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PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 78.8 MILLION
(US\$121.20 MILLION EQUIVALENT)

TO THE

REPUBLIC OF INDIA

FOR AN

UTTARAKHAND DECENTRALIZED WATERSHED DEVELOPMENT II PROJECT

March 6, 2014

Sustainable Development Unit
India Country Management Unit
South Asia Regional Office

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CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2013)

Currency Unit = Indian Rupees (INR)
US\$1 = INR 61.8170
US\$1 = SDR 0.64935

FISCAL YEAR

April 1 – March 31

ABBREVIATIONS AND ACRONYMS

CAG	:	Comptroller and Auditor General
CCL	:	Cash and Credit Limit
CPS	:	Country Partnership Strategy
DPD	:	Deputy Project Director
ERR	:	Economic Rate of Return
ESMF	:	Environmental and Social Management Framework
FAO	:	Food and Agriculture Organization
FM	:	Financial Management
FFs	:	Farmer Federations
FRR	:	Financial Rate of Return
FIGs	:	Farmer Interest Groups
FNGO	:	Field NGO
GDP	:	Gross Domestic Product
GEF	:	Global Environmental Facility
GoUK	:	Government of Uttarakhand
GoI	:	Government of India
GP	:	Gram Panchayat
GPWDP	:	GP Watershed Development Plan
HH	:	Household
ICB	:	International Competitive Bidding
IFAD	:	International Fund for Agricultural Development
IGA	:	Income Generation Activity
IWMP	:	Integrated Watershed Management Program
LIB	:	Limited International Bidding
M&E	:	Monitoring and Evaluation
MDT	:	Multi-disciplinary Team
MGNREGA	:	Mahatma Gandhi National Rural Employment Guarantee Act
MIS	:	Management Information System
MT	:	Metric ton
MTR	:	Mid-term Review
MWS	:	Micro Watershed
NCB	:	National Competitive Bidding
NGO	:	Non-governmental Organization
NPV	:	Net Present Value
PDO	:	Project Development Objective

PME : Participatory Monitoring and Evaluation
 PNGO : Partner NGO
 PRI : Panchayat Raj Institution
 RVC : Revenue Village Committee
 SLEM : Sustainable Land, Water and Biodiversity Conservation and
 Management for Improved Livelihoods in Uttarakhand
 Watershed Sector
 TAP : Transhumant Action Plan
 VP : Van Panchayat
 WMD : Watershed Management Directorate
 WOP : Without Project
 WWMC : Water and Watershed Management Committee

Regional Vice President:	Philippe H. Le Houerou
Country Director:	Onno Ruhl
Sector Director:	John Henry Stein
Sector Manager:	Simeon K. Ehui
Task Team Leader/ Co-TTL:	Edward W. Bresnyan, Jr. / Ranjan Samantaray

INDIA
Uttarakhand Decentralized Watershed Development II Project
TABLE OF CONTENTS

	Page
I. STRATEGIC CONTEXT	1
A. Country Context.....	1
B. Sectoral and Institutional Context.....	2
C. Higher Level Objectives to which the Project Contributes	3
II. PROJECT DEVELOPMENT OBJECTIVES	3
A. PDO.....	3
B. Project Beneficiaries	3
C. PDO Level Results Indicators.....	4
III. PROJECT DESCRIPTION	4
A. Project Components	4
B. Project Financing	7
C. Lessons Learned and Reflected in Project Design.....	8
IV. IMPLEMENTATION	9
A. Institutional and Implementation Arrangements	9
B. Results Monitoring and Evaluation	9
C. Sustainability.....	10
V. KEY RISKS AND MITIGATION MEASURES	10
A. Risk Ratings Summary Table	10
B. Overall Risk Rating Explanation	11
VI. APPRAISAL SUMMARY	11
A. Economic and Financial Analysis.....	11
B. Technical.....	12
C. Financial Management.....	13
D. Procurement	14
E. Social (including Safeguards).....	14
F. Environment (including Safeguards)	15
G. Other Safeguards Policies Triggered (if required).....	15

Annex 1: Results Framework and Monitoring	16
Annex 2: Detailed Project Description.....	19
Annex 3: Implementation Arrangements	26
Annex 4: Operational Risk Assessment Framework (ORAF).....	44
Annex 5: Implementation Support Plan.....	47
Annex 6: Economic and Financial Analysis	49

PAD DATA SHEET

India

Uttarakhand Decentralized Watershed Development II (P131235)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

SASDA

Report No.: 81846-IN

Basic Information			
Project ID P131235	EA Category B - Partial Assessment	Task Team Leader Edward William Bresnyan Co-Task Team Leader Ranjan Samantaray	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 01-Apr-2014	Project Implementation End Date 31-Mar-2021		
Expected Effectiveness Date 26-Sep-2014	Expected Closing Date 30-Sep-2021		
Joint IFC No			
Sector Manager Simeon Kacou Ehui	Sector Director John Henry Stein	Country Director Onno Ruhl	Regional Vice President Philippe H. Le Houerou
Recipient: Republic of India, Department of Economic Affairs, Ministry of Finance			
Responsible Agency: State of Uttarakhand, Watershed Management Directorate (WMD)			
Contact: B P Pandey	Title: Chief Project Director, UDWDP II		
Telephone 0135-2768712	Email: wmd-ua@nic.in		
No.:			
Responsible Agency: Watershed Management Directorate			
Contact: D J K Sharma	Title: Project Director, UDWDP II		
Telephone 0135-2760170	Email: wmd-ua@nic.in		
No.:			

Project Financing Data(in USD Million)									
<input type="checkbox"/>	Loan	<input type="checkbox"/>	Grant	<input type="checkbox"/>	Guarantee				
<input checked="" type="checkbox"/>	Credit	<input type="checkbox"/>	IDA Grant	<input type="checkbox"/>	Other				
Total Project Cost:		170.00			Total Bank Financing:		121.20		
Financing Gap:		0.00							
Financing Source					Amount				
RECIPIENT					45.80				
IDA reallocated as a credit					121.20				
LOCAL BENEFICIARIES					3.00				
Total					170.00				
Expected Disbursements (in USD Million)									
Fiscal Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Annual	2.80	5.20	14.50	18.50	20.00	20.00	18.20	16.00	6.00
Cumulative	2.80	8.00	22.50	41.00	61.00	81.00	99.20	115.20	121.20
Proposed Development Objective(s)									
The objective of the Project is to increase the efficiency of natural resource use and productivity of rainfed agriculture by participating communities in selected microwatersheds of the State of Uttarakhand.									
Components									
Component Name					Cost (USD Millions)				
Social Mobilization and Participatory Watershed Planning					30.00				
Watershed Treatment and Rainfed Area Development					90.30				
Enhancing Livelihood Opportunities					18.70				
Knowledge Management and Project Coordination					31.00				
Institutional Data									
Sector Board									
Agriculture and Rural Development									
Sectors / Climate Change									
Sector (Maximum 5 and total % must equal 100)									
Major Sector			Sector		%	Adaptation Co-benefits %		Mitigation Co-benefits %	
Agriculture, fishing, and forestry			Agricultural extension and research		25	20		5	
Agriculture, fishing, and forestry			Forestry		20	20		80	

