of area groups and sujala societies not surprising - they were not originally designed to sustain post-project.			
Indicator 3 :	% irrigated area increased			
Value (quantitative or Qualitative)	Zero baseline	+10% from PAD		+8% to +14% for Phase I, and +6% to +12% for Phase II.
Date achieved	09/10/2001	06/15/2005		02/15/2008
Comments (incl. % achievement)	Net increases from M&E samples for Phases I and II in line with PAD targets. Difficult to attribute how much of gain is from project versus external factors such as drought, but qualitative information supports gains achieved.			

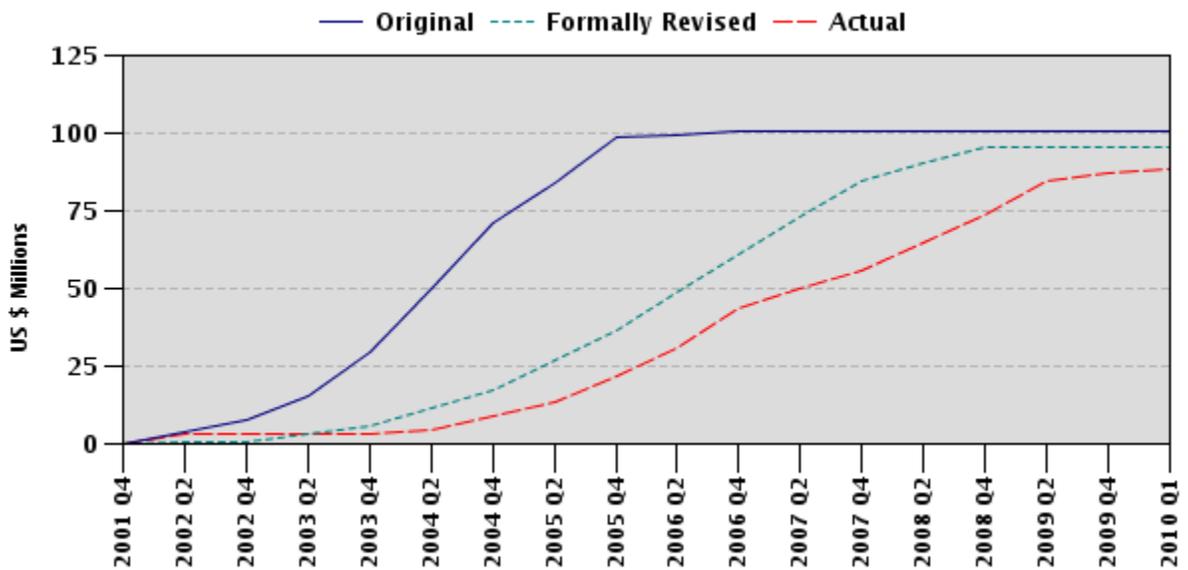
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	09/10/2001	Satisfactory	Satisfactory	0.00
2	06/27/2002	Satisfactory	Satisfactory	3.00
3	11/07/2002	Satisfactory	Satisfactory	3.03
4	06/27/2003	Satisfactory	Unsatisfactory	3.42
5	12/23/2003	Satisfactory	Satisfactory	4.36
6	06/25/2004	Satisfactory	Satisfactory	7.28
7	12/23/2004	Satisfactory	Satisfactory	13.42
8	06/12/2005	Satisfactory	Satisfactory	19.25
9	08/02/2005	Satisfactory	Satisfactory	22.69
10	12/20/2005	Satisfactory	Satisfactory	28.85
11	06/22/2006	Satisfactory	Satisfactory	39.44
12	09/09/2006	Satisfactory	Satisfactory	45.74
13	01/04/2007	Satisfactory	Satisfactory	49.92
14	06/04/2007	Satisfactory	Satisfactory	55.21
15	12/19/2007	Satisfactory	Satisfactory	64.70
16	06/22/2008	Satisfactory	Satisfactory	73.39
17	12/21/2008	Satisfactory	Satisfactory	84.25

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
12/23/2003	N	S	S	4.36	Mid-term review, revised costs.
04/29/2005		S	S	19.25	Cancellation of US\$20 million for Tsunami relief project (15 projects contributed funds)
03/30/2007	N	S	S	52.47	Two-year extension and minor reallocation of funds to strengthen IGA component

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

The Karnataka Watershed Development Project (KWDP)¹, known locally as the ‘Sujala’ project, addressed two key national and state government concerns at the time of design: a) rural poverty and agriculture growth, and b) declining agricultural productivity. The design strongly addressed a priority in the World Bank’s India Country Assistance Strategy (CAS) that complemented the government of Karnataka’s (GoK) emphasis on holistic development of rainfed areas, where the rural poor tend to reside. While the original design did not explicitly express clear poverty outcomes, during implementation the importance of reaching marginalized and vulnerable groups was clearly recognized and addressed by the project partners.

1.2 Original Project Development Objectives (PDO) and Key Indicators

The primary PDO was to improve the productive potential of selected watersheds and their associated natural resource base, and strengthen community and institutional arrangements for natural resource management. An associated development objective was to strengthen the capacity of communities in project districts for participatory involvement in planning, implementation, social and environmental management, maintenance of assets emanating from local level development program, and to have the implementing department operate in a more socially inclusive manner, within the framework of a convergent watershed development plan.

From the Project Appraisal Document (PAD - page 2), the main performance indicators for the project development objectives were:

1. Household income increased:
 - i. Overall income of various stakeholder groups at the village level increased (the log frame does not refer to various groups)
 - ii. Agricultural income per hectare (ha) increased
2. Crop yields increased
3. Groundwater recharged:
 - i. Cropping intensity on rainfed areas improved
 - ii. Percentage of irrigated area increased
 - iii. drinking water availability improved
 - iv. number of wells recharged
4. Soil erosion reduced
5. Cropping pattern diversified to high value crops
6. Milk, fuel and fodder production increased

¹ The KWDP was known locally as “Sujala”, which in the vernacular means “good water”. Both KWDP and Sujala are used interchangeably in this ICRR, particularly in the Borrower’s report (Annex 13).

7. Productivity of non-arable lands improved - forest cover, and forest produce increased, output from revenue lands increased
8. Project-created community based organizations involved in broader community affairs.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and Reasons/Justification

The PDO and key indicators were not formally revised during implementation.

1.4 Main Beneficiaries

The project would be taken up in five, arid rainfed agriculture districts². The PAD estimated that about 350,000 families (approximately 1.8 million people) would benefit directly from increased agricultural productivity and diversification of land uses across a geographic area of 518,000 ha. Attention to women's development was to be through increased availability of fodder, fuelwood, and water, and special Income Generating Activity (IGA) schemes. An estimated 25,000 landless families would benefit from increased labor demands for construction of civil works for soil and water conservation, subsequent intensification of agriculture, and from IGA programs.

1.5 Original Components

Based on a standard credit instrument, the project was to be implemented through four components with the following baseline costs, excluding contingencies (PAD - Annex 3):

A. Participatory Watershed Development and Protection (US\$104 million). This component was to finance: (a) social mobilization, institution building, and developing micro-watershed plans; (b) physical soil and water conservation treatment of sub-watersheds (arable and non-arable lands), and (c) entry-point investments to help communities learn to make collective development decisions. Seventy-seven sub-watersheds, encompassing 742 micro-watersheds (MWS) were targeted with an average size of about 5,500 ha. Implementation was to be in three phases; 10 sub-watersheds in Phase I, another 25 in Phase II, and the remaining 42 in Phase III.

B. Farming System Intensification (US\$5.5 million). This component was to finance (a) participatory farmer-driven research and extension; (b) farm demonstrations, and farmer training for introduction of improved practices for agriculture and horticulture; (c) for livestock: silvi-pastoral treatments, demonstrations, extension improvement, private participation in artificial insemination and veterinary services, and capacity building; and (d) forestry-related institution and capacity building.

² Late into implementation, two of the five project districts were split into two districts. This resulted in the project being delivered across seven districts, but still within the original geographic area in the PAD. For convenience and consistency, the report will continue to present results across the five original districts.

C. Income Generation Activities (US\$4.1 million). The project would (a) finance Non-Government Organization (NGO) support for the formation of beneficiary groups, with a focus on linking up with the government's on-going schemes, disseminating information on marketing and credit opportunities, and subsequent training of members; (b) provide equipment and materials for demonstrations; and (c) support study tours for group members.

D. Institutional Strengthening (US\$3.8 million). The project would finance: (a) Monitoring and Evaluation (M&E), which includes additional environmental and social assessments, and development of a Geographic Information System (GIS) database through the Karnataka Remote Sensing Applications Center (KRSAC); and (b) Project Management and Coordination.

1.6 Revised Components

The project had slow disbursement in the initial three years, due to recurrent drought (making it harder for farmers to raise their contributions for arable land works and limiting forestry activities on common lands); challenges organizing and training large numbers of field NGOs; a steep learning curve to introduce new, participatory watershed management systems; and slow recruitment of local watershed staff. A Mid-Term Review (MTR) in May, 2003 restructured the project phasing to 10 sub-watersheds in Phase I, 20 in Phase II, and 47 in the Phase III. No changes were made to the PDO, indicators or targets. From an assessment of Phase I, greater equity was addressed in 2004 by reallocating forecast savings in land treatments to establish revolving funds for IGA, mainly targeted towards SHGs and landless.

1.7 Other Significant Changes

With the Indian Ocean Tsunami on December 26, 2004, the Bank developed an emergency rehabilitation project for Tamil Nadu, financed from forecast savings of SDR272 million from 15 active lending operations in India. The KWDP reallocated US\$19.34 million to the new rehabilitation project, based on forecast savings while maintaining original project targets. With continuing improvement in implementation pace and quality, and recognizing the need to continue catching up from the slow start, in 2007, the project closing date was formally extended by two years to March 31, 2009, along with minor reallocation of funds across components. At closure, the remaining undisbursed IDA credit of US\$11.4 million was cancelled.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

The rationale for Bank involvement was strong, building on a solid foundation of experience from a range of Bank, GoK, and bilateral-supported projects in India. The GoK commitment prior to the project start was good, with the establishment of a Watershed Development Department (WDD) in 2000. The objectives and components,

interventions, processes, and institutional arrangements were generally sound and have stood the test of time. The components were all highly relevant and complementary, down to the village level, especially in balancing agricultural, social, and livelihoods needs of watershed development. The risks and mitigation measures (PAD, page 35) were generally well identified and appropriate, including the ‘inadequate capacity at community level to undertake project management’ which was considered a substantial risk. At the same time however, the original project period was probably over-optimistic, given that the project design was testing integrated, participatory watershed projects for the first time in Karnataka. These projects are fairly complex and require considerable “front-end” time to build experience, especially as new institutions needed to be set up and supported. Also, the design underestimated the considerable intricacy and effort required to create enduring benefit sharing mechanisms for common property resources managed by communities. The lessons learned in this project should reduce start-up times for similar project designs in India. Related, and again in hindsight, the involvement of the GoK Forestry Department in early project development seems to have been insufficient.

2.2 Implementation

With the two-year extension to March 31, 2009, the project essentially completed its main activities, and did so at reduced costs. Key reasons for this overall success include:

- (a) appropriate technical planning tools and capacity were put in place, albeit after some delay and simplification;
- (b) the M&E system provided a strong tracking and learning mechanism, correcting and realigning the project, and pushing for better performance and accountability through on-the-ground results - project management was very responsive to issues raised in the M&E system and supervision, with corrective actions taken;
- (c) quality control mechanisms were created for farm and community-level land and water treatments;
- (d) district-level technical teams that effectively coordinated inputs to communities and NGOs, led by the District Watershed Development Officer (DWDO) and supported by field officers from other departments to bring cross-cutting skills in agriculture, animal husbandry, forestry, etc,
- (e) a high level of transparency was used at the community level including, process monitoring; open village meetings; wall paintings listing project activities, beneficiaries and financing; and use of satellite imagery to track individual land interventions, and;
- (f) a new, performance based contracting system with field NGOs was facilitated by the new WDD Commissioner soon after he took office in 2007, greatly improving NGO execution of field activities with communities;

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

M&E design: In hindsight, the PDO and associated key performance indicators in the PAD had several issues. First, there were definitional contradictions of household income in the PAD main text and Annex 1 of the PAD. Second, there was no clear specification of quantitative targets for many of the outcome indicators. Third, there was inadequate attention to indicators for hydrological or soil monitoring, and studies needed to evaluate related environmental impacts of the project (although this was generally the case for Bank watershed management projects globally at that time). Finally, the PAD target for treatment of non-arable land was 100 percent of available areas in selected communities, which was unrealistic (later confirmed by more detailed micro-watershed plans). A positive point is that a decision was made to use a third party M&E agency to support the small M&E team in the implementing agency, drawing in wider expertise and technology.

M&E implementation: While the PAD provided little guidance on technical specifications of the M&E system, the eventual design produced by the project's third party M&E agency (Antrix Corporation – the commercial arm of the Indian Space Research Organization) and WDD was highly innovative and played a key role in improving project implementation. The M&E system made use of remote sensing and GIS, combined with a more conventional Management Information System (MIS) and field surveys. The system was unique for watershed development projects and has attracted significant international attention. The impact surveys conducted by Antrix were in general, carefully designed, including control and treatment groups, and using multistage random sampling method to collect both quantitative and qualitative data. However, some data and survey instrument issues existed, particularly for household income³.

M&E utilization: The M&E data from input-output assessment, process monitoring, impact analyses, and many thematic/case studies had a strong impact on improving project implementation. In particular, thematic studies and ongoing analyses helped project management make major changes to implementation strategies that resulted for example, in sharper poverty focus and opportunities for women and landless; better equity among small, medium and large farmers; and greater cost efficiency in soil and water conservation works.

2.4 Safeguard and Fiduciary Compliance

Environment safeguards: The project is inherently a natural resource management project, without major large-scale civil works; therefore environment management was implicit in the project design. To address moderate environmental risks during implementation,

³ The FAO team's detailed analysis of Antrix data and impact reports raised a few questions about household income based on small control groups and some of the survey instruments, and the implications on statistical causality between project activities and household income. At the same time however, field visits, detailed case studies by Antrix, and other information gathered by the FAO Implementation Completion and Results Report (ICRR) team, clearly suggest that positive and high income impacts did occur.

processes were built into local MWS planning and decision-making in 2003 through the project operating manual. It was updated in 2005 to emphasize a ridge to valley approach in micro-plans that promoted soil and water conservation in the entire watershed, both in the upper ridge areas (often common lands) and privately owned arable lands that predominate in the lower valleys. Criteria in the operating manual for selecting intervention types and guidance on designs led to better intervention choices by communities and technical teams, improved construction methods for small-scale works, and introduced quality control that minimized potential local environmental issues.

Social safeguards: As noted in the PAD, based on the regional environmental and social assessment, and the tribal (and vulnerable groups) plan, it is clear that the scheduled caste and tribal groups, though more vulnerable than non-tribals and other castes, were not considered strongly discriminated against or marginalized in GoK development efforts. The expansion of project financing to IGAs and use of careful targeting systems significantly improved the share of benefits flowing to these vulnerable groups.

Procurement: Procurement was satisfactory in complying with Bank guidelines and procedures, confirmed through regular Statement of Expenditure and post-contract reviews in the field. For implementation of the land treatment activities at micro-watershed level, a participatory accounting system was developed, which was very simple and transparent. Stringent guidelines were adopted for identification, execution and release of payments. In some cases, there were delays in finalizing specific contracts to meet the Bank's rigorous procurement guidelines, particularly under single source selection and for participatory research. The transformation to performance based contracts with NGOs in 2007 was a very positive step.

Financial management: The financial management (FM) rating gradually improved over the life of the project. Following initial technical and WDD capacity problems with the selected custom FM software package, an accounting firm was contracted to provide technical support. While the consultancy improved overall efficiency and aided project FM staff in maintaining the software, the consultancy had to be maintained on a part-time basis throughout the project. This is not viewed as a major problem, however because in the latter stages of the project, the GoK began unrolling a new and much simpler off-the-shelf FM software package to all departments. The fund flow for field activities through the District Watershed office to the communities, and subsequent reconciliation was satisfactory. The accounting and record keeping for the project has been satisfactory. The external audit has been carried out by the Auditor General (GoK) and audit reports submitted to the Bank, albeit in some cases with considerable delay. Internal auditing has been an integral design of the project and one of its strengths.

2.5 Post-Completion Operation/Next Phase

A major share of the project investments has been to private farmers, and to members of Self-Help Groups (SHGs) and their IGAs with individual benefits. Hence, ongoing maintenance will generally continue by farmers, SHGs and individual members of SHGs. District and Taluk (sub-district administrative areas) level WDD offices are now largely established and staffed on a permanent basis. These will no doubt continue to provide

some level of ongoing support to the established community based organizations (CBOs) and related agencies in project areas. Due to the timing of Phase III and the end of project, an impact evaluation of Phase III investments could not be undertaken before March 31, 2009. The project was marketed well during implementation; one result has been GoK replicating the model in other districts through Government of India (GoI) watershed schemes. A repeater project proposal has been referred to the Bank by the GoI for the remaining arid, rainfed districts in Karnataka. The proposed project is now under consideration for financing, possibly as part of a larger programmatic approach in several states, based largely on the lessons learned from KWDP.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

The project objectives of land and water management continue to be highly relevant. Pressures on water use are likely to increase, and rural poverty alleviation is still an issue for the GoK and the Bank. In particular, soil and water conservation are central to the 2006 GoK Agriculture Policy. The core design elements of on-and-off-farm watershed treatments planned and implemented through a participatory process, are still sound. In future project designs, more emphasis is needed on groundwater management, which was not part of the original design. The combination of watershed treatment with income generating activities and SHG strengthening in the same communities stands as very relevant, for equity purposes. Moreover, such an inclusive approach may impact overall project performance for several reasons that some of the thematic studies M&E seem to raise including: (i) inter-relationships between activities (such as water for agriculture and livestock feeding), (ii) improved social atmosphere and community cooperation, and (iii) overall wealth effects due to more pro-poor targeting vis-à-vis a pure “technical” watershed treatment approach. An increasing emphasis on participatory processes, alignment of SHGs with the expanding microfinance systems across India, and use of performance based contracting is in line with best practices.

3.2 Achievement of Project Development Objectives (PDO)

PDO 1 - Improved productive potential of selected watersheds and their associated natural resource base (Satisfactory). Based on detailed targets from MWS plans, 268,000 ha of land received soil and water conservation treatments, or 72 percent of the land available for treatment⁴. From a physical watershed development perspective, this is a very solid achievement. While results on arable lands are very successful, achievements were more limited on non-arable lands, including State Reserved Forests, and common property areas. Based on the Food and Agriculture (FAO) team’s review, only 15,000 ha

⁴ Refer to Annex 11 for a detailed discussion of area treated. While project documents show 398,000 ha of land treatments, in some cases farmers used more than one treatment (farm ponds and bunding for example), which meant the same area was sometimes counted twice. The FAO team disaggregated all treatments to estimate the actual area treated from the detailed targets in micro-watershed plans.

were treated against a target of 70,000 ha due to the small area of state Reserved Forest actually available from MWS plans (about 10 percent of the area originally estimated in the PAD), legal and policy constraints governing work in State Reserved Forests, and because of the apparent low interest by many communities stemming from a lack of trust about future benefit sharing with GoK. At the same time however, the area dedicated to horticulture reached around 54,000 ha, or 80 percent above the original PAD target. The bulk of soil and water conservation treatments (an estimated 254,000 ha versus target of 304,000 ha) were on private lands.

M&E data, augmented by data from local International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) monitoring stations, suggest the project has had a positive impact on the productive potential of watersheds and their natural resource base, including groundwater, reduced surface runoff, and soil erosion. For example, at selected borewells in the three main agro-ecological zones, increases in ground water levels by 50 feet (ft), 61 ft and 90 ft were observed respectively. Based on Phase I and II results, it is likely that the productive potential of Phase III watersheds has also been improved relative to comparable non-treated areas. While the monitoring methods for these soil and water conservation indicators were adequate, the overall data base would have been improved had the monitoring been started earlier in the project.

Sample surveys for Phases I and II indicate that both crop yields and cropping intensity in rainfed areas increased significantly and were accompanied by a move towards higher value annual and permanent crops (especially horticultural). As an example, average crop yields increased by 24 percent in Phase I and 26 percent in Phase II. The percentage of irrigated area increased between 6 percent and 14 percent across project sites, along with a marginal reduction in the dependency on fodder and fuel wood from common lands. For Phase II, the project resulted in average increases in milk yields of around 20 percent over control groups.

PDO 2 - Strengthened community and institutional arrangements for natural resource management (Moderately Unsatisfactory). Key indicators are: (a) common property resource management and maintenance improved on community lands, and Forest Department (FD) lands, and (b) funds in Micro-Watershed Management Group (MWMG) bank account increased and used for post-development maintenance (assumed to be for common resources). Overall, the project achieved considerable results in participatory planning and implementing land and water measures by establishing 742 community based Sujala Watershed Societies (SWSs) and 4,394 Area Groups (AGs). However, whether the long-term sustainability of these groups was intended as a project goal is not clear from the PAD. On the one hand, a study by Antrix (albeit from a small sample) indicated that less than 5 percent of SWSs and AGs were fully functioning after project withdrawal in Phases I and II and maintaining accounts for common land sustainability. On the other hand, this result could be expected as the majority of land treatment activities took place on private arable land with these groups mainly serving as the intended channel for individual farm interventions, based on micro-watershed plans. These groups effectively fulfilled this purpose during project implementation, but only a small proportion carried on after project withdrawal.

This situation has implications with respect to maintenance of the nearly 15,000 ha of non-arable, Common Property Resource (CPR) lands treated under the project. It is clear that a few, but very good examples of CPR management by SWSs, AGs, and most encouragingly women's SHGs, have emerged and will likely be sustained. In fact, most of the 6,648 SHGs comprising females from poorer households have continued functioning, and a considerable number have had successful engagement in CPR management. Outside of those CPR lands managed by SHGs however, long-term sustainability of CPR lands is likely to be weaker because of many SWSs and AGs ceasing to operate and more important, continued concerns over benefit sharing with GoK by many communities, especially in Phases I and II. To address this issue, the project commissioned a legal study, leading to a Memorandum of Understanding (MOU) between local government, the agency responsible for the land, and the CBOs for Phases II and III. Even with an MOU in place however, many communities still lacked full confidence that the agreements would assure full benefit sharing with GoK in future. Better results may be evident for Phase III with lessons learned from earlier experiences and improved negotiation of MOUs, but this could not be determined during the ICRR mission. The impact of uncertain sustainability on many CPR lands treated under the project must be viewed in the broader context. These treatments encompassed less than 15,000 ha compared to an estimated 254,000 ha of arable lands treated, where private ownership and incentives to maintain agriculture productivity provide better assurances of sustainability.

PDO 3 - Poverty focus (Satisfactory): All classes of beneficiaries had incremental increases in income. While noting earlier questions raised by the ICRR team over control group size and survey instruments, household income increased for all land ownership classes of farmers. In Phase II, increases were around 40 percent for small and marginal farmers (less than 2 ha), more than 50 percent for landless, and close to 80 percent for larger farmers (more than 2 ha), compared to controls. Concerns over equity issues in 2003 were addressed through a special M&E study that led to reductions in mechanization for soil and water conservation works, maximized use of local labor, and to proportionally allocate less investment to larger farmers. It is estimated that between 12 and 25 million person-days of employment were created through the project, particularly for physical works construction. In addition, the revolving fund introduced after MTR for IGA and SHGs, targeting women and landless, was another positive equity measure.

From various estimates (baselines, Phase II and III Sujala Watershed Action Plans (SWAPs) and impact assessments), the project reached out to an estimated 400,000 households. Overall, the project improved the lives of 230,000 direct beneficiaries, including 193,000 landholders and 40,000 landless, the latter through farm labor, SHGs and IGA. The SHGs have also built up around US\$5 million in savings, with the power to borrow four times these savings levels from commercial banks. The number of households rising above the poverty threshold is perhaps in the order of 50,000 or more, at least on a temporary basis; this is a highly commendable achievement.

PDO 4 - Communities have strengthened capacity to be involved in planning, implementation social and environmental management, maintenance of assets emanating from local level development programs. (Moderately satisfactory). The indicator, “project-created CBOs (in logframe “MWMGs and beneficiary” groups) involved in broader community affairs” is valid but poorly formulated in the PAD. Regardless, the project successfully demonstrated the capacity of community organizations to be involved in planning, managing funds and implementing Sujala watershed project activities, and building awareness. As indicated earlier however, few Sujala Watershed Society Executive Committees (SWS-ECs) and AGs continued to function after project intervention, and there are valid concerns about maintenance of common land assets by these groups. On the other hand, with a much greater number and survival rate as functioning units, the SHGs are emerging as a more important channel for addressing community affairs, even though their primary focus has been savings and IGAs. With more homogenous groupings of poorer women, considerable leadership developed in many cases; these groups have the potential to be a key achievement under this PDO. This outcome offsets the poor sustainability of AGs and SWGs, and justifies a Moderately Satisfactory rating.

PDO 5- Implementing department operating in more socially inclusive manner (Satisfactory). The PAD indicator, “implementing department operated in a facilitator role” is not clearly specified in what way this would be observable. Regardless, the WDD was established only just prior to project start-up, but in a few years developed as an effective formal institution, facilitating participatory watershed planning, implementation and M&E. It did not impose treatment activities on communities, but rather developed guidelines and worked closely with people to identify interventions, which would be more environmentally beneficial and socially inclusive. This is a very positive outcome.

3.3 Efficiency

The efficiency of the project in economic and financial terms is rated satisfactory (Table 1). The estimated overall economic Internal Rate of Return (IRR) is 17.7 percent, slightly higher than the PAD estimate of 16.4 percent. The estimated Net Present Value (NPV) is INR2.9 billion (US\$62 million) at a discount rate of 12 percent (the same rate as in PAD), which is around 20 percent higher than the PAD estimate of INR2.4 billion (adjusted to 2009 constant prices using Indian Consumer Price Index). The main drivers of the higher results are the horticulture benefits (planted area 80 percent above PAD estimates) and increased cultivated arable land for agriculture. The results also reflect very good cost efficiency during project implementation. A financial analysis shows very positive returns to farmers, for example horticulture (23 percent), agriculture (31-36 percent), and dairy (14 percent). For IGA, tailoring (24 percent) is a positive result. Annex 3 provides more details.

3.4 Justification of Overall Outcome Rating

The overall rating is Satisfactory (Table 1). This is based on: (a) Relevance - Satisfactory; (b) PDO achievement – Satisfactory; and (c) Efficiency - Satisfactory. Information on Phase III impacts as yet are mostly by observation and sample investment data, but indicate that in some areas, the results may improve. Had the PAD objectives been

formally revised for common property resources and a ‘poverty focus’, the achievements of the project could be considered excellent.

Some **key messages** from the review of PDO achievements are:

- (a) the project measurably improved the productive potential of watersheds;
- (b) a high proportion of overall project achievements were through investments in soil and water conservation on more than 300,000 ha of private, arable lands;
- (c) investments in common lands through community groups were less successful except for those managed by SHGs, particularly female SHGs;
- (d) the project achieved significant results in addressing rural poverty;
- (e) the WDD developed into an effective and inclusive implementing agency; and
- (f) a robust M&E system designed and established by Antrix and WDD after project effectiveness, was a critical success factor in project performance and adaptability.

Table 1. Outcomes weighted by component cost and importance to impact

Major outcomes in PDO	Weight (percent)	Rating (1-6)	Weighted score
1) Improving productive potential	55	5	2.75
2) Natural resource management sustained	10	3	0.30
3) Poverty focus	20	5	1.00
4) Communities able to participate and benefit from local development (non-project) activities	5	4	0.20
5) Implementing department more inclusive	10	5	0.50
Average weighted rating	100		4.75
			Satisfactory

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

As a result of increased local labor demand around soil and conservation civil works, many villages reported decreased migration to distant areas, contributing to better family and community relations. There has been possible (but undocumented) cases of leakage of some labor benefits to larger farmers who requested cash from laborers before hiring them and using the money as part of their cost-share. This practice, which is widespread across India, was addressed as far as possible in the project with public displays of minimum wage rates, labor allocations for specific land treatments, plus local institutional strengthening that helped people stand up better to village elites.

Strengthened women’s economic and social status was evident through their engagement in SHGs and IGAs. Several examples of women leaders emerging in communities were noted, some elected in village councils and local government, with others mobilizing the

community for improved sanitation, and accessing other GoK services. Men in several villages mentioned changing relationships with their wives who now had more influence over household decisions. Based on case studies, in some instances, federations of women's SHGs have formed and were instrumental in developing further linkages with commercial banks and addressing community issues, such as alcoholism. A survey of SWS-EC members identified gender and equity improvements as one of the major unintended features of the watershed development project.

(b) Institutional Change/Strengthening

Community para-veterinarians 'Gopala Mitras', usually young men and women drawn from project villages, were trained to provide important animal health functions to livestock beneficiaries through primary livestock health and artificial insemination. They have been formally recognized by the Department of Animal Husbandry and Veterinary Services (DAHVS). An estimated 77 percent of Gopala Mitras have developed into successful independent, private service providers, while the remainder have struggled or have failed. This success rate is a good result for small business start-ups anywhere.

The establishment of inter-agency, district level technical teams under the leadership of the DWDO to provide coordinated support to communities during micro-watershed planning and implementation proved quite successful. This model has been replicated in new Watershed Management (WSM) programs in Karnataka, financed by GoI funds. In addition, a large number of district-level agricultural, livestock, forestry, WDD, and NGO staff have been trained and gained experience in participatory watershed and livelihoods development. New national Common Guidelines for Watershed Development Processes also follow many project lessons and processes. The KWDP has hosted several mission from within India and other countries, and widely disseminated and presented its innovative processes. These audiences, programs, and policies will serve to spread the effects of the project far beyond its original project sub-watersheds.

(c) Other Unintended Outcomes and Impacts (Positive or Negative)

The project was the recipient of five prestigious national awards in the latter years of implementation; National Productivity Awards 2007 and 2009; National Water Award 2007; Earth Care Award 2008; and National E-Governance Award 2009.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

A stakeholder workshop with 60 participants was used to develop the Borrowers ICRR. Some key points were:

- (a) The project adopted an inclusive approach that encompassed watershed activities with equity, gender sensitivity and balanced participation from government, communities and private sector. This model can guide new integrated project design.
- (b) The project promoted high levels of transparency by displaying relevant information on walls in villages such as meteorological data, soil analysis results for micronutrients, wage rates, beneficiary financing, and decisions taken at gram sabhas.
- (c) Performance based payment systems adopted for NGOs later in the project ensured complete compliance with project objectives and deliverables.

- (d) Exposure visits to Phase I sites motivated communities in Phases II and III to undertake successful interventions and reinforced their belief about what could work.
- (e) Resource mapping should be combined with expertise mapping to help community members take up suitable IGA activities. It is important to facilitate market linkages for IGA. Follow-on handholding support was more important than the initial IGA training to assist group members in seeking loans, identifying and purchasing assets, raw material etc, and organizing markets.
- (f) Training programs in Phase I were rushed and the reading material not fully used by the beneficiaries. In Phases II and III, greater efforts were made to improve training quality and create user-friendly training material such as booklets and posters.

4. Assessment of Risk to Development Outcome

The Risk to Development Outcome is considered **Moderate**. There are a number of potential risks to the longer-term productivity of treated lands:

- (a) Despite considerable project efforts to implement innovative management mechanisms for CPRs, there is a risk that the improvements to common lands will in some cases not be sustained because of increasing pressure for fuelwood and grazing resources, especially with increasing livestock numbers, declining tree survival in some sites, and the related concern by some communities over the realized sharing of future production from CPR areas. On individual private lands, the risk of damage to physical structures (field bunds, farm ponds, etc) has been partly mitigated because of required farmer contributions acting as an incentive for maintenance, good control over construction quality, and training farmers in routine maintenance techniques.
- (b) Considerable project resources have been invested in activities related to recharging groundwater (a fundamental goal of watershed management), however the already considerable competition for scarce water resources is exacerbated by state subsidies to farmers on electricity for bore well operation.
- (c) Despite the numerous successes with IGAs and intensive training for beneficiaries and SHGs on good practices and FM, the fact that Phase III (with the largest share of project activities) IGAs were only able to receive project support for about one year is some cause for worry. The success and final impacts from these groups will only become evident well after project closure.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: Moderately satisfactory. While the design was generally appropriate and the core objectives and approach are still highly relevant, there were some shortcomings and inconsistencies including: unclear poverty focus on different farmer classes; poorly stated objectives in the PAD (in some cases targets not specified, or inconsistent); and an

underestimation of the complexity of implementing vegetative improvements on common lands, and forestry interventions on state forests.

(b) Quality of Supervision

Rating: Satisfactory. Supervision was generally supportive to project team decisions and providing timely technical advice, for example on equity considerations, civil works construction quality, and later in the project with hydrology. The Bank was particularly responsive on the need for flexibility to address needed changes, such as for restructuring and extensions that ensured project resources and timing would allow more time and focus to achieving results. Cooperative efforts of Bank staff and the client began to bear fruit by November 2007 (recorded in ISR sequence 14) when project implementation became much more satisfactory. At the same time however, supervision could have focused more on tracking beneficiary numbers, and formally revising PDO indicators and targets, particularly for CPR and forestry work, as the project continued to evolve.

(c) Justification of Rating for Overall Bank Performance

Rating: Satisfactory. While there were some shortcomings in design, these were mitigated somewhat by the flexibility of the project supervision team, which allowed for substantial improvements in the project structure and implementation modalities to support achievement of its PDO.

5.2 Borrower Performance

(a) Government Performance

Rating: Satisfactory. The GoI and GoK supported the project throughout with staffing and processing of contracts, although there were occasional delays in auditing. The project would have benefited at an early stage from greater clarity and guidance on: institutional arrangements over the utilization of CPRs; benefit sharing and fund flow for work proposed in state forests; the Panchayat role in CPRs; electrical subsidies to farmers for pumping groundwater; and regulations on groundwater use. It must be recognized however, that these are major policy issues, and not just in Karnataka. In addition, the degree to which these could be realistically addressed solely by this project was limited from the start. The GoI has set up a National Rainfed Area Authority (NRAA) to support watershed development throughout the country, with new guidelines drawing from KWPD experience.

(b) Implementing Agency or Agencies Performance

Rating: Satisfactory. The WDD has played a very key role in the positive outcomes of the project: learning, adapting and being flexible to needs and issues arising from field experiences and open to M&E information. It has steered the project towards increasing resources for poorer sections in the community and led the shift towards performance based contracts for NGOs.

(c) Justification of Rating for Overall Borrower Performance

Rating: Satisfactory. This is based on the positive performance of GOK and WDD in implementing the project with a strong focus on achieving the PDO and in doing so, being flexible to change and improvement guided by ongoing M&E results.