Agriculture, fishing, and forestry	General agriculture, fishing and forestry sector	15	20	80
Agriculture, fishing, and forestry	Irrigation and drainage	25	20	80
Industry and trade	Agro-industry, marketing, and trade	15	20	80
Total		100		

I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	
Rural development	Rural services and infrastructure	49
Social development/gender/inclusion	Participation and civic engagement	18
Environment and natural resources management	Land administration and management	13
Environment and natural resources management	Water resource management	13
Rural development	Rural policies and institutions	7
Total		100

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]
Does the project require any waivers of Bank policies?	Yes []	No [X]
Have these been approved by Bank management?	Yes []	No []
Is approval for any policy waiver sought from the Board?	Yes []	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04	X	
Forests OP/BP 4.36	X	
Pest Management OP 4.09	X	
Physical Cultural Resources OP/BP 4.11	X	
Indigenous Peoples OP/BP 4.10	X	
Involuntary Resettlement OP/BP 4.12		X
Safety of Dams OP/BP 4.37		X

Projects on International Waterways OP/BP 7.50			X
Projects in Disputed Areas OP/BP 7.60			X
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Project Steering Committee	X		CONTINUOUS
Description of Covenant			
Establish and thereafter maintain throughout the period of implementation of the Project, a state-level steering committee.			
Name	Recurrent	Due Date	Frequency
WMD Multi-disciplinary teams at district level	X		CONTINUOUS
Description of Covenant			
For each district involved in the Project, designate and thereafter maintain throughout the period of implementation of the Project, a multi-disciplinary team.			
Name	Recurrent	Due Date	Frequency
Project Internal Auditor		26-Mar-2015	
Description of Covenant			
Hire by no later than six (6) months after the Effective Date, an internal auditor, under terms of reference acceptable to the Association.			
Name	Recurrent	Due Date	Frequency
Project computerized accounting system		26-Dec-2014	
Description of Covenant			
Establish by no later than three (3) month after the Effective Date, and thereafter maintain throughout the period of implementation of the Project, a computerized accounting system.			
Name	Recurrent	Due Date	Frequency
Interim Financial Reports	X		Quarterly
Description of Covenant			
Furnish to the Recipient and the Association, not later than forty-five (45) days after the end of each calendar quarter, an interim financial report for the Project covering the quarter in form and substance satisfactory to the Association.			
Name	Recurrent	Due Date	Frequency
Operational manual and safeguards instruments	X		Annually
Description of Covenant			
The Project Implementing Entity shall implement the Project in accordance with the Operations Manual, ESMF and each environmental management plan and/or social management plan prepared thereunder, and TAP.			

Name	Recurrent	Due Date	Frequency
Subprojects	X		Annually
Description of Covenant			
The Project Implementing Entity shall select Subprojects for financing in accordance with the criteria set forth in the Operations Manual and the ESMF and acceptable to the Association.			

Team Composition					
Bank Staff					
Name	Title	Specialization	Unit		
Lilac Thomas	Program Assistant	Program Assistant	SASDO		
Jacqueline Julian	Operations Analyst	Operations	SASDA		
Edward William Bresnyan	Sr. Rural Development Specialist	Task Team Leader	SASDA		
Norman Bentley Piccioni	Sr. Rural Development Specialist	Rural Development	LCSAR		
Juan Carlos Alvarez	Sr. Counsel	Legal	LEGES		
Rohit Gawri	Information Analyst	MIS	SARIM		
Gaurav D. Joshi	Environmental Specialist	Environment	SASDI		
Miki Terasawa	Social Development Specialist	Social Development	SASDS		
Krishnamurthy Sankaranarayanan	Sr. Financial Management Specialist	Financial Management	SARFM		
Jorge Luis Alva-Luperdi	Sr. Counsel	Legal	LEGES		
Leena Malhotra	Program Assistant	Program Assistant	SASDO		
Sharlene Jehanbux Chichgar	E T Consultant	Environment	SASDI		
Jurminla Jurminla	Procurement Specialist	Procurement	SARPS		
Non Bank Staff					
Name	Title	Office Phone	City		
Selva Selvarajan	Economist/ FAO		Rome		
Paul Sidhu	Agriculturist		New Delhi		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
India	Uttarakhand				

I. STRATEGIC CONTEXT

A. Country Context

1. Agriculture accounts for some 16 percent of India's Gross Domestic Product. About 60 percent of Indians depend on agriculture as their primary livelihood, mainly in rainfed agriculture. India cultivates 86 million rainfed hectares, which is among the largest in the world. The incidence of poverty is high in these rainfed areas due to low land and labor productivity and limited employment opportunities. Of Uttarakhand's 8.5 million population, 37 percent live below the poverty line, as compared to the national average of 30 percent.

2. With 65 percent of India's agriculture relying solely on rainfall, improving the productivity of the country's rainfed agriculture remains a challenge. India's rainfed areas have not benefitted from the green revolution technologies, which were mainly tailored to well-endowed irrigated regions. As scope is limited for future expansion of irrigated areas, about 40 percent of the incremental national food demand by 2020 must be met by increasing productivity in rainfed areas. To increase rainfed crop yields and reduce poverty, watershed development tools, such as rainwater conservation and harvesting, hold considerable promise.

3. Ninety-two percent of Uttarakhand's 53,500 square kilometers are hilly with rugged topography. Only nine percent of land in the valleys and surrounded by hills is cropped; of this, 81 percent is rainfed. Another 65 percent of land is under forest cover. Vulnerability to climate change in the fragile hilly agro-ecosystem is also high. Implementation of sound watershed development strategies is therefore critical for conserving and sustaining the natural resource base and enhancing agricultural productivity.

4. Watershed development is a primary tool of the Government of India (GoI) to increase agricultural productivity and reduce rural poverty. For the 12th Five Year Plan, GoI has signaled its intent to significantly expand the watershed development programs nationwide. In this context, the proposed Uttarakhand Decentralized Watershed Development Project II (here after referred to as Gramya II), is well aligned with the GoI priorities. Building on the successful community-based approach of the predecessor Uttarakhand Decentralized Watershed Development Project (Gramya I), the central focus of the proposed Gramya II is rainfed agriculture development through use of watershed development tools, particularly rainwater conservation and harvesting and land resource management. Major investment would be on catchment area treatment of about 219,000 ha of non-arable land in the hills, ranging in elevation from 700 m to 2,700 m above sea level. This is expected to rejuvenate the natural resource base by significantly reducing soil erosion and runoff loss of rainwater, improving ground water recharge, and reducing sediment load in the tributaries of the Ganges flowing through the State of Uttarakhand. The project would also construct water harvesting structures and small irrigation systems on 40,000 ha of arable land, and disseminate new technologies for increasing productivity of cereal, pulse, and oilseed crops in these rainfed areas, and of high-value vegetables in the currently irrigated areas. It would also develop value chains for selected agriculture and horticulture commodities in addition to building capacity of targeted Gram Panchayats (GPs) for developing and implementing sound watershed management plans.

B. Sectoral and Institutional Context

5. In the State of Uttarakhand, about 80 percent of the population living in the hills depends on agriculture. The major crops are subsistence cereals, with productivity as low as 1.2 to 1.4 tons/ha. On average, the crop yields in the hills are 50 percent lower than those found in the plains, due mainly to limited availability of irrigation water, poor in-situ rainwater conservation, and loss of fertile topsoil. In the hills, conventional irrigation practices are not feasible. Moreover, there has been an overall reduction in the discharge rate of spring and stream water sources: about 10 percent of these water sources have disappeared over the last decade. Annual rainfall is high (1,523 mm) and more than 90 percent is received during the July-September monsoon months, resulting in severe soil erosion and average soil loss of 40 tons/ha. Rapid water runoff from the undulating hills during monsoon months also adversely impacts downstream valley and plains regions. These are major constraints to enhancing rainfed agronomic practices and increasing agricultural productivity. The degraded lands are owned by poor households, and their land holdings are small and scattered. As a consequence, household incomes are low and over 24 percent of the population out-migrates. Improving water availability through watershed treatment is therefore crucial to increase agriculture productivity and improve livelihoods in the rainfed areas of Uttarakhand.

6. The Gramya I project supported the Government of Uttarakhand (GoUK) in improving agricultural productivity and rural livelihoods in the hill areas by enhancing natural resource management and strengthening the administrative capacity of the targeted GPs. Financed by IDA Credit 3907-IN in the amount of US\$77.6 million equivalent and a Global Environment Facility (GEF) Grant of US\$7.5 million, Gramya I treated 234,000 ha in 76 microwatersheds, built the administrative capacity of 468 GPs, benefiting some 285,000 persons. With strong community participation and adoption of improved water conservation techniques, the Gramya I intervention areas showed a three-fold increase in the water discharge rates to about 18 liters per minute. Gramya I also provided renewable water for irrigation and domestic use and is estimated to have created an additional irrigation potential of 11,609 ha by converting about 13 percent of rainfed areas into irrigated areas. In addition, Gramya I has helped in enhancing the efficiency of natural resource use through catchment treatment and forestry activities in the project areas, including new forestry plantations totaling 16,363 ha.

7. Moreover, investments in rainwater conservation and harvesting financed under Gramya I had a major impact on agricultural production and productivity in the project area. The project introduced high-value vegetable crops in irrigated areas through demonstrations and achieved increased productivity: yields of ginger and peas were 2.34 t/ha and 3.67 t/ha, respectively. The project successfully established 27 agribusiness farmer federations (FFs) with forward market linkages and an annual turnover of about Rs. 430 million (about US\$9.5 million).

8. Through a participatory and inclusive approach to watershed development, Gramya I supported income generation activities for vulnerable groups and built substantial management capacity for participating Panchayat Raj Institutions (PRIs) - among these the GPs - including project management, fiduciary oversight, and safeguards compliance. GoUK also implemented a regulatory reform by issuing, through the State Forestry Department, a Government Order – unprecedented in India – which allows village-level communal forest management under Van Panchayats (VPs) to work in reserve forest areas within the microwatershed.

9. In 2009, GoUK developed a Perspective and Strategic Plan 2009-2027 for scaling up the participatory watershed development model under Gramya I to other programs, such as the GoI-supported Integrated Watershed Management Program (IWMP) and the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). Common guidelines were developed for these programs, and the GoUK plans to treat an additional 537 microwatersheds in the hills, covering about 1.9 million ha by 2027.

C. Higher Level Objectives to which the Project Contributes

10. The proposed Gramya II is consistent with the India Country Partnership Strategy (CPS) 2013-2017. It supports all three strategic engagement areas of the CPS, which are: (a) integration, (b) transformation, and (c) inclusion. First, Gramya II contributes to integration, in that the State of Uttarakhand is classified by the GoI as a Special Category State, due to its hilly terrain and low population density. Second, Gramya II would also support spatial transformation by promoting efficient water usage and natural resource management through watershed treatment which would enhance agricultural production and productivity. Third, the Project would also support inclusion by enhancing rural livelihoods opportunities through agribusiness development and vulnerable group activities. In consonance with the CPS, Gramya II would focus on improved governance, environmental sustainability, and gender equality by: (a) building GP and VP capacity in planning, project management, financial management, safeguards, and social accountability; (b) managing natural and water resources in a sustainable manner by treating microwatersheds; and (c) supporting women's participation in governance and livelihoods development.

11. The proposed Project would complement the proposed Neeranchal National Watershed Project (P132739), particularly in the realm of capacity building and innovation support nationwide and increased knowledge sharing across other decentralized watershed development operations (e.g., Himachal Pradesh and Karnataka). Also, the proposed Gramya II is well aligned with the ongoing IFAD-financed operation in the State of Uttarakhand which supports rural livelihoods and would also complement the recently-approved Uttarakhand Disaster Recovery Project (P146653), which will restore housing, rural connectivity and build resilience among communities affected by the floods of June 2013.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

12. *The PDO is to increase the efficiency of natural resource use and productivity of rainfed agriculture by participating communities in selected microwatersheds of the State of Uttarakhand.*

B. Project Beneficiaries

13. The project is expected to benefit about 55,600 households. By enhancing the natural resource base and improving sustainability, the proposed Gramya II would target 509 GPs, which are contiguous to the Gramya I-supported GPs and selected in accordance with the GoI's

Common Guidelines for Watershed Development Projects. The proposed project would support FFs formed under the Gramya I to ensure their sustainability, scale up their agribusiness development and support the following beneficiary groups:

- **Medium- and small-scale farmers:** would benefit from: (a) watershed treatment, in particular, rainwater conservation and water harvesting structures that would increase water availability and efficiency; (b) improved support services in agriculture, horticulture, and livestock, including rainfed agriculture development; and (c) agribusiness development and market linkages.
- **Vulnerable groups (e.g., marginal landholders, landless, women, and transhumance):** would benefit from: (a) improved livelihoods, mainly in the livestock and services sectors; and (b) support of transhumance through a dedicated Transhumant Action Plan.
- **PRI institutions, such as GPs:** would gain capacity in project management and social accountability, in particular, in preparing and implementing GP Watershed Development Plans (GPWDPs). Gramya II would also engage VPs in managing interventions for inter-GP areas and reserve forests. The project would also promote the formation of community-based organizations, such as water user groups, farmer interest groups (FIGs), and FFs.
- **Key institutional stakeholders in watershed development:** would benefit under Gramya II through expanded knowledge outreach to Partner NGOs, Field NGOs, agribusiness support agencies, six district headquarters, regional headquarters in each of the two regions of the State of Uttarakhand and the Watershed Management Directorate (WMD).

C. PDO Level Results Indicators

14. The PDO indicators are (detailed in the Annex 1):

- Increase in water discharge;
- Increase in biomass;
- Increase in rainfed area under irrigation;
- Increase in productivity in irrigated and rainfed crops; and
- Direct project beneficiaries and the percentage of which are female.