6. Lessons Learned

The project successfully achieved considerable results against what are still very relevant and challenging objectives. Against some original design weaknesses, the project team, partners and the Bank set about addressing the objectives comprehensively, learning and adapting on the way, refining processes for streamlined training, better inclusion and better planning mechanisms. Many positive lessons have been generated including:

Watershed planning and Implementation

- (a) **A combination of watershed and livelihoods interventions can create strong multiplication effects.** Where traditional soil and water conservation programs (focusing on farmers and common lands) are combined with SHG and IGA activities (targeting small and marginal farmers, women, and landless), greater value added is created in terms of equity and livelihoods linkages beyond what could be achieved through separate watershed management and rural livelihoods projects.
- (b) **Participatory watershed planning and implementation requires flexibility in treatment options.** A balance is needed between community desires for soil and water conservation investments, and technically effective and rational treatments. This was demonstrated under the project's experience through the participatory planning system, supported by training and intensive process monitoring, quality controls, cost ceilings, and beneficiary contribution rates that promoted equity.
- (c) **Watershed management projects need to be focused around water.** New projects need to be framed around basin or sub-basin hydrology and land-use modeling and analyses that will set the context for local soil and water management plans. Future projects should also consider groundwater management as an integral component.
- (d) **Targets for land treatments should be realistic, regularly reviewed and formally documented.** It was unrealistic to base project targets on achieving 100 percent coverage of treatable lands. Targets from actual micro-plans needed to be applied and formally adopted/documentated.
- (e) **Adequate time and resources should be allocated to develop project implementation capabilities for participatory watershed development.** Watershed development projects are complex, especially when combined with rural livelihood and development activities. The project demonstrated the value of comprehensive capacity building to all levels of stakeholders, and the value of partnering with NGOs experienced in participatory watershed management.
- (f) **Participatory watershed development projects benefit from a phased approach.** This allows for adequate testing of methodologies for community participation

relevant to particular eco-regions and existing institutional capabilities, and building the capacities of local agencies needed for implementation.

Improving Equity

- (g) **The equity and poverty reduction aims and processes within watershed development need clear articulation.** While the project was highly inclusive, a majority of the benefits in terms of investment flows went to the larger landowners. This inherent bias in watershed management of having to work with landowners who can afford contributions can be mitigated through a structured set of measures, which go beyond geographical targeting, such as changing beneficiary contributions to favor smaller and marginal farmers, and introducing an IGA component with a revolving fund to target vulnerable groups such as landless.

Monitoring and Evaluation (M&E)

- (h) **Comprehensive hydrological and soil loss assessments need to be incorporated into the project design and implemented early.** Effective monitoring is necessary to capture key environmental upstream and downstream effects of watershed treatments on water budgets, but it must begin early and be sustained.
- (i) **An independent and credible partner M&E institution can complement M&E functions in the implementing agency and provide major contributions to project success.** Specialist M&E agencies can deliver a range of complementary services, including spatial information from remote sensing and GIS, intensive process monitoring and thematic studies, and high quality oversight for more specific surveys, such as poverty assessments and improved data analysis and reporting. This becomes even more important if the M&E capability in the implementing agency is limited. The development of mechanisms to ensure feedback into project management and enable proper reflection on project design can yield substantial results towards achieving project objectives.
- (j) **The project duration needs to account for post-intervention support and monitoring.** The project showed a strong need to ensure that IGAs and SHGs get adequate follow-up advice and linkage building to achieve longer term sustainability.

Watershed Management and Gender

- (k) **Direct gender targeting can have positive effects in participatory watershed development.** Project experience suggests quotas for females in local leadership positions can have a positive impact on the functioning of community-based watershed institutions. This can include a mandated minimum composition of women in the local implementing institution and using women's SHGs to manage CPRs.

Managing Common Property Resources

- (l) Management of common property resources needs a dedicated strategy with additional resources. CPRs form a key livelihood base and safety net for a large number of the poorest in communities. Without fully addressing the inherent complex

institutional and equity issues surrounding CPR management, efforts may not succeed or be sustained.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

The initial draft ICRR by the FAO team was reviewed by WDD and Antrix in April 2009. A comprehensive dialogue then took place between WDD, Antrix, and FAO over a six week period to gather additional data and clarify questions regarding specific M&E data (particularly for household income impacts), and calculate achievements for land treatments relative to PAD targets versus more refined targets from micro-watershed plans.

The WDD reviewed the revised ICRR draft in August 2009. Only three additional comments were raised with respect to:

1. Fund flow: correcting a statement in the main report that fund flow and reconciliation for field activities was through local authorities when in fact fund flow to communities was from the DWDO office to the SWS-EC. *Response* – statement was corrected.
2. Post-project evaluation: suggesting that 91 percent of the project area had been treated by the project, rather than 72 percent in the report. *Response* - This proposed figure is incorrect and includes some double counting of multiple treatments on the same area. We will maintain the figure of 72 percent developed by FAO based on detailed Antrix data and in-depth analysis (refer to Annex 11 of this ICRR)
3. Project area: correcting a statement in the main report that Phase III impact studies were being undertaken post-project closure, when in fact due to alternative funding sources not being available as assumed at closure, this initiative could not be financed. At the same time, results for Phase III were expected to be similar to impact study results from Phases I and II. *Response* – statement was corrected.

The final statement reads: “*Except for the above three issues, we concur with the findings and have no further comments to offer*”.

Annex 1. Project Costs and Financing

Table A-1. Project cost by component (in US\$ Million equivalent)

Components	Appraisal Estimate (US\$ millions)	Actual/Latest Estimate (US\$ millions)	Percentage of Appraisal
PARTICIPATORY WATERSHED PROTECTION & PROTECTION	103.98	79.50	76
FARMING SYSTEM INTENSIFICATION	5.48	4.60	84
INCOME GENERATING ACTIVITIES	4.13	14.50	351
INSTITUTIONAL STRENGTHENING	3.76	9.10	242
Total Baseline Cost	117.35	107.70	92
Physical Contingencies	2.35	0.00	0.00
Price Contingencies	7.68	0.00	0.00
Total Project Costs	127.38	107.70	85
TF 26437 for preparation	0.36	0.18	50
Cancelled from TF 26437		0.18	
Total Financing Required	127.74 ⁵	107.88	84

Table A-2. Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (US\$ million s)	Actual/Latest Estimate (US\$ million s)	Percentage of Appraisal
Borrower	Counterpart	14.30	14.60	102
Local Communities	Counterpart	12.90	7.40	5
International Development Association (IDA)		100.20	85.80	85
TF 26437 for preparation		0.36	0.18	50
Total Financing		127.76	107.88	84

⁵ In 2005, US\$19.39 million in International Development Agency (IDA) credits were reallocated from KWDP to a new India tsunami rehabilitation project, one of 15 projects where savings were identified. In addition, a further US\$11.4 million in residual IDA credit was cancelled at project closure.

Annex 2. Outputs by Component⁶

Component 1. Participatory Watershed Development and Protection (PAD US\$104 million, Revised US\$89 million, Actual US\$80 million)

Social Mobilization and Institution Building Activities

The KWDP has successfully introduced a different organizational structure for implementing watershed development activities than has been previously used in Karnataka. These new arrangements brought together district-level line departments, Zilla Panchayats, NGOs and the project beneficiaries under the direction of the WDD. Adoption, preparation and planning in project villages were done in 77 sub-watersheds and 743 micro-watersheds and 1,270 villages.

A nationally recognized NGO (MYRADA) developed a training manual and led the training of trainers system in Phases I and II, which in turn built up a huge cadre of Field NGO (FNGO) staff delivering training to communities on social mobilization, facilitating watershed planning and basic organizational skills and systems. Training workshops and training were provided to Watershed Development Teams and Panchayat members. MYRADA acted as the Partner NGO (PNGO) throughout the project until 2008. Two lead NGOs, with sub-offices, provided continuing monitoring and capacity building support at the District level to 47 local field NGOs (FNGOs).

Overall a huge number of beneficiaries were trained: 75 different trainings provided to SHGs, AGs and SWS-EC, to almost 300,000 community members. Based on assessments of training, the capacity building was generally to the considerable satisfaction of the trainees, particularly to help them implement the basic aspects of the project. WDD, with the help of assessments and together with the PNGO were active in streamlining modules on a continuing basis, but especially after MTR recommendations based on experiences in the Phase I.

Table A-3. Formation and training of beneficiary groups

Phase	SWS-EC	Area Groups	Self-Help Groups	Total members trained
I	80	498	909	36,557
II	183	1,081	1,683	70,478
III	479	2,818	4,134	192,903
Total	742	4,397	6,726	299,938
Project Goal	749	4,394	6,648	Demand-based

⁶ Descriptions and small tables of outputs are embedded into the main body of the annex. A complete results framework is found in the data sheets, Section F.

Training on bookkeeping, livestock, SWAP preparation through Participatory Rural Appraisal (PRA), have generated good results among all CBO types for watershed implementation and basic environmental awareness. Overall training was more effective when delivered to SHGs than to AGs and SWS-EC. Overall, the impacts were better for social and economic aspects rather than broader natural resources management. The PRA was for example, very effective for SWAP planning, but less so for preparing community for the post-project maintenance and extension.

For AGs, the training impacts were nevertheless greater than for SWS-EC, mainly on project implementation level aspects rather than those for post-project concerns such as asset maintenance. Sensitization and awareness, though generating knowledge on environmental concerns of treatment activities of AG members, had ‘poor’ results on sustainability and economic awareness overall. A similar pattern applied to SWS-EC, though here it was noted that perhaps training just by NGO personnel was insufficient to overcome ‘status barriers’, indicating perhaps a lack of more formal engagement by skilled GoK personnel in more technical trainings. Training assessments indicated overall technical inputs were relatively less structured and effective. Where it was implemented more through inputs by technical agencies, such as District Resource Group (DRG for example in Kolar) the result seemed more effective.

Satellite-communication based training programs were also implemented for CBOs, Department staff and participating NGOs to help build capacities on a larger scale and at less cost. The program helped all the stakeholders to actively participate in the training and to get clarification for all their queries. Radio programs on different thematic areas, which included question and answer sessions were organized between experts and farmers.

Micro-Watershed Planning

The project achieved a good level of beneficiary and stakeholder participation in planning and executing field activities, and this project compares well with previous Bank funded watershed projects in India, which had similar objectives on beneficiary participation. The PAD provided considerable detail on the proposed organizational structure, and covenants mandated that field level implementation be through the Zilla Panchayats (ZP) and MWS management groups. Following the MTR, the operating manual was updated, and the resulting document provided comprehensive details on project institutions, the preparation and implementation of SWAPs, FM and M&E. Further revisions were made in 2005 to incorporate stronger environmental management considerations and to emphasize the ridge to valley approach in MWS planning.

All 742 micro-watersheds have had SWS, practically all with active executive committees (SWS-EC), and all with SWAPs. After the PRA, SWAPs and sub-plans were then developed and validated in each micro-watershed.

The overall effectiveness of the community organizations, especially the AGs and SWSs in implementing the project was highly impressive. Nearly all the geographical areas included in the SWAPs, and a very large proportion of landholdings were included for

treatment. Sub-plans for SHG and community wide activities were mandated to engage the landless and scheduled castes and tribes, especially with regard to labor and IGAs. It is estimated (see section 3.2) that a very large proportion of all households, both farmers and landless in the project watershed areas were involved in the project in one way or another as result of the process. There were CBO self assessments every 6 months. During implementation (May 2008), over 75 percent of SWSs and SHGs were performing at levels considered 'good' – according to self assessment criteria. The results were somewhat lower amongst AGs.

Common land planning formed a subset of planning within the SWAP. Nevertheless, the level of results for increasing awareness and facilitated involvement by community in CPRs was low. Training on CPRs was not so effective with little emphasis on longer-term maintenance, at least initially. Where communities had benefited from exposure visits to successful CPRs management, this proved the best method of raising awareness and gaining useful knowledge.

A large amount of funds was raised as beneficiary counterpart contribution for land treatment: 36 crores INR (\$7.2 million). This formed a major commitment to the follow-through of farmers to the success of the project outcomes, and a sign of the strength of mobilization in support of land treatment. However, it should be pointed out that some of this contribution may have been raised by larger farmers who asked for upfront cash from laborers, which is a common practice in India. The project tried to reduce this practice by posting wage rates prominently in villages along with other project financial information, and through monitoring farmers and laborers.

By the time of the ICRR mission, the withdrawal strategy was completed in nearly all sub-watersheds, following closures of accounts. The withdrawal strategy implemented was well structured, but focused considerably on practical matters such as closing accounts. An earlier PNGO proposal for a more comprehensive withdrawal focusing more on sustainability was not fully adopted.

Entry-Point Investments

Entry point activities (EPAs) were designed to be implemented at the early mobilization stage in the communities, to develop rapport with communities and help people learn to make collective decisions over their own development. The project funded interventions that addressed the needs identified by the community in a participatory manner and agreed by Gram Sabha. The project specified a maximum US\$2,200 per community, with a 10 percent contribution from the same to the EPA.

A total of 1,674 EPAs were planned and followed up, most of those implemented being community halls, but also drinking water, small roads, drainage, schools and sanitation facilities were constructed. In 2005, a policy decision was made by GoK to channel funds for watershed development through local authorities, including externally financed projects like KWDP. This would have been a major departure from the existing fund flow from the DWDO office to the SWS-EC. Given the high risk of trying to change the entire fund flow mechanism for a project well into its planned implementation period, a

compromise was reached for the KWDP to only direct the EPA funds through local authorities before it reached the SWS-EC, rather than redesign the entire project. As agreed, the new approach was monitored over the remainder of the project, and it was noted that there was slow approval of EPAs in many cases, by Gram and ZP, and in some cases followed by delayed payments to SWS for implementation.

Physical Treatment of Sub-Watersheds

Project activities were implemented in 743 MWS located in 77 sub-watersheds (SWSs) in 5 districts (as mentioned earlier, these five later became 7 districts during implementation due to administrative changes to district boundaries). The total geographical area was 518,087 ha. Districts were selected based on physical (including extent of rainfed agriculture and groundwater problem areas) and poverty indicators. The project was implemented in three overlapping phases to allow learning and modification during project implementation. Phase I consisted of 10 SWS covering approximately 69,000 ha (June 2002 to June 2005), Phase II had 20 SWSs covering approximately 111,000 ha (June 2003 to June 2006), and Phase III had more than 60 percent of the total SWSs with 47, and covered approximately 338,000 ha (April 2004 to December 2008). The district coverage is shown below:

Table A-4. Total district areas under project

District	Taluks	Villages	SWS	MWS	Area (ha)	Percent of area
Chitradurga	6	127	14	132	104,997	20.3
Dharwad	5	79	9	81	60,799	11.7
Haveri	6	111	13	118	76,081	14.7
Kolar	11	578	22	210	133,057	25.7
Tumkur	10	375	19	202	143,153	27.6
Total	38	1,270	77	743	518,087	100.0

There were contradictions in the PAD over arable land area treatment targets, and these were clarified to some degree during MTR. Also at the MTR, provision was made for additional resources to be allocated to components 3 and 4; however the actual physical targets for land treatments were not adjusted to reflect the redirection of funds. By the end of the project the actual expenditure for Component 1 was 74 percent of total project expenditure (PAD estimate 89 percent), Component 2 was 4 percent (PAD 5 percent), Component 3 was 13 percent (PAD 4 percent) and Component 4 was 8 percent (PAD 4 percent).

Despite expenditure in Component 1 being less than the PAD target, the land treatment targets were largely achieved, but with some significant variations to the initial proposals. While the arable land treatments were in line with original targets and horticultural targets substantially exceeded the initial area targets, there were major shortcomings in respect of forest land (under control of the FD) and common properties (usually under the

control of the ZPs). The PAD envisaged 80,000 ha of forestry activities (33,200 ha on state forest land, 36,900 ha on common property and 9,900 ha of private cultivable wasteland to be rehabilitated). Despite initial assurances given by the FD during project preparation, there was a lack of agreement between the WDD and the FD on the control of funds for work on state forest land. Also, the FD was unwilling to allow treatments other than planting trees on their lands, which in many cases would do little to improve downstream watershed benefits. In addition, the area of state forest land available for treatment was overestimated during project design, and during the actual preparation of detailed SWAPs during implementation, virtually no areas were identified as FD land. The shortfall in achieving targets on common properties was partly due to the available area being less than planned because of unauthorized encroachments, and also because during participatory planning there was a beneficiary preference to work on privately owned land.

As noted above, the PAD allocated about 25 percent of the total project base costs for the treatment of 80,000 ha with forestry and silvipasture activities. By the end of the project however, there had been no significant reforestation on FD land, and the total area of 29,000 ha of forest activities achieved were for agro-forestry, usually border plantations on arable areas, roadside plantations, and block plantations on common property and cultivable waste land. It should be noted however, that horticulture treatment on private lands amounted to an additional 54,000 ha by the end of the project, adding market and non-market forestry benefits into the micro-watershed, but not on state forests or common lands under the authority of other government departments. Had the original targets been formally adjusted during implementation, a better ICRR result would have been possible.

The PAD provided flexibility to allow the selection of activities in-line with stakeholder priorities, with watershed activities being presented as optional treatments, and it provided indicative per/ha investment levels of INR5,000 for arable land, INR6,000 for horticultural development, and between INR18,000 and INR22,000 for silvipasture and forestry activities. The operation manual provides similar guidelines for per/ha investments, and to guide the overall maximum investment at a micro-watershed level, it also provided an overall limit of INR7,000/ha for each SWAP.

The actual expenditure on soil and water conservation activities was 75 percent of total Component 1 expenditure. There has been a clear priority by beneficiaries towards investments in soil and water conservation to improve in-situ soil moisture conservation for better crop production, on-farm water storage, ground water recharge, and drainage line stabilization. The major physical investments for Component 1 have been:

Table A-5. Major physical land treatments

Major physical treatment	Outputs	Share of Component 1 Expenditure (percent)
Field bunding (ha)	169,000	22
Farm ponds (number)	15,800	9
Check dams (number)	1,700	6
Bore well recharging pits (number)	7,500	3

These treatments accounted for approximately 40 percent of the total investments in Component 1. This is not an unexpected selection by beneficiaries living in an area characterized by low rainfall, declining groundwater levels, and a resulting shortage of water for irrigation, livestock and domestic uses.