III. PROJECT DESCRIPTION

A. Project Components

15. The proposed Gramya II would focus on microwatershed treatment of 220,000 ha of non-arable lands, which would enhance agricultural productivity on 40,000 ha of adjacent arable land. Four core principles guide the proposed Gramya II: (a) the Project would promote bottom-up preparation, implementation, and monitoring of GPWDPs, which would build GP institutional capacity and develop community-based organizations; (b) microwatershed planning covers the entire landscape from mountain ridge to valley floor, including arable and non-arable lands, reserve forests and inter-GP areas; (c) watershed treatment is an integral part of rainfed agricultural development, as it supports increased productivity of rainfed crops by enhancing in-situ water efficiency and natural resource conservation; and (d) watershed treatment brings new areas under irrigation and improves water availability and efficiency for currently-irrigated areas,

where the Project would support cultivation of high-value vegetable crops. The proposed Project has four components: (a) Social Mobilization and Participatory Watershed Planning; (b) Watershed Treatment and Rainfed Area Development; (c) Enhanced Livelihood Opportunities; (d) Knowledge Management and Project Coordination.

16. Component 1: Social Mobilization and Participatory Watershed Planning (US\$30.0 million, of which IDA US\$13.9 million) would finance goods, works and services to support: (a) mobilization of GPs in order to prepare integrated and coordinated GPWDPs including, *inter alia*, the identification of specific interventions to increase effective land use and water resource management and develop agriculture and income-generation activities; and (ii) development of watershed treatment plans to guide the preparation and implementation of GPWDPs.

17. Component 2: Watershed Treatment and Rainfed Area Development (US\$90.3 million, of which IDA US\$72.3 million) would finance subprojects and associated goods, works and services to support the implementation of the GPWDPs through: (a) the carrying out of watershed treatment activities including, *inter alia*: (i) the construction and rehabilitation of check dams, ponds, irrigation channels and tanks, and roof water harvesting structures; (ii) the reparation of agriculture terraces and vegetative field boundaries; and (iii) the rehabilitation of bridle paths, small bridges and culverts; and (b) the carrying out water source sustainability activities including, *inter alia*: (i) the construction and/or rehabilitation of soil conservation structures; (ii) the border plantation of grasses; and (iii) the carrying out of forestry activities; and (iv) the promotion of alternative energy source practices. The component would also support the provision of improved seeds and promote innovative agronomic technologies in rainfed and irrigated areas. The component has two sub-components: (a) Watershed Treatment and Water Source Sustainability; and (b) Rainfed Agriculture Development.

18. Sub-component 2a - Watershed Treatment and Water Source Sustainability (US\$78.5 million, of which IDA US\$62.8 million) - would increase the efficient use of natural resources on about 220,000 ha of non-arable land and expand irrigation to about 7,800 ha of arable rainfed land in the targeted GPs. The subcomponent would finance watershed treatment activities of GPs through their GPWDPs, as described above, and water source sustainability, through the following activities: (a) construction and rehabilitation of recharge pits, ponds, vegetative structures and other soil conservation structures; (b) perimeter rehabilitation with Napier and other grasses; (c) forestry activities (e.g., plantations and nursery development); and (d) promotion of alternate energy sources (e.g., biogas plants, solar cookers, water mills, and pine briquette production).

19. Sub-component 2b - Rainfed Area Development (US\$11.8 million, of which IDA US\$9.5 million) - would support both rainfed and irrigated areas by providing improved seeds and demonstrating new technologies developed by universities and research institutions. In the rainfed areas, the improved seeds would promote rainwater conservation, climate-smart agricultural practices, and on-farm integrated crop management. In the irrigated areas, the project would promote diversification to high-value off-season vegetable crops, adoption of innovative agronomic practices, establishment of greenhouses and tunnels, productivity enhancement of irrigated maize, wheat and other crops, and production of bio-fertilizers and vermi-compost. The Project would also provide support in the horticulture and livestock sectors,

including new orchard development, orchard rehabilitation, fodder production, and livestock genetic upgrading. Implementation of the technical support packages would be led by the GoUK Water Management Directorate (WMD), in coordination with the State Departments of Forestry, Agriculture, and Livestock.

20. **Component 3: Enhancing Livelihood Opportunities (US\$18.7 million, of which IDA US\$14.9 million)** would finance subprojects and associated goods, works and services to FFs to develop agribusinesses in high-value crops including, *inter alia*: (a) the formation and capacity building of FIGs and their consolidation into FFs; and (b) the development of agribusiness plans and marketing strategies. The Component would also provide support to Vulnerable Groups, through GPs, to finance income-generating microenterprise activities and provide training to Vulnerable Groups to promote their entrepreneurial development. Finally, the component would provide support to FFs to strengthen their business planning and management capacities as sustainable producer businesses. Component 3 has three sub-components: (a) Agribusiness Support; (b) Support for Vulnerable Groups, and (c) Consolidation of Gramya I activities.

21. **Sub-component 3a - Agribusiness Support (US\$9.1 million, of which IDA US\$7.2 million)** - would facilitate agribusiness development in high-value vegetable crops for targeted farmers. The support would include: (a) formation of FIGs and their FFs, building on project-supported water user groups and others; (b) building capacity of FIGs and FFs in business planning and supply chain development, including input supply (e.g., quality seed production) and value addition (e.g., setting up collection and processing centers); and (c) providing market-oriented extension services and marketing support, including market intelligence and brand creation. Agribusiness support would be provided by local NGOs.

22. **Sub-component 3b - Support for Vulnerable Groups (US\$7.2 million, of which IDA US\$5.8 million)**- would finance entrepreneurial activities for Vulnerable Groups in the targeted GPs, including landless, vulnerable women, and transhumance, who will not directly benefit from the major project investments under Component 2. The Project has a dedicated transhumant action plan, which will have an emphasis on livestock support.

23. **Sub-component 3c - Consolidation of Gramya I activities (US\$2.4 million, of which IDA US\$1.9 million)** - would repair the damaged assets created in Gramya I and strengthen the business planning and management capacity of 27 FFs formed under Gramya I to develop them as sustainable producer businesses. The support for agribusiness development will be provided by local NGOs.

24. **Component 4: Knowledge Management and Project Coordination (US\$31.0 million, of which IDA US\$20.1 million)** would finance goods, works, services and incremental operating costs to support the strengthening of the institutional capacity and knowledge management of the Project Implementing Entity, GPs and FFs for the implementation and management of the Project including, *inter alia*, the provision of support for setting up a participatory watershed development knowledge hub. The Component would also support the management of project implementation including *inter alia* monitoring and evaluation through an ICT-based monitoring information system and social accountability and grievance redress mechanisms. Finally, the Component would finance the management of Project implementation

including *inter alia* facilitation and coordination of project activities by WMD. The Component has two sub-components: (a) Knowledge Management; and (b) Project Coordination.

25. **Sub-component 4a – Knowledge Management (US\$11.7 million, of which IDA US\$9.3 million)**– would finance the strengthening of the institutional capacity and knowledge management of the Project Implementing Entity, GPs and FFs for the implementation and management of the Project through, *inter alia*: (a) training and dissemination activities for targeted local institutions (e.g., GPs, VPs, water user groups, and FIGs), state-level stakeholders (e.g., NGOs, universities, and research institutions), and the GoI-supported programs, such as the IWMP and the MGNREGA; (b) the establishment of a Center of Excellence in Watershed Development to serve as a knowledge hub of participatory watershed development, natural resource conservation, rainfed agricultural development, and agribusiness development; (c) information and educational exchanges among and between the various Gramya II stakeholders; (d) project supervision through an ICT-based management information system (MIS) to effectively monitor project activities; (e) hydrology monitoring stations to build a comprehensive dataset at the microwatershed level; and (f) social accountability at the GP and VP levels through participatory monitoring exercises (PMEs), social audits and grievance redress mechanisms.

26. **Sub-component 4b – Project Coordination (US\$19.3 million, of which IDA US\$10.8 million)** – would finance the management and supervision of Project implementation including: (a) incremental expenditures incurred by the Project Implementing Entity for Project implementation, management and supervision; (b) financial management and annual internal and external audits; (c) incremental contractual staff salaries (other than consultants), excluding salaries of civil servants deputed to the Project; and (d) dissemination of Project-related information.

B. Project Financing

27. The total project cost is US\$170.0 million over a seven-year implementation period and would be co-financed by an IDA credit (US\$121.2 million equivalent), the GoUK (US\$45.8 million), and beneficiary contributions (US\$3.0 million). The table below details project financing by project component (in US\$ million equivalent).

Project Components	Project Cost		IDA Financing		GoUK Financing		Beneficiary Contribution	
	US\$	%*	US\$	%**	US\$	%**	US\$	%**
1. Social Mobilization and Participatory Watershed Planning	30.0	17.6	13.9	46.4	16.1	53.6	0.0	0.0
2. Watershed Treatment and Rainfed Area Development	90.3	53.2	72.3	80.0	15.1	16.7	3.0	3.3
3. Enhancing Livelihood Opportunities	18.7	11.0	14.9	80.0	3.7	20.0	0.0	0.0
4. Knowledge Management and Project Coordination	31.0	18.2	20.1	64.8	10.9	35.2	0.0	0.0
Total Project Costs	170.0	100.0	121.2	71.3	45.8	27.0	3.0	1.7

*% of the total project costs

**% financing per component

C. Lessons Learned and Reflected in Project Design

28. In designing the proposed project, the following key lessons were drawn from previous decentralized watershed development projects in India, including Gramya I:

- **Fiscal decentralization and community empowerment are necessary but not sufficient to promote improved community management of natural resources.** The massive increase in transfers from GoI to PRIs potentially provides communities, particularly GPs, with a source of funds for needed watershed treatment. Successful implementation of GPWDPs also requires training in financial management as well as technical knowledge transfer to GPs to both maintain and sustain these investments. Gramya I promoted a participatory approach to build GP capacity in preparing and implementing GPWDPs, which resulted in a 30 percent increase in GP administrative capacity. The participatory approach also fostered ownership among water users in targeted GPs, which helps to ensure the sustainability of project investments. As such, the proposed Gramya II would continue to strengthen the additional 509 targeted GPs as they develop GPWDPs.
- **Watershed treatment tools, such as rainwater conservation and harvesting, can effectively contribute to rainfed agricultural productivity.** Gramya I installed almost 21,500 water harvest tanks in the targeted GPs and demonstrated the effectiveness of rainwater conservation and harvesting in rainfed areas, when combined with improved seeds and management practices, to increase agricultural yields. The proposed Gramya II would continue to promote synergy between watershed treatment and rainfed agriculture through adoption of appropriate resource-conserving and productivity-enhancing technologies.
- **Comprehensive watershed treatment at the microwatershed level has proven effective.** The GEF grant under Gramya I engaged GPs and VPs in treating 20 microwatersheds, including inter-GP areas and reserve forests, ensuring full benefits of reduced soil erosion. The proposed Gramya II would scale up treatment at the microwatershed level to cover the entire landscape, from mountain ridge to valley floor.
- **Watershed development projects are a relevant response to the needed increase in rainfed agricultural productivity in India.** More attempts must be made to quantify costs and benefits relative to alternative interventions. The economic and financial analyses for the proposed Project both quantifies the relevant costs and benefits accruing to the investments under the GPWDPs and by WMD in watershed development and considers these relative to alternatives (see Annex 6).
- **Watershed development can spur market linkages and enable inclusive growth through value addition for participating farmers.** Gramya I successfully established 27 FFs with annual gross revenues of about INR 430 million (about US\$ 9.5 million). This made a substantial contribution to the 15 percent increase in rural income over the baseline in the targeted GPs. The proposed Gramya II would strengthen these FFs as sustainable producer businesses and build and support FIGs as they consolidate into new FFs.
- **Science and cutting-edge technology in hydrology cannot be overemphasized: watershed development should balance participation and science in its design and**

implementation. The Gramya I was designed and implemented with an emphasis on decentralization and participation, which was appropriate considering the GoUK priority at the design phase. The science and technology were enhanced in the project design and implementation and highlighted in the results framework in the proposed Gramya II, without compromising the participatory approach.

- **Field-based NGOs can enhance the quality of project implementation through much-needed and localized technical support.** The engagement under Gramya I of two partner NGOs (PNGOs) complemented the project staffing and supported overall project implementation with a direct reporting line to the Chief Project Director of the GoUK Watershed Management Directorate. Moreover, the PNGOs supported project innovations, in designing and implementing PME, women's Aam Sabha, and agribusiness development.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

29. The proposed Gramya II would be implemented by the Watershed Management Directorate (WMD) under the State Watershed Department. Uttarakhand is one of eight states in India which has established a dedicated WMD to implement watershed and rainfed agriculture development activities. Under Gramya I, WMD acquired substantial capacity in managing a complex, multi-sectoral project, which required expertise in natural resource management, irrigation, agriculture, horticulture, livestock, forestry, environment (e.g., hydrology, climate change, and safeguards), social development (e.g., participation, social and institutional development, gender, Vulnerable Groups, social accountability, and safeguards), agribusiness and value chain development, monitoring and evaluation (M&E) including MIS and participatory monitoring and evaluation (PME), financial management, and procurement. Additionally, WMD implements the GoI-financed IWMP and would therefore promote synergy and convergence with Gramya II. The GPs and FFs would undertake project implementation at the GP and microwatershed levels.

30. WMD would contract field NGOs (FNGOs) to provide support in: (a) social mobilization; (b) GPWDP preparation, implementation, and monitoring; and (c) agribusiness development. GoUK has an adequate number of experienced NGOs for social mobilization and capacity building of the communities at the GP level. WMD would also contract two Partner NGOs (PNGOs) in two divisions of the project area, whose functions would be the same as those for the Deputy Project Director and Multi-disciplinary Team. However, the PNGOs would not be responsible for transferring funds to GP accounts after approval of GPWDPs. This responsibility would remain with the WMD. Moreover, WMD would partner with national institutes and universities for technical support, such as the Indian Institute of Technology (IIT), the National Institute of Hydrology, and the GB Pant University of Agriculture & Technology.

B. Results Monitoring and Evaluation

31. Gramya II would build on and strengthen the comprehensive M&E system developed during Gramya I. The monitoring tools include: (a) the results framework (outcomes); (b) an MIS, including physical outcomes and outputs; (c) PME; and (d) impact evaluation. Gramya II

would further include an innovative ICT-based MIS, which would facilitate quality and on-time data collection. The MIS would map the outcomes and outputs on satellite imagery and link the numerical data collected online. It is expected that the data and maps generated by the MIS would support planning and decision making at the division and state levels. Subject to satisfactory performance, the MIS could be scaled up by IWMP and other GoI-financed programs for decentralized planning and implementation.