The M&E studies conducted at the end of Phase I revealed an emphasis on structural soil and water conservation works, and recommended that a better balance was required, particularly in respect of horticultural and forestry activities. As noted earlier, this transformation was largely achieved although the original PAD targets were not formally revised. The excessive use of machinery rather than labor for construction activities was also identified as a problem. New guidelines were introduced for the remaining two phases with a limit of 60 percent of SWAP investments for treating arable land and drainage lines, 20 percent for horticulture and 20 percent for forestry. This resulted in a better balance between activities. The use of machinery was restricted to areas where soil conditions were difficult for manual labor, and the investment in individual farm ponds was reduced from a maximum of INR50,000 to INR20,000.

The horticultural development activities have been particularly successful with 54,000 ha being developed against an original target of 30,000 ha. M&E case studies show good survival rates (70 to 80 percent) and good maintenance, and a significant conversion from single cropping to agro-horticulture, and a reduction in fallow and cultivable wastelands. The full benefits will be achieved post-project, with species such as mango not reaching full production until about 7-10 years after planting.

The quality of the design and construction of the SWC structures was good. A quality management system was introduced, including the preparation of a comprehensive quality control handbook, the introduction of an “OK” card system⁷ for every structure, a photographic record of key construction activities, and quality control training for project staff and NGOs.

There have been major investments in SWC activities, and key PAD PDO indicators for the environmental impact of the project included an improvement in groundwater recharge and a reduction in soil erosion. The project did measure these impacts but not as

⁷ This is a small file card kept by each farmer and listing all required treatments. After site inspection by the local WDD officer after each treatment, it would be signed off and the farmer could proceed to the next step.

comprehensively as required, however at the time the project started, most Bank-financed watershed management projects did not put enough attention on monitoring hydrology changes and soil erosion.

Component 2. Farming System Intensification (PAD US\$5.5 million, Revised US\$6.2 million, Actual US\$4.2 million)

Participatory Farmer-Driven Research and Extension System

The PAD envisaged a system of farmer-driven research managed as a competitive grants program. At MTR, this was changed to sponsored research, and resulted in the formation of a partnership between ICRISAT and University of Agricultural Sciences (UAS) Bangalore to implement a program of “Farming System Research and Demonstration”. This involved working jointly with the WDD, relevant district-level GoK agencies, project NGOs and project beneficiaries, to identify and introduce technologies to increase agricultural productivity. The approach combined participatory research/demonstration activities on the land of beneficiary farmers, larger scale farmer training, and the establishment of soil and moisture monitoring stations.

Many of the demonstrations delivered by ICRISAT and through Farmer Field School (FFS) were delivered to a wide group of AG members with a range of results. For the most successful demonstrations, adoption due to exposure visits tended to be largely on crop varietal aspects. The impacts of trainings by ICRISAT on new technology taken up, was very District specific. The ICRISAT work was quite successful in introducing soil health cards for farmers to better target fertilizer applications to address specific nutrient deficiencies and reduce costs. The work also provided farmers with better information on monsoon rain patterns to help with agricultural planning, particularly seeding. Early results from pilot plots show high yield increases with these simple tools, especially when combined with soil and water conservation measures as implemented by the project.

Farmer Training for Introduction of Improved Practices

There was extensive training of farmers on improved agricultural practices to complement planned demonstration activities:

- (a) technology exposure visits and field days in the project area, as well as at UAS, Bangalore and an ICRISAT farmers’ day (out of project area), provided an introduction to improved technologies for more than 5,000 farmers;
- (b) two hundred farmers were trained on seed production, processing, safe storage and establishing village based seed banks;
- (c) six hundred farmers were trained on methods of treating seed with Rhizobium, insecticides, and fungicides;
- (d) three hundred farmers were trained on integrated production and protection management (IPPM) techniques;

- (e) eight hundred fifty farmers were trained on improved agricultural implements, such as seeding tractors; and
- (f) six hundred farmers and rural women from self-help groups (SHGs) participated in training on vermi-compost preparation techniques.

Initially, training on technical components such as on IPPM and integrated nutrient management (INM), which would have been of greater interest to AGs, lagged somewhat behind; in addition the coverage of these trainings was also limited early in the project. The FFS model seemed to provide a useful tool for building the technical capacity of AGs, with increased biological control and reduced pesticide use. However, the FFS system was applied only to a limited extent, although reports noted that several WDD staff, in association with the Agriculture Department (AD), now has the experience to further impart FFS related skills through regular extension work.

Program of Farm Demonstrations

Field work began in 2005 with the selection of 10 Phase 1 MWSs in all project districts, to implement participatory field trials in INM; varietal selection; land and water management; IPPM; and integrated disease management. A total of 353 trials were conducted in conjunction with beneficiary farmers in the first year. Based on the experience in the first year, activities were scaled-up to add a further 33 trial sites and 378 trials were conducted in 2006. There was a further expansion in 2007 (the final year for trials) with farmers participating in 1,164 field trials over an area of 5,900 ha in all project districts.

The farming research and demonstration activities were assessed by a project M&E random sample survey covering 172 farmers who had cooperated in the field trial activities, and to ascertain the secondary impacts, an additional 234 project farmers who had not participated in a field trial were also surveyed. The survey covered all project districts. The adoption of new technologies varied between districts, but overall the adoption level due to exposures to the ICRISAT farmers' day and field visits indicate that the best adoption was for improved varieties (46 percent) and for improved cropping pattern (27 percent). By the third year, overall crop productivity on farmer trials was demonstrated to have increased by 45 percent to 65 percent with the application of INM treatments. Land and water management trials in Chitradurga demonstrated that it was possible to increase maize production by one ton/ha due to using a conservation furrow system, which was a 25 percent increase over traditional methods. Integrated Disease Management for groundnut resulted in identifying a superior foliar disease tolerant cultivar. Improved location specific cultivars of groundnut, ragi, soybean and maize were identified.

INM trials demonstrated good yield increases, but adoption was low (86 percent of respondents indicated improved yields due to INM, however 74 percent discontinued the INM aspects, and only 5 percent extended it to their entire cultivable area). The study concluded that the impact of the demonstrations was much better with direct beneficiaries, and had a lower secondary impact.

Strengthening Disease/Pest Surveillance and Forewarning System

Project training activities have improved the general knowledge of farmers in the project area of disease and pest identification and control, but improvements in long-term institutional capacity is likely to be limited to individual farmers given that a high proportion of AGs have not been sustained post project. Continued support to farmers will be required from the trained district specialists in both the AD and WDD through regular extension work.

Forestry-related Institutions' Capacity Building

Project activities have not resulted in any improved capacity in forestry related institutions, as little specific FD related activities took place on the ground due to legal and policy issues, and disagreements over fund flow that could not be resolved.

Livestock

More than 86,500 women and men were given capacity building support on livestock and dairying through various trainings. Livestock training was considered to be one of the most successful of the project's capacity building activities. It was well-designed and had simple and effective delivery mechanisms given by specialist NGOs through village-based training (VBT) and posters and charts with clear messages, with follow-up practical animal health camps (110,000 livestock benefited from 1,435 camps). At these camps, livestock were treated for diseases, and given vaccines against contagious diseases. These camps also served as spaces for demonstrations, lectures, film shows and rallies to increase awareness.

More than 64,741 farmers (community members) benefited from the project through the purchase of livestock as part of the IGA component. In support of this, more than 6,344 ha were brought under fodder production, the majority on private land. Silvi-horti-pasture was supported on 166 ha of common land under CBO management.

The village-based Gopala Mitras and Livestock Extension Agents were in place to provide follow-up support. Gopala Mitra para-veterinarians formed part of the original design. These were specially trained community members, often educated youth, who were to provide ongoing community level support to households with livestock. During project implementation Gopala Mitras had a modest project stipend (May 2008 WDD progress report, p16) to help with the transition to becoming private service providers. Agreements were reached with the Department of Veterinary Services to provide ongoing technical support. Of the 154 Gopala Mitras trained under the project, 119 continue to provide door-to-door delivery of support in the project area during implementation on a fee basis, with feedback that their services were being utilized to a considerable degree by community members. Earnings by the Gopala Mitras appear to be between US\$75 and US\$375 per month, with an average of around US\$125.

Fisheries

A new initiative by the project was in improving fisheries in water harvesting structures established or improved by the project. Stocking of fingerlings was done in 69 private farm ponds, and 5 common or village ponds, resulting in very good harvests.

Component 3. Income Generation Activities (US\$4.1 million, US\$15.4 million, US\$14.5 million)

Formation, Strengthening and Training of Beneficiary Groups

Building on the initial mobilization by field NGOs, the project support for IGA evolved with the burgeoning SHG movement both in Karnataka and more widely in India. The project financed 27 Specialist NGOs (SNGOs) to support the further formation and organization of SHGs with training of members, linking SHGs with existing GoK development schemes, disseminating marketing information, and developing linkages with commercial banks for capital growth post-project. Some examples of linkages include the project convergence with the GoK Total Sanitation Campaign to construct new toilets in all target communities. The project also linked with the state government Yashaswini Scheme to provide low-cost health insurance to 4,000 beneficiaries.

A total of 6,648 new SHGs were formed, considerably more than the 5,080 expected in the PAD, and complementing a nearly equal number already existing through other previous government and NGO support. The project-supported SHGs had a considerably stronger focus on the vulnerable – landless, scheduled castes and tribes. Though data on the inclusion was not systematically presented, all landless and vulnerable were expected to be part of SHGs. Nearly all groups were women-only SHGs. More male farmer oriented AGs were also encouraged to generate group savings, with a possible view to enhance their economic activities, though this was less successful.

The support process consisted of entrepreneurship awareness program training, assisting individuals to start thinking and identifying potential IGAs, followed by an entrepreneurship development program on basic business development issues and features. For members with specific IGAs identified, a skills based entrepreneurship development program was then provided, relating to the specific enterprise chosen. A total of 11,216 community members were involved in exposure visits.

Some of the SNGOs did exceptional work, with comprehensive training programs and follow-up handholding activities, quality and marketing support, and IGA fairs that would bring together community producers and prospective buyers. The SNGOs were backed up by specialized Additional Project Directors at the State level for livestock and IGAs, and DRGs drawn from sector agencies, operating at the district level. In total, 96 traditional and 78 new skills-based non-traditional IGA were identified, both in the form of individual and group activities.

Income Generating Activities (IGAs)

Initially the project was designed to only support training and financial links to commercial banks. However at MTR, and drawing from emerging lessons from the Bank's growing rural livelihoods program in other states, it was realized a much greater financial boost was needed for IGAs to really succeed within an integrated watershed development project. In restructuring the project, the funds for the IGA component were increased primarily to include a revolving fund allocation for each SHGs, initially INR 25,000 (US\$556), later increased to INR 75,000 (US\$1,667) per SHG as lessons were learned and experience gained. This ultimately meant that overall, the IGA component constituted 13 percent of project expenditures.

A total of 68,852 IGAs were set up, mostly facilitated through the SHGs. Training and IGA implementation in relation to projects targets improved with each phase, as a result of improved training methodology, as noted in independent assessments. Livestock based IGA has proven highly successful, linking small producers with Karnataka's highly efficient milk marketing system. Anecdotal information and ICRR field observations noted that many of the non-livestock IGAs were generating small incremental, but important incomes to households. In some cases federations that developed organically were highly active and successful. For example, 19 SHGs in Kolar produced 127 tons of *papad* in 5 months, with a net profit of around 2,500 INR (US\$56) per month per member, for 174 active members.

The SHGs built up 19 Crores INR (US\$4.2 million) in savings, which they used largely as counterpart funds for IGAs of different scales, and to leverage further loans from banks. All SHGs were supported to make links with commercial or state banks. A total of 3,826 SHGs actually formed solid links to access further loans to the groups and individuals. With less emphasis on more economic support to AGs initially, only about 16 percent of the AGs formed strong links with commercial financial institutions.

Component 4. Institutional Strengthening (PAD US\$3.2 million, Revised US\$9.2 million, Actual US\$9.1 million)

Monitoring and Evaluation

The system was named a Monitoring, Evaluation and Learning (MEL) structure and was led by Antrix Corporation, an independent organization (commercial arm of the Indian Space Research Organization), which was contracted early on by WDD. The expected outputs were: (i) M&E system in place and operational, (ii) KRSAC assisting with GIS and preparation of treatment plans for project watersheds. The project has successfully achieved all output targets on M&E with a very innovative and comprehensive MIS/M&E system involving Antrix, WDD, NGOs and CBOs (for self-assessments). Antrix also included an important field presence (3 staff per district), which supported data collection, regular monitoring and capacity building of field NGOs, GoK staff and beneficiaries.

The overall system included three main components:

- (a) **Impact Assessment.** This included the combination of GIS and remote sensing data with household surveys and ground-truthing in order to follow the main outcome indicators of the project. In addition, several case studies and thematic research were conducted which supported changes to project implementation (Table A-6). Antrix used different methods (mix of qualitative and quantitative) for measuring among others: (i) impact of training and capacity building, (ii) investment patterns and (iii) the overall impact study.
- (b) **Process Monitoring.** This included the use of the MIS and GIS for progress monitoring, as well as the development of a software for support of watershed action plans, which not only reduced planning time but also allowed for a consistent and comparable approach to all MWS and for research to be conducted using the compiled data.
- (c) **Input-output Monitoring.** This included a number of activities such as participatory observations, focus group discussions, transect walks, informal discussions, and expert judgment. The fact that plans were consistent also allowed for greater transparency in comparing planned outputs with actual works on the field. Finally, experts such as those employed for civil works construction quality, secured good overall quality of soil and water conservation works, particularly in Phases II and III, after lessons had been learned from Phase I.

The M&E system generated a considerable number of practical reports (Table A-6). The project also made extensive use of remote sensing and GIS for: (i) Watershed characterization and prioritization, (ii) Resources Assessment and (iii) Action Plan Preparation. In addition it had an important role in building capacity of the different implementing agencies, raising awareness about implementation problems and monitoring solutions found. Finally, the system put in place by the independent agency was well embedded in the project's accountability and transparency processes and this allowed for a good working environment and contributions to project achievements. Examples of this are the use of satellite connectivity for weekly discussions between project director and staff, as well as receiving feedback from beneficiaries and the changes put in place by WDD following many of the thematic reports (such as those on labor usage for construction works).

Table A-6. Reports conducted under KWDP

Type	Number
Inception	1
Input/output reports	7
Baseline	11
Evaluation / assessment	55
Impact	17
Case studies	5
Monthly observation reports	56
Total	149

While the process and input-output monitoring were highly successful, the main impact evaluation study could have benefited from more specific support on household survey implementation, analysis and reporting. The outputs achieved are considerably above most projects, but with household income, the use of a larger control group and better data management might have resulted in stronger statistical links between project inputs and income.

Project Management and Coordination

Incremental operating expenses were the main support to the project. While there were early delays in staffing the project fully, by the end of 2003, most positions at the state office level (20 out of 22) and District level (616 out of 685) were filled, and people were trained. The project provided basic vehicles and equipment for operations. At MTR allocation to the operating expenses were slightly increased. The project supported study tours for senior WDD and lower level field staff to China, Mexico, Indonesia, Turkey and Ethiopia. These field visits supported wider sharing of information with counterparts in these other countries. The Mexico field visit included staff from all three active Bank-supported watershed projects in India at that time to promote inter-project dialogue and knowledge sharing.

The project was the recipient of five prestigious national awards in the latter years of implementation; National Productivity Awards 2007 and 2009; National Water Award 2007; Earth Care Award 2008; and National E-Governance Award 2009.

Annex 3. Economic and Financial Analysis

A. Project Benefits and Expected Returns in the PAD

1. The PAD economic analysis focused on quantifying benefits from the different project activities included in treatment of watersheds and then aggregating the different streams of benefits and costs to estimate an overall economic rate of return for the project. Thus benefits were calculated for agriculture, horticulture, forestry and livestock. The PAD calculated parity prices based on Bank forecasts for the main traded commodities and non-tradables were adjusted by a Standard Conversion Factor (SCF) of 0.9. Labor was valued at a market wage rate of INR30 per day in financial terms and adjusted by the SCF to obtain the economic wage rate. Since the PAD costing of the project used a GoK minimum wage of INR75 per day, the adjustments to produce economic costs have resulted in reducing costs by around US\$32 million (or 25 percent of total financial costs including contingencies). The latter is also based on the assumption that 60 percent of project costs excluding price contingencies consist of manual labor⁸.

2. The main economic benefits from the project were expected in agriculture (42 percent of total net benefits) and secondly in horticulture and forestry (22 percent and 19 percent respectively). In agriculture, two agro-climatic zone were considered in the PAD, first the East and Central Dry Zone (ECDZ) with Kolar, Tumkur and Chitradurga districts and second, the North Transitional Zone NTZ with Dharwad and Haveri districts⁹) with respective typical hectare models constructed (crop models were estimated with breakdown by season and rainfed/irrigation). The agriculture benefits were expected in 50 percent of the total cultivated arable land treated by the project, resulting in 42,800 hectares in NTZ and 89,300 hectares in ECDZ. The expected benefits would result from two main assumptions: (i) a 15 percent increase in yields of all rainfed crops and 10 percent increase in yields of irrigated crops and (ii) area under irrigation in the project areas would increase by 10 percent (see Table A-7 for main summary of assumptions in the PAD).

⁸ To be precise, the PAD total economic costs exclude expenditures related to forestry field operation costs, fallow land treatment and IGA. Forestry and fallow land costs were included in the calculation of net benefits from those operations (and therefore excluded from the cost side to avoid double counting) and IGA was excluded from the economic analysis.

⁹ ECDZ – East and Central Dry Zone, NTZ – Northern Transitional Zone.

Table A-7. Summary of PAD key assumptions for agriculture benefits

Item	Unit	ECDZ		NTZ	
		Without	With	Without	With
Total treated area	ha	0	89,265	0	42,774
Cropping intensities	%	102	104	122	131
Share of irrigated crops	%	28	31	18	20
Increase in yields for rainfed crops	%	+15% for all rainfed crops		+15% for all rainfed crops	
Increase in yields for irrigated crops	%	+10% for all irrigated crops		+10% for all irrigated crops	
Net incremental economic benefits per ha (in constant 2009 prices)	INR/ha US\$/ha		5,862 127		2,601 57

3. Regarding horticulture, economic benefits were calculated based on a total area of 30,000 ha being developed with horticulture species. The incremental net benefits (see Table A-8 below) were derived from a representative mango model and reduced by the estimated net income from agriculture (which was considered to represent the opportunity cost for the land).

Table A-8. Summary of PAD key assumptions for horticulture benefits

Item	Unit	Assumption
Total area benefiting	Ha	28,200 in ECDZ and 1,800 in NTZ
Year start bearing; total duration	year	5 th year; 30-year duration in financial analysis (24 in economic analysis)
Yield pattern a/	Mt/ha	Starting with less than 1 Mt/ha in year 5 to peak of 3.5 Mt/ha in year 10 onwards
Net financial income (all in 2009 constant prices) Year 10-30		
Net economic income b/ Year 10-30	INR/ha	60,610
	INR/ha	44,278

a/ yields reported in PAD are of 28Mt/ha from year 10 onwards but this is inconsistent and 3.5Mt/ha was assumed

b/ since calculations not available derived from Annex 4, table 8 from PAD and adjusting for 2009 constant prices

4. The PAD economic analysis also included benefits from seven different forestry models, which consisted of a combination of short rotation crops (for poles, timber and pulpwood) with some fruit crops, as well as teak and bamboo. The total areas to benefit include 33,200 ha of GoK forest land, 37,000 of common and gomal lands and around 9,900 ha of cultivable wastelands under the Revenue Department, or privately owned through encroachment. The models used are not available from the project files and therefore only the total incremental benefits from forestry can be interpreted. Moreover, it is not clear from the PAD whether the carbon sequestration benefits were included or not as the text says they are [PAD, p. 86] and the economic analysis table states the opposite [PAD, p. 91]. The project economic analysis also incorporated benefits from livestock, which assume that from project year 12 onwards about 10 percent of cross-breed cattle, buffalo, sheep and goats in project areas (respectively 15,000; 85,000 and 320,000) adopt best practices on feeding and also benefit from greater availability of fodder and straw.

B. ICRR Estimation Methodology

5. Estimation of costs and benefits for the ICRR followed a similar approach to that of the PAD to the extent possible. There was substantial information available from the project's M&E system, which supported the ICRR calculations and allowed checking on key assumptions from the PAD. However, a number of difficulties were encountered at ICRR in re-assessing the economic impact of the project as a result of, (i) non-availability of all final economic analysis files and raw data used for deriving the results presented in the PAD (namely forestry, horticulture and livestock); (ii) treated areas reported by the project were based on sub-watershed plans and often included more than one project activity, which needed to be differentiated in the economic analysis; (iii) yield and cropping pattern data reported from project M&E did not differentiate between seasons and rainfed/irrigated crops, although the study area selected is mostly rainfed with annual rainfall ranging from 400 to 700 mm and having less than 10 percent of the area under irrigation (rainfed crops constitute about 90 percent to 95 percent of agriculture output); and (iv) details on increases in area under irrigated crops were not readily available.

6. The ICRR estimates relied to a great extent on updating the detailed ex-ante analysis carried out during project preparation. The revised estimates use different data from project M&E documentation, information collected during ICRR field visits, and detailed discussions with project stakeholders. The ICRR estimates also include IGA costs and benefits (which are not included in the PAD analysis) given the importance accorded to this component following MTR.

Project Costs

7. Project economic costs at ICRR have used a 0.6 conversion factor between economic and financial unskilled labor wage rates. This is based on the observation that when most of project soil and water conservation works were implemented, official wages were around INR75 and wages paid around INR45. This is higher than the conversion factor of 0.4 used at preparation and translates everything else equal into an increase in estimated economic costs. The ICRR estimates also assume that 60 percent of costs related with entry-point activities and treatment of watersheds are labor costs. This is different from the PAD assumption, which included more activities under this category (of 60 percent labor costs) therefore translating into a greater reduction of project costs when adjusting from a financial to an economic perspective. Finally, ICRR project economic recurrent costs are estimated as 3 percent of economic investment costs and all costs are adjusted to 2009 constant prices using the Indian annual Consumer Price Index (CPI) to inflate historical prices. The total economic investment costs at ICRR were estimated at US\$89.5 million (in 2009 constant prices), i.e. around 77 percent of total financial project costs in 2009 constant prices.

Agriculture

8. Agriculture economic benefits use two farm models representing respectively ECDZ (Chitradurga, Kolar and Tumkur districts) and NTZ (Dharwad and Haveri). The farm models were changed at baseline and end of project based on the cropping pattern data collected by the M&E system for Phases I and II. The results are presented in Table

A-9 below¹⁰ and indicate that in the ICRR a lower share of irrigated crops and cropping intensity is usually assumed as per the information gathered from the project. In particular, only a 5 percent increase in irrigated areas was considered for the ICRR given the data collected¹¹, which falls below the PAD estimate of 10 percent. Yield increases were adjusted and computed from data made available from the impact study Phase II report and from analysis by the ICRR team of the dataset used in that study (comparing control and treatment before and after project). This translated into an increase in production of a 1ha farm by 12.8 percent in ECDZ and 14.5 percent in NTZ (versus around 15 percent in the PAD).

9. Historical and future economic prices (based on Bank commodity price projections) for the main commodities and inputs were derived from international prices and analysis was conducted in constant 2009 prices using the Manufacturing Unit Value (MUV) index as deflator for future prices. The economic prices were annual average derived prices weighted by the number of ha estimated to benefit each year. Financial prices were collected locally. For wages, a financial rate of INR50 per person-day was used (in line with field observations) and the shadow wage rate was set at INR 45 per person-day. Finally economic benefits were calculated based on a total of 141,000 ha being treated. This was derived from the 224,403 ha of areas treated (calculated through conversion factors from soil and water conservation activities implemented by the project and excludes horticulture and forestry land. This is still around 7 percent above the area used at appraisal. The benefits were assumed to start two years after the treatments (in line with the period between impact analysis baseline and final data collection) and lasting for 15 years. The resulting net economic margins from the project are higher for the two regions mainly as a result of higher economic prices being used. The ICRR incremental net economic margin as a result of the project is lower for the ECDZ region (relative to the PAD), but higher for the NTZ region, mainly as a result of higher groundnut yields.

¹⁰ The actual calculations differentiate between irrigated and non-irrigated crops and crop budgets were updated with a breakdown by region, irrigation and season.

¹¹ The Impact Study Phase II indicates between 6 and 12 percent increase in irrigated areas. However, it is not clear whether this accounts for the evolution in the control group. Therefore only 5 percent increase was used in the ICRR estimates.

Table A-9. ICRR key assumptions for agriculture benefits

Item	Unit	ECDZ		NTZ	
		Without	With	Without	With
Total treated area	ha	0	105,680	0	35,871
Cropping intensities	%	104	105	111	131
Share of irrigated crops	%	25	26	16	17
Increase in yields for rainfed crops	%	between 0% (paddy and sorghum) and +15% (groundnut, sunflower),		between +7% (sorghum) and +20% (groundnut)	
Increase in yields for irrigated crops	%	between 0% (paddy) and +10% (groundnut, sunflower, ragi and		between 10% (maize, cotton and paddy) and +20% (groundnut)	
Net incremental economic benefits per Ha	INR/ha US\$/ha		4,424 96		2,365 51

Horticulture

10. The ICRR economic benefits follow a 1 ha mango model since the plant represents more than 50 percent of the horticulture species planted under KWDP according to M&E data. Survival rates for the trees are assumed at 65 percent based on Antrix report from 2007 and the model has a 30 year horizon. Given the normal spacing (around 200 trees per ha), the survival rate and the number of hectares covered by horticulture (53,839 according to M&E data) this means almost 7 million mango trees planted. In the PAD horticulture was to benefit only 30,000 ha. The ICRR model includes farmer contributions to develop the mango trees that are not accounted for by total project costs, namely 35 percent contribution on materials and seedlings and 10 percent contribution for a farm pond. Economic benefits from horticulture in the ICRR were not decreased by an estimated net income from agriculture (taken to be the opportunity cost of the land as per the PAD). In fact, M&E information and field observations indicate that most of the land used with horticulture was being intercropped and/or was idle before the project.

Table A-10. ICRR key assumptions for horticulture benefits

Item	Unit	Assumption
Total area benefitting	ha	53,839
Year start bearing; total duration	year	5 th year; 30-year duration in financial analysis (24 in economic analysis)
Yield pattern a/	Mt/ha	Starting with less than 0.5 Mt/ha in year 4 to average of 3.9 Mt/ha in year 10 onwards
Net financial income (all in 2009 constant prices) Year 11-30	INR/ha	62,477
Net economic income b/ Year 11-30	INR/ha	65,665

Forestry

11. The ICRR economic benefits for forestry are derived from a forest species model which consists of planting costs and minor inputs during the first five years (and some maintenance labor until harvesting). Survival rates for the trees are assumed at 50 percent for private land and 40 percent for revenue land. For private land, it is assumed that the survival rate would thus be lower than that of horticulture species and on revenue land

the survival rate is based on Antrix’s report which estimated survival rates of 40 percent for Phase III (57 percent for phase II and 70 percent for Phase I). A 25 year horizon is used before harvesting and total number of hectares is based on the final number from project M&E (29,000 ha). Since most of the planting was done as agro-forestry, the density per ha is low and assumed at 120 trees.

IGA

12. IGA economic benefits and costs were not included in the PAD, but the fact that this activity became more important following MTR (around 15 percent of total financial costs of the project) led to its inclusion at ICRR. The benefits are based on two models (one of buffalo dairy and another of tailoring) from which an average net economic benefit stream has been calculated with the duration of eight years per activity. These two models represent some of the most common activities undertaken by members of SHGs during project implementation. It is further assumed that out of the total IGAs set up under the project (almost 69,000 according to project data), approximately 75 percent were successful (this may be conservative given field observations but reflects the lack of information on Phase III and the fact that project support has just ended). Since IGAs are set up with the formation of SHGs which receive commercial bank loans, there may be subsequent higher benefits from funds being paid back and re-used for other activities. This has, however, not been taken into consideration in the ICRR economic analysis.

C. Economic Returns

13. The overall economic rate of return (ERR) on the base case assumptions is highly satisfactory at 17.7 percent, which is slightly higher than the PAD estimate of 16.4 percent. The ICRR estimates translate into an NPV of INR2.9 billion (US\$62 million) if a discount rate of 12 percent is used (the same rate as in PAD), which is around 20 percent higher than the PAD estimate of INR2.4 billion (adjusted to 2009 constant prices using Indian CPI). The main drivers of the valuation are the horticulture benefits and secondly agriculture (see Table A-11 below).

Table A-11. ICRR vs. PAD present value of economic benefits (INR million)

Activities	Present value of Economic Benefits in 2009 constant prices	
	PAD	ICR
Agriculture	2,357	1,641
Horticulture a/	970	3,623
Forestry a/	1,044	286
Livestock	936	
IGA		290
PROJECT	5,307	5,840

a/ The net benefits in the PAD include some part of costs and are therefore not fully comparable. Given the unavailability of raw data from the PAD economic analysis, it was not possible to calculate economic net benefits on a comparable basis for livestock and IGA.

D. Main Reasons for Higher Economic Returns

14. The higher economic returns obtained mainly reflect higher horticulture benefits and improved cost efficiency. Regarding horticulture, the reasons for improved returns are: (i) larger area under horticulture at ICRR (80 percent above the PAD estimate), (ii) around 50 percent higher net income per ha (see tables 2 and 4 above) mainly as a result of slightly higher yields and most importantly, not following the PAD approach of reducing horticulture net income per hectare by the “income from agriculture in the with-project situation” and (iii) differences in timing and of cash flows between ICRR and PAD estimates.

15. ICRR estimates show improved cost efficiency, which led to above target results in ha treated for horticulture and cultivated arable land despite a reduction in total project economic costs. The PAD estimated present value of economic costs stood at INR 3.2 billion when adjusted to 2009 prices, while the ICRR estimate is of INR 3.0 billion (around 6 percent lower than PAD).

16. Agriculture economic benefits were below PAD estimates mainly because of lower than expected yield increases for several crops (when compared to the control group evolution), particularly in the ECDZ region, which resulted in lower incremental economic benefits per ha of respectively 25 percent and 9 percent for the ECDZ and NTZ regions. ICRR total area benefiting from agriculture productivity improvements is, however, larger than the PAD estimate by 7 percent. The remaining difference is due to timing and duration of cash flows, as at ICRR, a more conservative estimate was used.

E. Financial returns

17. Given the general interest among watershed development projects in understanding financial incentives for farmers to participate in soil and water conservation activities, a financial analysis was conducted. The results indicate the following:

(a) **Agricultural** financial net margins per ha indicate a lower increase in both regions when compared to the PAD, however it is still very satisfactory. For NTZ the increase estimated at ICRR is of 32 percent very close to the PAD estimate of 34 percent. For ECDZ the increase is of 25 percent, while the PAD estimate is much higher with a 92 percent increase. The ICRR estimates indicate an increase in returns to labor as a result of the project of around 19 percent in both regions to INR 157 per person-day for ECDZ and INR126 for NTZ. Moreover, simulating an investment per farmer household of INR 9,000 (the weighted average investment based on data from phase II¹²) and using a land size of 1.8 ha the increase in net margin is highly profitable. In fact, even if the farmer would pay for 100 percent of the investment and with annual

¹² This is based on the share of each type of farmer category and the investment pattern studies by Antrix, which indicate that the investments in soil and water conservation average between INR 5,185 for the marginal farmers to 7,273 for small farmers and 14,339 for big farmers.

operating and maintenance at 3 percent of investment cost, given the margin increase due to the project, the implicit IRR would be of 31 percent for NTZ and 36 percent for ECDZ and the respective NPV at 12 percent of INR15,140 and INR19,700 (assumed 25 years but at 10 years would still be highly profitable). This seems to suggest that such investments could receive a higher share of farmer contribution (although this would require further analysis such as of household annual distribution of cash flows).

- (b) **Horticulture** financial analysis indicates strong profitability even if sensitivity analysis employs conservative assumptions. With a model including only 130 trees surviving (based on the mentioned 65 percent survival rate) and yields per tree of around 30 kilograms (kg) at full potential, the financial analysis indicates that even if the farmer would pay for 100 percent of an initial investment of around INR31,000 (farm pond, seedlings and other), the one hectare would still yield a financial IRR of 23 percent and a INR138,224 NPV. This is below the 39 percent IRR estimated at appraisal (which only accounted for labor costs but no farm pond and other), but still highly satisfactory.
- (c) **IGA** financial analysis indicates good profitability of both the buffalo dairy model and the tailoring activities constructed from information supplied by the project M&E and field observations and discussions. The financial IRR calculated are respectively 14 percent and 24 percent.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

Table A-12. Task team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Harideep Singh	Senior Operations Officer		Task Team Leader
T.C. Jain	Senior Agriculturist		Land treatments
Sonia Kapoor	Environmental Specialist		Environmental Impact Assessment review
Mridula Singh	Social Development Specialist		Social, institutions
D.J. Baxi	Procurement Specialist		Procurement
Manvinder Mamak	Financial Management Specialist		Financial Management
Paul Sidhu	Agriculturist		Agriculture
Meena Munshi	Senior Natural Resources Management		Non-land works
Muthoni W. Kaniaru	Counsel		Legal
Gajanand Pathmanathan	Lead Economist		Economics
Thao Le Nguyen	Senior Finance Officer		Disbursement
Sarita Rana	Program Assistant		Administrative Support
Theodosia Karmiris	Program Assistant		Administrative Support
M. Balasubramanian	Senior Agriculturist		Agriculture
Bill Sorrenson	FAO Investment Centre		Economics
Jim Alexander	FAO Investment Centre		Land treatments
Supervision/ ICRR			
Manish Bapna	Economist	SASDA	Task Team Leader ¹³
Grant Milne	Senior Natural Resources Management	SASDA	Task Team Leader ¹⁴
E.V. Jagannathan	Water Resources Specialist	SASDA	Water management
Sonia Chand Sandhu	Environmental Specialist	SASDI	Environment
Ashish Bhateja	Senior Procurement Specialist	SARPS	Procurement
Debabrata Chakraborti	Senior Procurement Specialist	SARPS	Procurement
Sonia Chand Sandhu	Senior Environmental Specialist	SASDI	Environment
Bekele Debele Negewo	Water Supply Specialist	MNSSD	Hydrology
Reena Gupta	Natural Resources Management Specialist	SASDA	Co-Task Team Leader
Manoj Jain	Senior Financial Management Specialist	SARFM	Financial Management

¹³ TTL from project effectiveness to May 2003 (MTR)

¹⁴ TTL from June 2003 to Closure

Theodosia Karmiris	Program Assistant	SASDA	Administrative Support
Vibhuti Narang Khanna	Team Assistant	SASDO	Administrative Support
Santhanam Krishnan	Lead Financial Management Specialist - Consultant	ENVCF	Financial management
Jai Mansukhani	Program Assistant	SASDO	Administrative support
Ryma F.J. Aguw	Program Assistant	SASDO	Administrative support
Tanuj Mathur	Senior Financial Management Specialist	SARFM	Financial management
Manivannan Pathy	Senior Agricultural Specialist	SASDA	IGA marketing
Benjamin Powis	Consultant	SASDA	Social, institutions
Krishnamurthy Sankaranarayanan	Financial Management Specialist	SARFM	Financial management
Mridula Singh	Senior Social Development Specialist	SASDI	Social, institutions
Ai Chin Wee	Senior Operations Officer	SASDA	M&E
Jim Hancock	FAO Investment Centre		ICRR Team Leader
Jim Alexander	FAO Investment Centre		Watershed management
Nuno Santos	FAO Investment Centre		Economic analysis

Table A-13. Staff time and cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	US\$ Thousands (including travel and consultant costs)
Lending		
FY99		55.94
FY00	28	71.24
FY01	51	319.34
FY02		0.09
Total:	79	446.61
Supervision/ ICRR		
FY02	21	36.76
FY03	36	141.67
FY04	21	83.87
FY05	20	84.83
FY06	26	101.16
FY07	14	88.66
FY08	8	68.89
FY09	24	0.00
Total:	170	605.84

Annex 5. Beneficiary Survey Results

No separate beneficiary survey was undertaken as part of the ICRR process. Beneficiary input was captured two ways. First, a workshop was held in association with the ICRR mission, on February 20 and 21 in Bangalore to discuss the draft ICRR from the FAO team and gather stakeholder input for the borrowers ICRR (see section 3.6 on page 11 of this report for a summary of key points from the workshop, and Annex 6, which provides a summary of the borrowers ICRR). Second, the M&E system encompassed input/output monitoring, concurrent process monitoring and impact assessment to measure progress across a range of indicators, which included field level data collection. This information is reflected in the Bank and Borrower ICRRs. The FAO team estimated beneficiaries and key impacts in Annex 11, Table A-23.