32. Project-based PME was an effective beneficiary feedback mechanism under Gramya I. Through PME, outreach to women and other marginalized groups enhanced project awareness and improved beneficiary satisfaction with the project interventions. PME also facilitated grievance redress among all stakeholders. The proposed Project would continue the PME exercise and also finance two third-party impact evaluations (i.e., mid-term and completion), which would verify the project’s key outcomes and physical achievements. The three tools - MIS, PME, and impact evaluation - would support results monitoring and provide data for the results framework.

C. Sustainability

33. The success of Gramya I was built on its innovative design that decentralized watershed management, including finance, to GPs. Gramya I provided targeted training to enhance GP capacity in project management, fiduciary and safeguards compliance, and social accountability. The participatory approach in GPWDP preparation and implementation also ensured GP ownership in the GPWDPs and the sustainability of project investments by forming: (a) user groups for check dams and water harvest structures; (b) VPs for new forest plantations; and (c) FFs for value-added activities. The proposed Gramya II would continue to strengthen decentralized watershed management and build local institutional capacity, including GPs, VPs, water user groups, FIGs, and FFs, which would ensure overall project sustainability.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Risk Category	Rating
Stakeholder Risk:	Low
Implementing Agency Risk:	
- Capacity	Moderate
- Governance	Moderate
Project Risk:	
- Design	Moderate
- Social and Environmental	Low
- Program and Donor	Moderate
- Delivery Monitoring and Sustainability	Moderate
Overall Implementation Risk:	Moderate

B. Overall Risk Rating Explanation

34. The overall risk in project implementation is Moderate as Gramya II is a Repeater Project of the well-performing Gramya I. Given the proposed scaled-up decentralized participatory approach in the 509 newly targeted GPs, fiduciary risk is substantial. This risk would be mitigated by continuing both the well-established FM training program developed under Gramya I and the good practice of hiring an accounting assistant at every targeted GP. Safeguards risks are low. There is also a moderate risk in the sustainability of agribusiness support, which would be mitigated by investments to consolidate participating FIGs into new FFs. Gramya II would also strengthen the 27 FFs formed under Gramya I in their transformation into viable businesses and establish an agribusiness support model.

35. As the implementing agency for the IWMP and the IFAD-financed Integrated Livelihood Support Project in Uttarakhand, WMD is well-positioned to facilitate state-level knowledge management. The proposed Center of Excellence in Watershed Management would support dissemination, training, and institutional development at the state, division, and village levels.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

Financial: NPV = INR 7.9 billion; Financial Rate of Return (FRR) = 22.7 %

Economic: NPV = INR 6.6 billion; Economic Rate of Return (ERR) = 21.6%

36. A cost-benefit analysis was conducted over a 30-year horizon. Annual incremental financial benefits (undiscounted) from the project interventions are estimated at INR 3.3 billion and distributed as follows: (a) watershed treatment (15 percent); (b) plantations (44 percent); (c) irrigated and rainfed agriculture (23 percent); (d) animal husbandry (5 percent); (e) agribusiness (10 percent); (f) and income generation activities by vulnerable groups (3 percent). Total project cost, including contingencies, is INR 10.2 billion. Financial analysis is done at market prices. The estimated economic rate of return for the project is 21.6 percent, with a net present value of INR 6.6 billion at an opportunity cost of capital of 12 percent. For economic analysis, appropriate economic prices are derived and used for relevant inputs and commodities.

37. Major sources of quantifiable benefits from the proposed investments (INR 10.2 billion) are identified as follows (detailed in the Annex 6):

- (a) **Watershed development and source sustainability** interventions, under Component 2, would generate: (i) sustainable water supply by rejuvenating about 1,530 traditional water sources; (ii) increased annual biomass production from the non-arable lands in terms of small timber (108,691 MT), fuelwood (14,387 MT) and fodder (37,603 MT); and (iii) improved watershed services and ecological functions through comprehensive conservation of natural resources (30 percent reduction in soil loss and runoff).
- (b) **Rainfed agriculture development** investments, also under Component 2, would ensure: (i) runoff harvesting and recycling to increase irrigation coverage by 50% (net irrigated area); (ii) comprehensive *in situ* soil and moisture conservation coverage for an additional 37,157

ha of agriculture lands; and (iii) incremental annual fodder production (296 MT), health coverage and breed improvement for cows and buffaloes in 1,066 project villages. These benefits would be captured through increased productivity of 33 to 60% for major crops (irrigated and rainfed), and dairy cattle, as compared to a without-project scenario, and reduced fluctuations in productivity due to better moisture conservation during prolonged dry spells.

- (c) **Enhancing livelihood opportunities**, under Component 3, would support: (i) agribusiness linkages through FIGs and FFs with processing units to promote a increased producer prices; and (ii) Vulnerable Groups' income generating activities (IGA) to benefit 20,333 vulnerable households by an additional annual income of INR 15,880 (both individual and group based) in the project villages.

38. *Sensitivity and Risk Analyses*: A number of sensitivity and risk analyses were conducted using various scenarios. The following joint deviations were considered: (a) all project costs; (b) benefits due to possible variations in the impact of watershed treatment in arable and non-arable lands, and livelihood enhancement interventions; (c) sustainability of assets (e.g., operation and maintenance); and (d) delays in project implementation. The analysis considered pre-defined lower and upper limits for all project costs and the above-mentioned benefits and other possible risks. In summary, project costs were allowed to increase up to 25 percent above the base level, and the three sources of benefits were allowed to decrease up to 25 percent below their base levels. Sustainability impacts are captured through reduced flows of project benefits by up to one-third of the project life. A delay in project implementation of up to two years is considered. This risk analysis estimated the effects of uncertain returns to investments and generated confidence limits for realizing expected benefits. The above joint variations caused the ERR to vary between 13.4 percent and 19.7 percent with a coefficient of variation of 7 percent. The expected ERR, under this risk scenario, is estimated at 16.2 percent and is reasonably stable because the risk model predicted a 0.83 probability of the ERR exceeding 15.0 percent.

B. Technical

39. The project has two types of broad interventions: (a) technical assistance; and (b) GP-level investments through GPWDPs that will demonstrate efficiency in water and agricultural productivity. The technical assistance will incorporate available technologies for improved watershed management with special emphasis on rainfed agriculture development - backed by local hydrological monitoring systems. WMD has identified areas in selected microwatersheds where comprehensive planning and demonstration among GPs would take place within a confined hydrological boundary. Some of the key technological innovations include: (a) drip technologies for more efficient irrigation (i.e., "crop per drop"); (b) a decision support system based on real time data; (c) hydrological monitoring through automatic data stations along drainage lines; and (d) geo-tagging of all arable and non-arable land parcels.

40. The technology will be used to further improve water budgeting and agro-forestry practices for enhancing moisture control backed by crop diversification and regular monitoring of the plant population. Contour line sowing in selected sample plots and creation of a database for its correlation with agricultural productivity would also be financed. In addition, extension services under the Project would engage progressive and innovative farmers through farmer field

schools (FFS), which would showcase the various water management techniques and improved crop production technologies.