Physical and financial progress monitoring of the project was facilitated through a customized MIS package “Sujala Mahithi”, designed, developed and deployed by Antrix. This MIS package helped to create systematic database, allowed users to query, analyze periodic field data, and prepare reports at different levels. Information can be generated on specific project components at State/District/Taluk/SWS/MWS level on a weekly/monthly basis. The package also helps to generate various types of charts, trend lines, statistics, etc.

Process monitoring was designed to capture near real time information on the key processes, particularly at the community level. It was carried out throughout the project to provide regular timely information on the quality of processes, reflect the constraints and successes for decision making / corrective measures. The observations were provided fortnightly / monthly to WDD for effective project implementation and management. The observations also recorded the outcomes of the interventions and their environmental and social implications. As part of process monitoring, evaluation of the functioning and performance of various stakeholders such as CBOs, NGOs, technical institutes and also capacity building programs were carried out at discrete intervals. The monitoring strategy was based on the linkages established between MIS data, process and implementation monitoring.

Impact evaluations were carried out at pre-determined time intervals to establish the net contribution of the project to poverty alleviation, capacity building and natural resource regeneration. Impacts were evaluated using a combination of qualitative and quantitative indicators information collected at specific time intervals viz before (baseline), during (midterm), end of the project and after withdrawal (final). Observations were compared between project and control areas. Judicious combination of conventional and remote sensing approaches were adopted to generate a comprehensive data for monitoring and impact assessment with respect to remote sensing, household survey, focus group discussions, participatory observations, thematic studies, MIS data and case studies.

More detailed information on project results are found in section F from the Data Sheets (Results Framework Analysis), and Annex 6.

Annex 6. Stakeholder Workshop Report and Results¹⁵

Summary

A two-day workshop was held in association with the ICRR mission, on February 20 and 21, 2009 in Bangalore. The objectives of the workshop were to:

- (a) present the holistic picture of Sujala Watershed Project to the partners and invitees;
- (b) share different components and methodologies used while implementing the project;
- (c) present the significant findings of impact assessment studies;
- (d) share experiences of successful initiatives and the impact thereof;
- (e) present and discuss unique features and strategies designed for successful implementation of the project; and
- (f) consolidate the learning from the project and finalize recommendations, if any.

Sixty participants attended the workshop. These participants included key officers from the WDD and specifically with KWDP, DWDOs from all the districts, researchers, officers from Antrix, and key personnel from the external agencies who had taken up various responsibilities in the project implementation, NGO representatives and officers from a World Bank supported watershed project in Uttarakhand.

Key results from the workshop included:

1. The project adopted an inclusive approach that encompassed watershed activities with equity, gender sensitivity and balanced participation from GoK, communities and private sector that can guide new integrated project design.
2. The project promoted high levels of transparency by displaying relevant information such as meteorological data, soil analysis results for micronutrients, wage rates, beneficiary financing, and decisions taken at gram sabhas on walls in villages.
3. Resource mapping should be combined with expertise mapping to help community members take up IGA activities they are good at. It is important to facilitate market linkages for IGA. Handholding support was more important than the IGA training to assist group members in seeking loans, identifying and purchasing assets, raw material etc, and organizing markets. Based on the learning achieved from this project, in upcoming government projects, user groups would be formed from common interest groups and these would replace area groups.
4. Training programs in Phase I were rushed and the reading material was not fully used by the beneficiaries. These lessons resulted in more efforts in Phases II and III to

¹⁵ A larger report was incorporated into the Borrowers ICRR – summary of Borrower’s ICRR is given in Annex 7 and the full report is in Annex 13.

improve the quality of training and creation of user-friendly training material such as booklets and posters.

5. The uniqueness of this project was that actual implementation was completely in the hands of the people. This was made possible by building capacity in the community through training programs that had structured modules. Experience sharing workshops and trainings through teleconferences were also innovations that the project used extensively.
6. The exposure visits organized as a part of the project motivated communities to undertake initiatives similar to what they had seen. It also helped that they saw successful interventions on the ground and this reinforced their belief about what could work. Consistent efforts towards capacity building resulted in total involvement from the concerned government offices, and in total acceptance from the community. With the expertise gained during implementation of the project, it is possible to replicate this kind of project anywhere in the state or country.
7. Social mobilization was a major strength and almost 75 percent of the communities involved, were aware of the project and had been actively involved in implementation. This was not the case in other GoK watershed projects previously taken up in the State.
8. The technologies developed by Antrix and WDD for monitoring and evaluation had an edge over all other systems because they focused on outcomes, impacts and sustainability. The methodology factored in mechanisms, which could validate achievements. The concurrent monitoring ensured that information, both positive and negative was collected on a continuous basis and had learning mechanisms, which could be integrated for corrective action to be taken without delays. Using an external agency brought objectivity and transparency to the process.
9. The Performance Based Payment System (PBPS) adopted later in the project for field NGOs was a very successful lesson. In Phases I and II, with the traditional input based contracts, despite 100 percent payment, work was often completed only up to 50-70 percent of targets. The old system did not differentiate between a good performing NGO and non-performing NGO as both were paid on the same basis. In Phase III, a new PBPS was introduced linking payments to the achievement of clear targets and outcomes. A unique performance indicator system was developed after having a detailed discussion with the NGO to support the PBPS. The NGOs were ranked on the basis of the results. As a result, the FNGOs had more clear milestones and very good results were seen.

Annex 7. Summary of Borrower's ICRR and Comments on Draft ICRR¹⁶

Introduction

Agriculture is the main occupation for 70 percent of India's population and 90 percent of this population is made up of small and marginal farmers who own less than two acres of land. Much of this population resides in semi-arid tropics and pursues agriculture in rainfed conditions. India has around 174 million ha of rainfed area, which is already degraded, and about 5,334 million tonnes of top soil are lost every year. The average annual loss of topsoil per ha is estimated at 16.53 tonnes. Rainfed agriculture in semi-arid tropics is characterized by low productivity, degraded natural resources and widespread poverty among the community.

In Karnataka, the situation is even more severe. Around 82 lakh ha of cultivable area in Karnataka is dry land and only 24 percent of the land is irrigated. Approximately 80 percent of Karnataka is drought prone (the highest in India) and more than 60 percent of the land will always depend on rainfall. The prospects for increased irrigation potential are bleak and productivity in existing irrigated lands has decreased owing to salinity and alkalinity. Agriculture provides employment to more than 70 percent of the population of Karnataka and there is high rural poverty and significantly higher poverty in rainfed districts. The watershed development approach is a solution to the problems associated with rainfed agriculture in semiarid regions by increasing productivity in degraded lands and developing, maintaining and using natural resources on a sustainable basis. This approach is also the most appropriate as watershed development projects address water, soil, forest and pasture resources in an integrated and participative manner. Towards this, Karnataka has 7.8 million ha of land which, is untreated but has potential for watershed treatment.

The Sujala Project Approach

The conventional watershed approach in India has been to focus on technical solutions to soil and water conservation, and delivered by government agencies with little participation by communities and/or farmers. Unlike in the past where watershed activities translated into benefits only for the landed population, and looked primarily at land based activities, in the inclusive and more integrated KWDP (Sujala) approach, agricultural productivity and natural resource management has been fused with income generation activities for the landless and the vulnerable sections of society for overall poverty reduction. Sujala was implemented in five districts of Karnataka state covering 5.19 lakh ha of land spread over 77 sub watersheds and 1,270 villages benefiting nearly 2.25 lakh households including the landless. As per the original plan, the project, which

¹⁶ This summary was drafted by the Bank TTL from the 61 page Borrowers ICRR, completed by the WDD of the GoK (full report attached as Annex 13). As much as possible, this summary reflects the drafting style and terminology in the Borrower's report.

began on 10 September 2001, was due to close on 31 March 2007. It was later extended for two years and closed on 31 March 2009. The districts and villages selected for interventions under Sujala were rainfed areas associated with a high degree of land degradation and suffered from a number of constraints such as low and uncertain rainfall, poor soil fertility, sparse vegetation cover, relatively large areas under wastelands, frequently affected by drought, drinking water scarcity, lack of infrastructure and low productivity output. Soil erosion, runoff and water quality were some of the other environmental problems. The areas selected had large numbers of small and marginal farmers and landless people, most of who were below the poverty line (BPL), were illiterate and faced hardships for their livelihoods.

The key objectives of the project were to:

- (a) improve natural resource base of the selected watersheds;
- (b) increase production and productivity of agricultural lands;
- (c) alleviate poverty in a sustained manner;
- (d) increase the productivity of non-arable lands;
- (e) improve skills and create alternate livelihood options for vulnerable families in the watersheds;
- (f) enable participatory planning and implementation, environment and social assessment and social inclusiveness;
- (g) develop and strengthen community based institutional arrangements for sustainable natural resource management; and
- (h) improve skills and employment opportunities under non-farm sectors.

Sujala addressed several key issues that would enable an overall better quality of life for the community, as well as restore health to the environment through its strategy of working with technology partners and with the community. The technology partners provided professional inputs, and the community together with the project staff implemented appropriate activities towards:

- (a) improving agriculture productivity and improving vegetative cover
- (b) reducing soil erosion, runoff and nutrient loss
- (c) improving water availability at surface and ground water
- (d) increasing production from dairy and horticulture activities
- (e) increasing fodder and fuel availability
- (f) increasing household incomes for enhanced quality of life among local communities
- (g) local institutional development through CBOs with the support of the watershed development department and NGOs

Through a holistic, integrated approach that addressed soil, forest and water management, the Sujala project sought to restore the health of agricultural land, forest cover and the water retaining capacity of the land. Additionally the project facilitated livelihood options for the poor and landless, groups which would otherwise have been perceived as external to a watershed project. The Sujala project had built in flexibility, which was particularly significant considering it was strongly community driven. The flexibility ensured that it

was sensitive and could adapt or alter components based on the felt needs of the community.

These initiatives were enabled through a multi-layered system of project implementation. At the community level, there were three entities: SWS; AGs made up of farmers who owned land within the micro-watersheds area; and SHGs made up mostly of women from the vulnerable sections of society. AGs and SHGs were constituted with members from SWSs.

At the next level were NGOs who had been designated as lead, field, specialist and partner NGOs. While their primary responsibility was to enable better cooperation between the administration, WDD and the community, their contribution and responsibility was significant in other important ways, such as forming the CBOs, facilitating measures for capacity building, skills training for the community, and for other implementation support.

At yet another level, specialist resource agencies brought in their specific skills into the project. Specialist agencies also contributed to awareness building, social mobilization, and other activities. The Sujala project worked with UAS in Bangalore, Antrix, KRSAC, ICRISAT, etc.

At the apex, the WDD administered the project and monitored the budgets through DWDOs stationed at each district.

The Main Project Components

The Sujala project was sectioned out into four main components and budgets allocated accordingly (Table A-14).

1. Participatory Watershed Development and Protection

Social Mobilization and Institution Building

The initial point of interaction with the community was the rapport building phase and interactions were held with the village community in order to introduce the project, gain the community's confidence, and set the stage for actual implementation and community mobilization. PRAs were conducted to determine the community's perceptions of what they wanted out of the project viz-a-viz the current situation. Sujala treated this component as vital and took especial care to build in transparency about the project and convey clear and consistent messages to the community.

Table A-14. Project components and expenditure against initial allocation (INR)

S.I. No.	Components	Expenditure		Percent Achieved against Allocation
		Project Allocation (100,000 INR)	Estimated Expenditure (100,000 INR)	
A	Participatory Watershed Development and Protection			
	Social mobilization and institution building	8,793.37	7,773.89	88.41
	Entry point activities	11,99.84	10,95.89	91.34
	Treatment of watersheds	31,068.46	26,051.72	83.85
	Subtotal	41,061.67	34,921.50	85.05
B	Farming System Intensification			
	Farming system demonstrations	2,023.35	1,218.05	60.20
	Participatory research	889.70	754.78	84.84
	Subtotal	2,913.05	1,972.83	67.72
C	Income Generating Activities			
		7,147.70	6,295.56	88.08
D	Institutional Strengthening			
	Training and technical assistance	2,093.20	1,566.40	74.84
	Project management and coordination	2,484.89	2,381.67	95.85
	Subtotal	4,578.61	3,948.07	86.23
	Grand Total	55,701.03	47,137.96	84.83

Entry Point Activities

To meet the desires and needs of the community and develop rapport with people, entry point activities such as infrastructure building like drinking water and sanitation systems, community buildings, school buildings, cattle troughs, etc, were financed through the project. These activities, undertaken as part of social mobilization, helped encourage active participation from the community in the project. In the first two phases almost all the activities taken up under EPAs were community halls. In this backdrop after lengthy discussions among partners a list of EPAs were worked out and shared with the EPA committees for other activities. However, the decision of communities received priority even if they selected community halls in the third phase. A vital component of the project was the baseline survey, where families were interviewed to determine their current economic and social status, and to understand their needs with regard to livelihood options. Baseline surveys enabled a sound understanding of village dynamics and all existing resources in a community. This went on to support preparation of the SWAP and for impact monitoring. Participatory methods of data collection and information sharing were used to compile the baseline information for each village and MWS. These were:

Treatment of Watersheds

Sujala Watershed Action Plan (SWAP)

The SWAP was a comprehensive plan evolved by the primary stakeholders of a MWS to develop its natural resources and livelihoods. The preparation of the SWAP started at the individual farmer's level in the respective AGs and was consolidated at the MWS level. On completion of all the pre-SWAP capacity and institution building activities, the SWAP was prepared with active participation from all the primary stakeholders. The main components of a SWAP were: soil and water conservation and drainage line treatments; forestry; horticulture; livestock; farming systems intensification; fisheries; and IGA.

Soil and Water Conservation and Drainage Line Treatments

Soil and water conservation were critical factors in stabilizing and scaling up productivity in dry land agriculture areas. It was estimated that 10-40 percent of annual rainfall was lost as run off, and this situation was aggravated by the fact that water run-off carried fertile topsoil with it. The SWAPs introduced measures to check soil erosion and retain as much rainwater as possible in the watershed area itself and utilize that water optimally for sustained crop production. The technical methods for runoff management in watersheds are contour and field bunding, contour trenching, terracing, check dams, gully control structures, diversion channels, contour furrowing, percolation tanks, farm ponds and runoff storage structures (see Table A-15 for physical achievements).

Table A-15. Physical achievements, major soil and water conservation activities

Treatment	Units	Private Land	Common Land	Total
Desilting village pond	Nos	12,361	2,238	14,599
Revetment	Rmt	54,899	0	54,899
Sunken pond/dugout pond	Nos	393	182	575
Bunding	Ha	122,486	1,248	123,734
Farm pond	Nos	13,868	502	14,370
Recharge pits	Nos	5,608	115	5,723
Bore well recharge pits	Nos	5,407	0	5,407
Open well recharge	Nos	1,381	0	1,381
Nala bund	Nos	52	274	326
Check dam	Nos	152	920	1,072
Boulder check	Nos	12,921	4,181	17,102
Loose boulder check	Nos	1,705	0	1,705
Mini-percolation tank	Nos	850	1,486	2,336
Rock filled dam	Nos	907	198	1,105
Ravine reclamation	Nos	442	317	759
Boulder bund	Rmt	483,709	7,687	491,396
Rain water harvesting	Nos	144	69	213
Check dam repair	Nos	0	57	57

Forestry

Various forestry models are adopted to cover upper reaches of a watershed, common lands, private lands and bunds of farmers' fields with trees and shrubs. The tree growth intercepts rainfall, reduces drop velocity to cause less erosion and the root system acts as vegetative check. Under this project 29,013 ha of land has been brought under tree cover.

Horticulture

To reap the benefit of growing trees on private land and reduce runoff to promote percolation, horticulture crops were grown as they assure good economic returns. A total of 53,893 ha of land were covered with mango, pomegranate, fig, guava, sweet lime, and other fruit yielding trees. While forestry species are planted on the margins, the horticulture species are planted in the center, interspersed with agricultural crops. Structures like farm ponds ensured in providing critical irrigation and increased soil moisture has helped these multiple crops yield good results.

Livestock

Sujala project improved the number and quality of livestock in the project area so that high yielding breeds are able to fulfill the requirement of the local people for their livelihoods, particularly dairying. About 154 village-based (Gopala mitras) were trained to provide minor veterinary services, artificial insemination facilities and veterinary extension services. About 64,741 farmers were benefited from different types of demonstrations and 6,344 ha were brought under fodder production.

2. Farming Systems Intensification

Farming System Demonstrations

Participatory on-farm research was found to be more effective while demonstrating the efficacy of various methods, and identification of problems and solutions thereof, than on research farms. The objectives of this sub-component were to:

- (a) support participatory research in order to improve the efficiency and meet the emerging and future challenges facing the agriculture sector in Karnataka by recognizing local responses and relevance;
- (b) focus on adaptive research by encompassing in-situ moisture conservation, crop production, agro-horticulture, silvi-pasture, livestock rearing, sericulture, forestry and apiculture;
- (c) develop models for farming systems intensification for different agro-climatic regions particularly for small and marginal farmers;
- (d) focus on rehabilitation of degraded ecosystems and supplement incomes of farmers and landless farmers in selected sub-watersheds; and
- (e) conduct demonstrations to promote the adoption of improved farming practices in a range of crops.

Farmers Field Schools (FFS)

FFS is a demonstration school meant for teaching the new agricultural practices to the farmers. A group of 25 farmers in each village would be provided with hands on training about Integrated Pest Management, Integrated Nutrient Management, and eco-friendly methods of farming.

3. Income Generation Activities (IGA)

Generally, watershed programs have mainly benefited the landowners as most of the interventions are land based. The Sujala project worked on the belief and principle that any rural development is successful only when it is inclusive. Landless people and other vulnerable groups such as women, normally depend on common lands for meeting their day to day needs and for income generation. Unless the problem of income generation of these people is addressed, any treatment of common property resource would not be successful. The prime objective of including IGAs in the project was to improve the socio-economic conditions of landless and vulnerable families by supporting them to be successful entrepreneurs. The effort was to target a majority of women. Sujala targeted Schedule Caste (SC)/Scheduled Tribes (ST) population and other marginalized castes thereby ensuring that gender and equity issues, as well as women's empowerment objectives were met to the fullest extent. The uniqueness of IGAs in the Sujala project was that they were not implemented in an ad hoc manner. There was a dedicated set of activities built into the project design and the community was taken through the various activities in a building block fashion to their ultimate goal of running their own businesses or enterprises. The steps were:

- (a) awareness on entrepreneurship;
- (b) confidence building and risk management;
- (c) personality development;
- (d) analysis of successful enterprises;
- (e) pros and cons of enterprises and their management;
- (f) business plan preparation;
- (g) marketing management; and
- (h) linkages to financial institutions.

IGA results

Table A-16. IGA targets and achievements

Phase	Skills Training			IGA Setup		
	Target (No.)	Achievement (No.)	Percent Achievement	Target (No.)	Achievement (No.)	Percent Achievement
I	2,430	2,036	83.8	7,272	5,328	73.3
II	5,520	4,493	90.5	17,920	17,691	98.7
III	12,447	12,122	97.4	45,833	45,833	100.0
Total	20,397	18,651	91.4	71,025	68,852	96.9

4. Institutional Strengthening

Capacity Building

The project had 19 different training modules addressing technical, social and managerial needs of communities, field NGOs and technical staff. The project designed and produced a variety of teaching aids including books, manuals, flip charts, posters, wall magazines, films etc on different topics to facilitate training at different levels. Keeping community needs in view the aids used simple language and were more dependent on illustrations. They were also compiled in the local language. Capacity building of the SHGs, AGs and SWSs was an essential process that continued throughout the project period. Training focused on key thematic areas of watershed management, classified into social and technical aspects. Exposure trips to nearby successful watershed sites by community members to enable them to get first-hand knowledge on the various activities associated with, and the impact of watershed initiatives. At a broader level, international exposure visits for senior and lower-level WDD staff provided an opportunity for sharing knowledge and experiences with counterparts in other countries.

Monitoring, Evaluation and Learning

The Sujala project had a comprehensive M&E system, with a unique learning element to ensure that the insights that emerged from the M&E actually translated into timely implementation correction thereafter. Monitoring in Sujala was a continuous process of collecting and analyzing data to determine the effectiveness of implementation against the expected outcomes. Monitoring also helped to observe and record the processes and changes taking place among the communities, institutions and natural resources situation. Two types of monitoring were adopted, i.e. concurrent and discrete monitoring. The first included input and output comparison, process monitoring and self-assessment, and the second included impact assessment, which was assigned to Antrix. Sujala relied heavily on information technology to develop and implement the project. The MIS and GIS packages were designed, developed and deployed under the project to capture specific information on the various aspects of the project, coupled with remote sensing and field monitoring.

Mid-Term Impacts

Impact assessment helped determine project contributions towards poverty alleviation, capacity building and natural resource regeneration. Impacts were evaluated using a variety of qualitative and quantitative indicators before, during and after the project, and a with/without comparison of control groups. Key impacts in Phases I and II are shown in Table A-17.

Sujala's emphasis on the participation of the community in development work and the efforts to build their capacities to make relevant decisions resulted in a change of knowledge, attitude, practices and behavior of the people. At one level they became aware of the project and their role in it. Greater levels of awareness were evident in the rural communities about the project and social responsibility towards the natural

resources etc. The enhanced confidence and self-reliance was evident in people as their participation in the CBO increased. It was especially seen through the empowerment of women who were part of the SHGs. They were able to articulate their needs and plan their livelihood strategies better and harness their productive potential optimally.

Sujala Watershed Project has made its presence felt and made a difference in the lives of rural people from the operational area. However, the process that Sujala underwent towards achieving its objectives was not without challenges, which impeded or slowed down the process. Sujala was able to identify most of these in real time and address them effectively and hence, major impediment was not evident. Yet there is a need to acknowledge these factors that affected Sujala's progress and understand how Sujala addressed them to gain a complete understanding of the project.

Table A-17. Comparative impacts, Phase I and Phase II for selected indicators¹⁷

Impact Indicators	Phase I - Impacts	Phase II - Impacts
Decrease in fallow lands	12.5%	10.0%
Improvements in cropping intensity	12.0%	15.0%
Increase in crop diversity	From 2-5 crops to 4-9 crops	From 2-4 crops to 4-7 crops
Average increase in irrigated crops	11.0%	10.0%
Average improvements in crop yields	10.5%	18.0%
Shift from agriculture to agro-forestry/horticulture	Up to 20%	Up to 20%
Water discharge improvement	275 gallons/hour	263.5 gallons/hour
Surface water availability	3-4 months	4-6 months
Average increase in household income	1.75 times	2.00 times
Average increase in employment opportunities	17,500 person-days	18,500 person-days
Reduction in migration	70.0%	75.0%
Average increase in milk yields	18.0%	19.0%

Key Factors Contributing to the Implementation

The factors which primarily contributed to Sujala's uniqueness were:

- (a) involvement of various resource agencies for provision of specialized inputs;
- (b) monitoring and evaluation processes developed for the project implementation structure and process and thrust on feeding the learning from monitoring and evaluation system into the decision-making process;

¹⁷ Some results in Table A-17 for example, household income and crop yields, are lower than figures used in the final results framework (data sheet, section F). The data in the Borrower's report reflected earlier Antrix impact data prior to a detailed review and refinement by the FAO team after the ICRR mission.

- (c) ensuring effective accountability and transparency through adopting appropriate financial management systems at all levels;
- (d) ensuring gender, caste and equity;
- (e) bottom –up, participatory and integrated approach among stakeholders and helps them to identify themselves with the project;
- (f) cost sharing by the community;
- (g) adopting social and environment assessment techniques; and
- (h) use of state-of-art science and technology tools for planning, implementation, monitoring and evaluation.

Lessons Learned

The KWDP (Sujala) project gave emphasis to learning through the implementation process and improving the process based on the learning. The entire process was thus under constant scrutiny and analysis. This learning process helped Sujala and others in the sector to build on and improve on the model. Some of the significant lessons that came out of Sujala are:

- (a) The participatory approach helped to achieve results, ensuring the ownership of the community towards the development process and led to sustainability;
- (b) The synergy between the four P's, participation; people (community); public (government); and private (NGOs and others) was able to bring the competencies of different stakeholders in respective areas and added to the impact. More importantly the integrated, holistic, participative watershed development approach helped in holistic development of the area with reference to different components and addressing the needs of the community and achieving equity overcoming the class, caste and gender boundaries;
- (c) Integration of all the related sectors such as agriculture, forestry, horticulture, animal husbandry, fisheries, etc, into the watershed development process helped in achieving the project goals;
- (d) It was critical to build the capacity of the community based institutions for planning implementation and maintenance of the assets to ensure their ownership and sustainability even after project closure;
- (e) The post-training, hand holding support such as bank and marketing linkages was as important as the thrust on training and capacity building;
- (f) The importance of integrating M&E in the development process on a concurrent basis was reinforced. The learning was used as a basis to modify strategies to enhance the impact and ensure there is no loss of time;
- (g) Involvement of external agencies with core competence on technical aspects enhanced the impact of the project;

- (h) Use of IT-enabled tools such as remote-sensing, MIS, GIS, Satellite Communication (SATCOM) added authenticity to the data. It also made the information more manageable and accessible to all stakeholders;
- (i) It was critical for any watershed program to be equitable. Hence inclusion of women, SC/ST and other vulnerable groups such as landless laborers needed to be focused. Apart from designing specific activities for them it was important to involve them in the decision-making processes on a priority basis;
- (j) Accountability and transparency needed to be built into the entire process. It impacted the ownership of stakeholders and increased the credibility of the project and systems were created to ensure multilevel transparency and accountability;
- (k) Ensuring Environment and Social Safeguard Assessment in every project activity at all stages of the project cycle helped in maximizing the social and environmental benefits and minimizing the social and environmental costs of the projects through appropriate screening, mitigation and compensation measures;
- (l) Converting to the Performance Based Payment System helped to ensure that deadlines for deliverables were met;
- (m) The revolving fund for SHGs was increased from INR35,000 to INR75,000 in response to a felt need;
- (n) Differential rates were fixed for manual and machinery based work;
- (o) A ceiling of INR70,000 was fixed for each farmer; and
- (p) Payments were standardized for NGO staff.

Borrower's Comments on Draft ICRR

GOVERNMENT OF KARNATAKA
Watershed Development Department
No. WDD/SWP/WB /M&E/9/2009-10 Sujala Watershed Project
Cauvery Bhavan, 7 & 8th Floor
KHB Building, Bangalore - 560 009
Tel: 22 1006701 11213
Email: su_jala@vsnl.net
Date: September 3, 2009

Sir,

Sub: Comments on Draft External ICR Report reg:

This is in response to your Draft External ICR Report of Sujala Watershed Project received through e-mail on 9 August 2009. After reviewing the draft ICR, the following comments are offered for necessary modifications in the report.

1. In the second para of page No.6, the report says "The fund flow and reconciliation for

field activities through Gram Parishad (GP) to the communities was periodically delayed by the GPs, which required intervention from the project."

Comments: Since project funds flow directly from DWDOs to the SWS-EC, the question of delay by GPs does not arise. So kindly, this sentence may be removed from the report.

2. In the third para of page No. 6, the report says "The evaluation of Phase III investments could not be undertaken before March 31, 2009. The GOK and Antrix are now engaged in this assessment, but the results will not be available for some time."

Comments: Since the project has closed on 30.03.2009, funds are not available to take up this work. Similar such studies have already been taken in the project and there was not much difference between the results of mid-term impacts of Phase I and Phase II. Hence expecting similar results from phase III the idea was dropped.

3. In the second para of page No. 7, the report says "Using M&E data, 72 percent of the total project area has been treated through physical soil and water conservation works and vegetative improvements."

Comments: As per the project reports 4.35 lakh ha is the total treatable area of the project, out of which 3.98 lakh ha (91.49 percent) has been treated through soil and water conservation works and vegetative improvements. Accordingly information may be supplemented in the report. Hence 72 percent should be replaced by 91.49 percent.

Except the above three issues, we concur with the findings and have no further comments to offer".

Yours faithfully

Project Director
Sujala watershed Project
Bangalore

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Stakeholder comments were captured in the Stakeholder Workshop and incorporated into the Borrowers ICRR – summary in Annex 6 and full report in Annex 13.

Annex 9. List of Supporting Documents

World Bank Documents

<u>India - Karnataka Watershed Development Project (English)</u>	2001/05/29	22230	Project Appraisal Document
<u>India - Karnataka Watershed Development Project</u>			Credit Agreement
<u>India - Karnataka Watershed Development Project : Environmental Assessment (Vol. 2) : Tribal Study Report (Final Report) (English)</u>	2001/05/31	E458	Environmental Assessment
<u>India - Karnataka Watershed Development Project : Environmental Assessment : Final report on Regional Environmental And Social Assessment (English)</u>	2002/03/31	E458	Environmental Assessment
<u>India Karnataka Watershed Development Sujala Project : Innovation in Participatory Watershed Development to Improve Natural Resource Productivity and Rural Livelihoods (English)</u>	2007/12/01	42725	Working Paper (Numbered Series)

KWDP Implementation Status Reports Nos. 7-17 (Internal World Bank)

Mission Aide Memoires, December 2000 to December 2008

Mid-Term Review Aide Memoire and Management Letter, May 2003

Project Documents

Operations Manual - Sujala Watershed Project, Watershed Development Department, Government of Karnataka, 2003.

Presentation by Project Director, Sujala Watershed Project, to World Bank ICRR Mission 24th February, 2009. Karnataka Watershed Development Project (SUJALA – 3528 IN), Watershed Development Department Govt. of Karnataka (PowerPoint)

Other PowerPoint presentations by WDD and NGOs on Pre-ICRR Workshop, February 21, 2009.

Key Project M&E Reports

The list below is just part of the number of documents produced by the project's M&E system and reviewed by the ICRR team.

Sl. No.	Title	Date
23	An Assessment Report on Self Help Groups (Phase I)	15.07.2004
24	An Assessment Report on Area Groups (Phase I)	15.07.2004
25	An Assessment Report on SWS – EC (Phase I)	15.07.2004
26	An Assessment Report on Field NGOs (Phase II)	15.07.2004
27	An Assessment Report on Self Help Groups (Phase II)	15.07.2004
28	An Assessment Report on Area Groups (Phase II)	15.07.2004
29	Social Inclusion & Watershed Program (A study in Sujala Project)	15.07.2004
30	Species Survival Rate (Phase I – Sujala)	15.07.2004
35	"A Study on Investment Pattern under Sujala" – A Thematic Report on Analysis Vulnerability, Equity, Social Inclusion, Employment and Migration (Phase I)	14.12.2004
39	FNGO Assessment Report (Third phase-Sujala)	12.01.2005
40	Final Report on Investment Pattern – Analysis (Phase II)	05.04.2005
41	Soil Sample Analysis report	15.04.2005
43	Equity Issue or Involvement of Vulnerable in the Project	03.06.2005
45	Entry Point Activity (Report Based on the Information from WDD and MEL)	13.06.2005
46	Soil Sample Analysis Report of Phase-II	16.01.2006
47	An Assessment of Sujala Water Sangha-Executive Committee - Phase III	30.01.2006
49	An Assessment Report of Area Groups - Phase III	15.03.2006
51	Submission of Investment Pattern in Sujala Phase II	04.08.2006
52	Common Property Resources Development under Sujala - An Assessment	15.12.2006
53	Distribution of CPRs along slope gradients - GIS analysis	20.12.2006
54	An Assessment of Horticultural Plants Survival Rate - Phase I	15.03.2007

55 A Feedback on ICRISAT demonstrations

07.06.2007

Project Impacts Assessments

Sl. No.	Title	Date
3	Empowerment of Women Under Sujala	19.05.2005
5	Sustainability of Treated CPRs	07.09.2006
6	Land Use / Land Cover Transformation	13.04.2007
7	Saga of Kurudi Village -Initiatives Towards Sustainability	13.04.2007
8	Impact Analysis of Training Under Sujala (Draft)	30.04.2007
9	Federation of Self Help Groups - Initiatives Towards Women Empowerment.	17.05.2007
10	Livelihood Enhancement at Grassroots	11.09.2007
11	An Assessment of Training Impacts	11.07.2007
12	Satellite and GIS Based Runoff Estimation	30.11.2007
13	Water Quality Analysis	30.11.2007
14	Soil and Moisture Conservation Activities - A Report on Impacts and Sustainability	10.03.2008
15	Post Project Scenario Horticulture Activity Under Sujala - A Study in Benakanakatte MWS, Dharwad	10.03.2008
16	The Writing on The Wall - Showcasing Sujala Impacts	12.03.2008
17	Sujala Impact Assessment Report - MTR (Phase-I)	31.03.2008

Annex 10. Micro-Watersheds Visited During ICRR Mission February-March 2009

Table A-18. ICRR mission field visits

Date	Time	District	Subwatershed	Microwatershed
February 26	a.m.	Dharwad	Managundi	Benakatte (Phase I)
	p.m.		Amblikoppa	Devagiri (Phase III)
February 27	a.m.	Haveri	Itagi	Magod (Phase I)
	p.m.		Kanakapura	Kanakapura (Phase III)
February 28	a.m.	Chitradurga	Veda	Sankayanahatti (Phase II)
	p.m.		MD Kote	Maradihalli (Phase III)
March 2	a.m.	Kolar	Kumuduvathi	Kurudi (Phase I)
	p.m.		Mingdal Vaddu	Chelumakote (Phase III)

Annex 11. Assumptions on Area Targets Achieved

The tables in this annex show the ICRR team's assumptions and estimates of PAD area targets achieved by the project. It also includes short explanations to clarify some of the terminology used in the PAD, which was often confusing.