C. Financial Management

41. WMD would be the implementing agency for Gramya II. The Project Director would be assisted by the Chief Finance Officer (CFO) of WMD, who would be responsible for all matters relating to project financial management. The proposed IDA funds would flow through a budget head which has been established. GoUK would provide the budget allocation to WMD which would issue the Cash and Credit Limit (CCL) to the Deputy Project Director (DPD) offices for works. The DPD would further release money to GPs, by checks drawn on GoUK treasury, which GPs would deposit and maintain in a separate bank account. In the case of staff and operational costs, these would be incurred only at the WMD, Project Director and DPD levels through GoUK treasury. In those areas covered by PNGOs, the payments to GPs would be made from WMD directly.

42. The budget head-wise accounts would be maintained in the GoUK treasury. The overall accounting for releases/expenditure would be carried out by the GoUK treasury (for most of the heads except GP grant in aid details). Details of the component-wise expenditures and advances given to GP would be maintained by the WMD and its divisions. These offices would maintain a separate cash book to record project expenditures. Monthly reconciliation of the expenditures with the GoUK treasury would be carried out by the project offices.

43. Disbursements would be based on interim unaudited financial reports (IUFs), which would be used for reporting as well as financial monitoring. IUFs shall be submitted to the Bank on a quarterly basis within 45 days from the end of the calendar quarter. The IUFs would disclose receipt and utilization of project funds (both Bank share and counterpart contribution). IUFs would be based on project accounts and would reflect the actual expenditure for the project components.

44. The annual external audit of the Project Financial Statements would be carried out by the Auditor General, Uttarakhand office. The Project Financial Statements, in a format acceptable to the Bank, would be subject to audit by the Auditor General under terms of reference already agreed between the Bank and the Comptroller and Auditor General (CAG). The internal audit of the Project would be an integral part of the project design and would cover all activities under the Project carried out by WMD, Divisions, PNGOs and a sample of GPs. The internal audit would be carried out by a Chartered Accountancy firm as per agreed terms of reference with the Bank.

45. Two disbursement categories are defined which would finance: (a) goods, works and non-consulting services under Subprojects; and (b) goods, works, non-consulting services (other than under Subprojects), consultants' services, training and workshops and incremental operating costs.

46. WMD has simplified implementation arrangements. FM arrangements are simplified and largely based on the GoUK's existing systems, except for funds managed by GPs. The FM risk rating for the Project is Substantial, as a major portion of the project funds would be disbursed to

the GPs. This risk would be mitigated by continuing the well-established FM training program developed under Gramya I for the newly targeted 509 GPs and following the Gramya I good practice of hiring an accounts assistant for each participating GP.

D. Procurement

47. A detailed procurement assessment was conducted for identified goods, works, consultant services and non-consulting services required under the proposed Gramya II. Procurement for the Project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011, and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011, and the provisions stipulated in the Project Agreement and Financing Agreement and detailed in the Project Operational Manual and in the Procurement Plan.

48. Procurement items were prioritized in a phased manner, keeping in mind project requirements at different implementation stages. A procurement manual has been finalized and a procurement plan prepared for the first eighteen months of project implementation, both of which are acceptable to the Bank. WMD will consider using the GoUK e-procurement system, subject to the Bank's review and recommendations. The project procurement arrangements are detailed in the Annex 3.

E. Social (including Safeguards)

49. OP/BP 4.10 (Indigenous People) is triggered. The Transhumant Action Plan (TAP), which was prepared for Gramya I, has been updated, based on a survey of nomadic populations that either are settled or seasonally migrate into the Gramya II-targeted GPs.¹ Under the proposed Gramya II, results monitoring of the TAP has been strengthened in two forms: (a) the nomadic population's participation in Vulnerable Group activities would be monitored as a project output; and (b) Vulnerable Groups' awareness would be increased as to available government services in livestock and human health, with effective monitoring of their access to these services as outcomes.

50. The proposed Gramya II does not anticipate any land acquisition or involuntary resettlement. All project investments, such as water harvesting structures, will be made on private land. Activities, such as drainage line treatment, would rehabilitate already-existing facilities. In cases where any minor area of land is required, such as for village-level collection and/or processing facilities for agribusiness development, the land would be provided as a donation and would be: (a) community land; (b) private land purchased by the community (i.e., transactions between willing buyer and willing seller); or (c) land obtained through private voluntary donations. Community purchases and private voluntary donations would be fully documented as required by the Environmental and Social Management Framework.

51. Gramya II would continue to promote inclusiveness by ensuring participation of Vulnerable Groups (e.g., women, landless, scheduled castes and tribal people) in GPWDP

¹ The two nomadic groups are Bhotiya/Anwal and Gujjars. Bhotiya/Anwal maintain small ruminants (sheep and goat) and migrate without families. The Gujjars have buffalo and cows and migrate with families.

preparation and implementation. Component 3 would finance selected income generation activities for these Vulnerable Groups, including transhumance. Gramya II would also maintain and enhance PME in obtaining feedback and grievances from these Vulnerable Groups and ensure their participation in social audits. WMD has disclosed the TAP on its website www.wmduk.gov.in and www.gramya.in. The Bank has disclosed the TAP in the Infoshop.

F. Environment (including Safeguards)

52. The proposed project triggers OP/BP4.01, OP/BP4.04, OP/BP4.09, OP/BP4.11 and OP/BP4.36. A detailed environmental analysis was undertaken by WMD and incorporated into an Environmental and Social Management Framework (ESMF). The environmental policy framework, environmental institutional arrangements, potential environmental impacts and proposed mitigation measures and compliance management issues are addressed in the ESMF and detailed in Annex 3.

G. Other Safeguards Policies Triggered (if required)

53. None

Annex 1: Results Framework and Monitoring

INDIA: Uttarakhand Decentralized Watershed Development II Project

Project Development Objective (PDO): to increase the efficiency of natural resource use and productivity of rainfed agriculture by participating communities in selected microwatersheds of the State of Uttarakhand.														
PDO Level Results Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values**							Frequency	Data Source/ Methodology	Resp. for Data Collection	Description (indicator definition etc.)
				YR1	YR2	YR 3	YR4	YR 5	YR6	YR7				
Indicator One: Increase in water discharge.	<input type="checkbox"/>	%	0	-	-	-	10%	-	15%	25%	MTR Final	Hydrological Monitoring Impact Evaluation	Third Party	Flow change (in liters/minute) of perennial water sources based on representative sample of MWSs.
Indicator Two: Increase in biomass.	<input type="checkbox"/>	%	0	-	-	-	10%	10%	15%	20%	Yearly	MIS	WMD	Covers biomass produced in arable and non-arable lands.
Indicator Three: Increased Ha of rainfed area under irrigation.	<input type="checkbox"/>	No.	5,262	-	-	4,100	4,500	5,000	5,400	7,800	Yearly	MIS	WMD	Annual targets indicate cumulative additional area beyond baseline.
Indicator Four: Increase in productivity in irrigated and rainfed crops	<input type="checkbox"/>	%	0	-	-	20%	30%	45%	45%	50%	Yearly	MIS	WMD	<i>Irrigated:</i> Increase in production of major five high value vegetable crops. <i>Rainfed:</i> Increase in production of three major rainfed crops.
							5%	10%	15%	20%	Yearly	MIS	WMD	
Indicator 5: Direct project beneficiaries, of which % of female.	<input checked="" type="checkbox"/>	No.	0	-	-	20,000	30,000	35,000	40,000	45,000	Yearly	MIS	WMD	Calculated as #HHs benefiting under GPWDPs, net of HHs under Vulnerable Groups (Intermediate Indicator 8) with gender breakdown.