The project's reports include data on total ha treated as per the SWAPs and also horticulture and forest areas planted. However, there is potential overlap between activities for the same area. The analysis contained in the tables below tries to clarify this point through two main estimations. First, to approximately calculate from the SWC works, how many ha could have potentially been treated by the project (Table A-21). Secondly, to calculate net area treated through estimates of the overlap (areas that benefited from more than just SWC works). The assumptions for this are shown in Table A-22, which in the shaded cells shows the overlap areas. Finally, the overall results of achievements relative to PAD targets are shown in Table A-19, which includes explanations of terminology used in the PAD and the ICRR team's interpretation in the footnotes and also further in Table A-20.

The results point to an overall estimated achievement of 72 percent of all area targeted which is a satisfactory achievement for such type of project.

As can be seen in Table A-19, the main explanation for a result below 100 percent lies with treatment of non-arable land which is, overall, around 20 percent of expected area of combined common revenue and forest reserve lands being treated. These under-achievements in non-private land versus PAD/MTR targets reflect an unrealistic target for treatments expected in forest reserves, which was not rectified during implementation. However in both forest reserve and common revenue lands important reasons for not reaching overall target area effectively (i.e. with sustained productive growth) is the difficulty in setting up appropriate management agreements for benefit sharing. In the case of common property, the underestimation of encroachment at the time of project design also contributed to the lower performance relative to PAD targets. The small Forest Reserve areas and encroached common lands were identified in the Regional Environmental and Social Assessment (RESA), which was finished just before project approval. Clarification of these important issues was only achieved at the start of implementation, but didn't translate into changes in targets.

Table A-19. Net land area treated

Categories by land use and ownership a/	Target b/	Net area treated vs PAD/MTR target c/	
		ha	% of target
<u>A. Private land</u>			
<u>A1. Arable land</u>			
<i>Cultivated arable land c/</i>	235,000	216,249	92%
<i>Arable fallow land</i>	30,000	19,262	64%
<u>A2. Permanent crops</u>			
<i>Horticultural land d/</i>	30,000	5,000	17%
<u>A3. Non-arable</u>			
<i>Cultivable waste land</i>	9,900	13,460	136%
sub-total private land	304,900	253,972	83%
<u>B. Non-private land</u>			
<u>B3. Non-arable</u>			
<i>Forest land (Forest Dept)</i>	33,200	0	0%
<i>Pasture/shrub land (Revenue land)</i>	36,900	14,758	40%
sub-total non-private land	70,100	14,758	21%
TOTAL	375,000	268,730	72%

Notes:

a/ The PAD/MTR terminology for categories/targets is highly confusing, as it mixes both land ownership and land use classifications. Based on the text of the PAD/MTR the categories/targets were re-organized according to conventional categorization by land use and land ownership. *The categories in italics indicate the original PAD/MTR categories.* Additional explanations:

(i) *Arable fallow land* – according to the PAD text this is arable land that is “fallow land (seasonal or otherwise)”. This is confusing as non-seasonal fallow land would be non-arable land. Ultimately in this classification it was considered to be just seasonal fallow.

(ii) *Cultivable waste land* – in the PAD table this category is handled in a confusing way as in the initial table it is only listed as “non-arable land” with no mention of ownership type. However, in the text it is said that “clear endorsement has to be obtained from the farmers owning the cultivable waste land for the proposed treatments”. It was therefore considered to be private land.

(iii) *Forest land* – in the PAD this category’s ownership is not specified in the initial table. However, the text explains that “in forest area, the treatment will be consistent with the Forest Department’s Working Plan, and will have to be encompassed into a MOU”. It was therefore considered, Forest Dept managed land (non-private).

(iv) *Pasture/shrub land* – in the PAD this category’s ownership status is not specified in the initial table. However, the annex on project area and scope indicates that this is “assumed to equate to C&D and Gomal Lands”, i.e. it is non-private.

b/ - There were inconsistencies with the targets between the main text of the PAD and Annex 4. The targets were clarified at the MTR.

- The targets also include treatment of natural drainage lines of a total of INR 7.15 million per SWS of about 5,000 ha.

Given that this cannot easily be converted to an area based indicator, it has been left out of this analysis.

The PAD appraisal investment on watershed treatment represented 92% of the total of Component 1 and 82% of total project costs incl. contingencies. Subsequent changes have reduced the share of

watershed treatment investments to 56.5% of total project costs. The actual expenditures as of ICR time is estimated at US\$59 million or 55% of total project costs (84% of revised target achieved).

- The area based activities per land category in PAD/MTR include both physical and vegetative treatments for each land category. In fact, in most cases more than one treatment is often undertaken on one particular plot or land.

c/ To calculate the net area treated, the departure point used was the physical numbers of infrastructure, as well as planted areas with horticulture and forest species (border planting) then assumptions were made based on M&E data and studies, discussions with project staff and direct field observations. In particular, assumptions were made to the degree of overlap with SWC in reported data for horticulture and forestry. The summarized results can be found in tables C. SWC Assumptions and D. Net Area Treated.

d/ The interpretation of *horticultural land* used by the ICR team is that of land that already had horticulture at baseline. The PAD is not totally clear on this as in the economic analysis it is mentioned that horticulture would be normally resulting from conversion of arable fallow land. Therefore unlike the other categories, it seems it is an objective rather than the status of the land (in terms of land use) at appraisal. For the sake of consistency the ICR team interpreted horticultural land as the land use status at baseline and therefore the achievement is rather low (as most horticulture achievements will be accounted for under *cultivable arable land*, *arable fallow land* and *cultivable waste land* (see table D. Net Area Treated for details).

Table A-20. Terminology matrix

In Hectares

LAND USE

LAND OWNERSHIP	Arable		Permanent crops	Non-arable			TOTAL
	Cultivated	Temporary seasonal fallow		Forest	Pasture/shrub	Permanent fallow	
Private land	235,000	30,000	30,000			9,900	304,900
Revenue land					36,912		36,912
Forestry Dept land				33,200			33,200
TOTAL	235,000	30,000	30,000	33,200	36,912	9,900	375,012

Table A-21. Assumptions for converting SWC activities into net area treated

Type of SWC structures	Achievement a/	ha b/	Assumption
A. Private land			
Area bunded (ha)	169,000	169,000	200 to 250 rmt/ha
Boulder bunds (rmt)	680,000	13,600	50 rmt/ha
Farm ponds (no)	15,261	15,261	1 additional ha irrigated from each pond
Bore well recharge pits (no)	7,354	14,708	2 additional ha irrigated from each borewell
Open well recharge (no)	2,468	2,468	1 additional ha irrigated from each pond
Nala bunds (no)	61	366	6 additional ha irrigated from each nala bund
Check dams (no)	167	334	2 additional ha irrigated from each check dam
sub-total private land		215,737	ha that benefited directly from SWC activities
B. Non-private land			
Farm ponds (no)	587	587	1 additional ha irrigated from each pond
Boulder bunds (rmt)	11,733	235	50 rmt/ha
Nala bunds (no)	734	4,404	6 additional ha irrigated from each nala bund
Check dams (no)	1,554	3,108	2 additional ha irrigated from each check dam
Borewell recharge pits (no)	166	332	2 additional ha irrigated from each borewell
sub-total private land		8,666	ha that benefited directly from SWC activities
TOTAL		224,403	ha that benefited directly from SWC activities

Notes:

a/ output data from WDD

b/estimated conversion in ha directly benefited from SWC activities

Table A-22. Assumptions for converting SWC activities into area treated

Intervention	ha	Assumptions
SWC physical works	224,403	<p>A see table 3. SWC Assumptions see table 3. SWC Assumptions</p> <p>based on field trips and M&E data and studies</p> <p>See table 3. SWC Assumptions Since no forest land interventions all common land structures are in revenue land</p>
o.w. private land	215,737	
<i>Cultivated arable land</i>	191,475	
<i>Arable fallow land</i>	12,532	
<i>Horticultural land</i>	5,000	
<i>Cultivable waste land</i>	6,730	
o.w. non-private land	8,666	
<i>Pasture/shrub land (Revenue land)</i>	8,666	
Horticulture planted area	53,839	data from WDD
o.w. Area combined planting and SWC works	26,920	not included in Net Area Treated as it is considered overlap of interventions
<i>Cultivated arable land</i>	13,460	included only under SWC physical works to avoid double counting
<i>Arable fallow land</i>	6,730	included only under SWC physical works to avoid double counting
<i>Cultivable waste land</i>	6,730	included only under SWC physical works to avoid double counting
o.w. Area without SWC physical works	26,920	<p>B assumes that out of total 53,839 ha of reported planted area only 50% has not been treated with physical SWC works assumes 50% of all new horticulture planted without physical works are in cultivated arable land that is being converted to horticulture</p> <p>assumes 25% of all new horticulture planted without physical works are in cultivated arable land that is being converted to horticulture</p> <p>assumes 25% of all new horticulture planted without physical works are in cultivated arable land that is being converted to horticulture</p>
<i>Cultivated arable land</i>	13,460	
<i>Arable fallow land</i>	6,730	
<i>Cultivable waste land</i>	6,730	
Forestry planted area	29,013	data from WDD
o.w. Area combined planting and SWC works	11,605	not included in Net Area Treated as it is considered overlap of interventions
<i>Pasture/shrub land (Revenue land)</i>	5,803	included only under SWC physical works to avoid double counting
<i>Arable fallow land</i>	5,803	included only under SWC physical works to avoid double counting
o.w. Area without SWC physical works	17,408	<p>C assumes that out of total 29,013 ha or reported planted area 60% has not been treated with physical SWC works assumes 65% of all new forest planted without physical works is in cultivated arable land (part of agro forestry) this is based on SWAP data on forestry planned investments for phases II and III by common and private land</p>
<i>Cultivated arable land</i>	11,315	
<i>Pasture/shrub land (Revenue land)</i>	6,093	
Total estimated Net Area Treated (A+B+C)	268,730	

Annex 12. Analysis of Poverty Data

Targets at Appraisal

Poverty Focus

Although not well explained in the initial PDO section of the PAD, this development objective is nevertheless referred to elsewhere¹⁸. In particular, the first key performance indicator states the objective of an increase in the “overall income of various stakeholder groups at the village level”. Moreover, the original project description summary states that at end of project the evaluation “would focus on the project’s overarching objectives, i.e. a reduction in poverty of the small and marginal farmers, landless, women, and indigenous people”. In the PAD beneficiary description it is estimated that 95 percent of landholders small and marginal, and a further 25,000 landless should benefit for a total of 350,000 households.

The project has achieved a considerable inclusion in terms of the numbers of beneficiaries reached, though this is quite a bit less than expected in the PAD. The PAD estimates of 350,000 household benefiting from the project are probably not in line with actual landholding or ownership patterns in the project areas, as implied both by the RESA, M&E surveys and Karnataka 2005-06 Agricultural census, which indicate small and marginal farmers forming closer to 73 percent of households (using district data). Again the project did not clarify indicators and targets accordingly. Also, as the RESA data seems to be based on 1991 census, with increasing population, overall potential beneficiary numbers will have been higher by the time project started.

Distribution of Income Benefits

Table A-23 summarizes assumptions and estimates of beneficiary numbers and benefits. The project has achieved a considerable inclusion in terms of the numbers of beneficiaries reached, though this is quite a bit less than expected in the PAD (which as noted may have been unrealistic). All classes of beneficiaries had incremental increases in income as reported in the project impact studies. Nevertheless, most of the benefits overall are also likely to have accumulated with big farmers because of the nature of watershed treatments (being land-based).

Project impact studies based on survey data for Phases I and II indicate that household income increased for all land ownership classes of farmers. On Phase II, increases registered around 40 percent for small and marginal farmers, more than 50 percent for

¹⁸ The original premise in the PDO is that poverty focus arises from one of the criteria for watershed selection is poverty incidence.

landless and close to 80 percent for big farmers, compared to controls¹⁹. While the ICRR has used the impact assessment reports for the basic conclusions on project results, on a note of caution, a more detailed analysis conducted by the ICRR team using the Phase II dataset raised some questions about the level of statistical significance in the household income increases reported. This may be the result of different approaches taken in data collection, survey instruments, small sample size for household income control groups, or some data issues. On the other hand, field visits and case studies certainly confirm income increases.

While benefits to the landless in the initial Phase I watersheds treated was lower, the data analysis on equity issues during the project led to measures on reducing use of mechanization for construction works, and proportionally less investment for larger landholdings – very positive equity measures. There were also improvements to transparency through wall paintings indicating wages paid to construction laborers, which also contributed to the good outcome. Temporary labor opportunities provided by the project’s physical works activities provided employment for a large number of landless and small and marginal farmers. However, the timing of the last survey probably reflects peak labor demand from land treatment rather than sustained income for the landless.

Beneficiary Numbers

While the project assessed inclusion and equity issues (through data available in SWAPs), beneficiary numbers have not been regularly reported. Estimated families covered are 400,000 (based on project website information) – though this more likely to be those living in project area, roughly in line with population increase. There is no exact figure for total effectively addressed households in project area, though from various estimates and community observations it is considerable.

With available data, the structure of landholdings is the best guide to assess poverty distribution. The project did not seem to select strongly for sub-watersheds within District with higher proportion of smaller landholders, compared to big farmers. Also in Phase II implementation there was a slight bias towards big farmer beneficiaries (37 percent of land holders in among beneficiaries, compared to 23 percent in baseline data)²⁰. For Phase III sample of six SWAPs, the proportion of big farmers stayed the same but with a very large variation: 10 percent to 65 percent of land beneficiaries were big farmers.

¹⁹ These growth rates are based on the project averages reported in the Impact Study - Phase II Report and calculated using a linear growth assumption for the treatment group based on the income growth of the control group as a counterfactual. The same calculations for Phase I show around 60 percent growth for landless and big farmers and 40 percent growth for small and marginal farmers relative to the control group.

²⁰ As these are based on different samples, and land-classes instead of direct poverty data, they are indicative.

Based on estimates using proportion of beneficiaries in Phase II impact assessment samples, landholding beneficiaries were around 190,000, over a third of whom were big farmers. Together with the landless there were around 230,000 beneficiaries, which also tallies roughly with estimated number of Project CBO members, though there may be some overlaps in membership within households. Alternatively, based on actual effectively treated area (where many farmers have several treatments in one plot, or treatments covering only parts of their land), and based on average landholding sizes, number of farmer beneficiary households would be between 100,000 to 150,000. In addition to this, between 12 to 25 million workdays were created²¹, estimated from labor costs, which if distributed at 2 months work per household would cover a large majority of all households in the areas. Often paid labor workdays were also used by farmer households with own family labor.

The continued focus on SHGs encompassing landless households, and their continued operation and growth, and involvement with IGAs indicate a strong inclusion of the poor. With a 78 percent survival rate of 6,648 and estimated 60 percent²² belonging to the landless (and with an average of 15 members each) the project may have reached out to over 45,000 landless households in this component.

Concluding Points

The development and scaling up of the IGA component will have played a major role in reducing poverty of marginal farmers and landless households. Moreover, it contributed significantly to improvements in the condition of women, as detailed through case studies and also witnessed during field observations and interviews with women groups. A majority of livestock IGAs were managed by women. The SHGs have also built up around US\$4 million own savings, and generating capital several times that through revolving funds and bank loans, channeled into poorer sections of watershed communities.

With the bias towards big farmers of both actual and proportionately larger incremental income increases (if one uses the data from the project Impact Studies), the majority of the project benefits is likely to have been accumulated by this group, even with rules on higher contributions expected on big farms, etc. The inequity in benefits is deeply inherent in land management projects. In this sense the project has done very well in design and implementation to ensure livelihood opportunities for landless and poorer small-holders in the project. It should be noted also that a large share of big farmers in the project area are not much above the poverty line.

Using estimates of numbers benefiting in each land-class, and the increase in incomes for the landless, marginal and small farmers, there will definitively have been a large number

²¹ Based on conservative use of data from Antrix studies.

²² Sustainability of CBOs report Nov 2008.

of households rising above the poverty threshold. The estimates indicate perhaps in the order of 50,000 or more, at least on a temporary basis. This proportion is slightly lower than that shown rising above the poverty line in successful project villages, noted in project M&E case studies.

While grappling with the inherent bias in land management projects, the KWDP showed considerable foresight in design as well as during implementation in ensuring inclusion of the whole community in the watershed development process, and building the livelihoods among a wide stakeholder group, including the landless. Future efforts in watershed development could look even more carefully at targeting and support mechanisms for small and marginal farmers – perhaps through dedicated groups. It could also build further on ensuring management and tenure of common lands results in long term benefits for the poorest in the community.

Table A-23. Estimates of targets, beneficiary numbers and benefits

	I	II	III	IV	V	VI	VII	VIII	IX
Land classes	Target beneficiary hh in PAD (percent)	District percent of hh in land classes (land-holders)	Baseline in Project watersheds percent of hh in classes (land-holders)	Estimated numbers of households in project area	Actual beneficiary percent of hh in land classes (land-holders)	Estimated numbers reached	IGAs beneficiaries (HH)- estimates [percent of total]	Incremental Income increase - allowing for control - in INR	Percent income increase from baseline – allowing for control
Landless	25,000 (7%)	26	22	88,000	17	39,484	42,000 60%	9,932	53%
Marginal farmers	310,000 [89%]	32 (43)	32 (42)	128,000	27 (33)	62,710	14,000 20%	10,685	40%
Small farmers		21 (29)	27 (35)	108,000	25 (30)	58,065	10,500 15%	14,590	38%
Big farmers	15,000 [4%]	21 (29)	18 (23)	72,000	31 (37)	72,000	3,500 5%	58,909	76%
Total	350,000			400,000		232,258	70,000	26,483	53%
Notes	Estimates calculated from PAD, p10, based on State data	District Census data	Phase III samples of SWS and Baselines	From total SWAPs (MIS data)	Based on phase II impact study sample structure (was done in proportional method)	Assuming all Big farmers reached and deriving others from relative proportions as per column V	Estimated from various project data	Phase II impact assessment. Total is weighed average using column V	Phase II Impact assessment. Total is weighed average using column V

Annex 13. Borrower's ICRR