Intermediate Results Indicators	Core	Unit of Measure	Baseline	Cumulative Target Values							Frequency	Data Source/ Methodology	Resp. for Data Collection	Description (indicator definition etc.)
				YR1	YR2	YR3	YR4	YR5	YR6	YR7				
Intermediate Result (Component 1): Social Mobilization and Participatory Watershed Planning														
Intermediate Indicator 1: (i) Percent of participating HHs in the Gram Sabha meetings; and (ii) % of which are female.	<input type="checkbox"/>	%	0%	80% 35%	80% 40%	80% 50%	80% 50%	80% 50%	80% 50%	80% 50%	Yearly	MIS	WMD	% of all HHs participating in the Gram Sabha meetings and their female representatives.
Intermediate Result (Component 2): Watershed Treatment and Rainfed Area Development														
Intermediate Indicator 2: Hydrological monitoring systems fully installed and functional in sample MWSs.	<input type="checkbox"/>	No.	0	-	8	8	8	8	8	8	Yearly	MIS	WMD	Composed of Gramya II MWSs.
Intermediate Indicator 3: Targeted traditional natural water sources rejuvenated.	<input type="checkbox"/>	%	0	-	-	-	-	10%	20%	30%	Yearly	MIS	WMD	Depleting water sources (those that are 50% dried up); 1,500 such sources identified.
Intermediate Indicator 4: Natural resource conservation techniques adopted in the targeted areas.	<input type="checkbox"/>	%	0	0	0	10%	25%	33%	50%	70%	Yearly	MIS	WMD	Terraces with soil water conservation measures and vegetative boundaries.
Intermediate Indicator 5: Targeted farmers adopting soil moisture conservation and crop production technologies.	<input type="checkbox"/>	%	0	0	10%	20%	30%	40%	50%	60%	Yearly	MIS	WMD	Farmers adopting demonstrated technology in at least two cropping seasons.

Intermediate Result (Component 3): Enhancing Livelihood Opportunities														
Intermediate Indicator 6: Farmers organized into FIGs.	<input type="checkbox"/>	No.	0	-	-	4,000	6,000	8,000	10,000	10,660	Yearly	MIS	WMD	Farmers organized as FIGs
Intermediate Indicator 7: Self-sustained FFs.	<input type="checkbox"/>	%	0	-	-	10%	15%	20%	25%	30%	Yearly	MIS	WMD	Measured by percentage increase in the production volumes marketed by the FFs
Intermediate Indicator 8: Vulnerable HHs covered by the Vulnerable Group activities under GPWDPs.	<input type="checkbox"/>	No.	0	-	890	1,780	3,110	7,560	8,895	8,895	Yearly	MIS	WMD	# of HHs considered to be vulnerable and benefiting from Vulnerable Group activities under approved GPWDPs.
Intermediate Result (Component 4): Knowledge Management and Project Coordination														
Intermediate Indicator 9: Targeted GPs with satisfactory Social Audit using PME.	<input type="checkbox"/>	%	0	-	-	-	65%	-	-	80%	MTR Final	Impact Evaluation	Third Party	Satisfactory GP Social Audit as defined in Project Operational Manual.
Intermediate Indicator 10: Targeted GPs with satisfactory financial audit report.	<input type="checkbox"/>	%	0	-	-	-	80%	-	-	100%	MTR Final	Impact Evaluation	Third Party	Satisfactory GP Project Financial Audit as defined in Project Operational Manual.

Note: YR-1 will be baseline year; YR-4 – MTR will be conducted; YR-7 – Final Impact Evaluation will be conducted

Annex 2: Detailed Project Description

INDIA: Uttarakhand Decentralized Watershed Development II Project

A Project location and beneficiaries

1. The Project will target 509 GPs in eight districts of the State of Uttarakhand i.e., Almora, Bageshwar, Pithoragarh, Dehradun, Pauri, Rudraprayag, Tehri Garhwal, and Uttarkashi, located in the middle Himalayas at elevations between 700m and 2,700m above mean sea level. The Project area consists of hills with sloping lands which are susceptible to soil erosion during the monsoon season. The Project area has a sub-humid temperate climate with annual rainfall varying from 750-2000mm. Land holdings are small and scattered, and dependence is high on common property resources requiring collective management approaches. Low-value subsistence farming is commonly practiced, based on cereal production, dairy cattle and exploitation of forest biomass. The Project would cover about 260,000 ha and directly benefit 55,600 households, which include small and marginal farmers, landless and transhumant communities.

B Project Duration

2. The Project will be implemented over seven years from 2014 to 2021.

C Project Components

3. Four core principles guide the proposed Gramya II: (a) the Project would promote bottom-up preparation, implementation, and monitoring of GPWDPs, which would build GP institutional capacity and develop community-based organizations; (b) microwatershed planning covers the entire landscape from mountain ridge to valley floor, including arable and non-arable lands, reserve forests and inter-GP areas; (c) watershed treatment is an integral part of rainfed agricultural development, as it supports increased productivity of rainfed crops by enhancing in-situ water efficiency and natural resource conservation; and (d) watershed treatment brings new areas under irrigation and improves water availability and efficiency for currently-irrigated areas, where the Project would support cultivation of high-value vegetable crops.

4. The Project would focus on developing rainfed agriculture using watershed treatment tools, rejuvenating land and water resources, enhancing environmental sustainability, mitigating climate change impacts and vulnerability, and improving adaptation to climate change. Gramya II would support interventions at the village and cluster levels, including land use planning, catchment treatment, adoption of improved technologies for rainfed and irrigated agriculture, water source sustainability and forest plantation, all of which are in line with the prescriptions of the National Action Plan on Climate Change issued by the GoI in 2008. The Project would also strengthen community-driven social mobilization and agriculture support services, and develop compact and efficient agriculture commodity supply chains. Gramya II would have four components: (a) Social Mobilization and Participatory Watershed Planning; (b) Watershed Treatment and Rainfed Area Development; (c) Enhanced Livelihood Opportunities; and (d) Knowledge Management and Project Coordination.

5. **Component 1: Social Mobilization and Participatory Watershed Planning (US\$30.0 million, of which IDA US\$13.9 million)** would cover the planning phase of selected microwatersheds in 509 targeted GPs. The Component would promote social capital formation and develop effective, integrated and coordinated GPWDPs. These GPWDPs would be supported by a comprehensive digital database and new decision-support tools, as well as orientation and awareness-building activities about the vision, scope and proposed interventions under the Project. Participating GPs would be assisted in social mobilization and preparation of comprehensive GPWDPs covering arable land in all revenue villages in the GP. As under the Gramya I, Services of FNGOs will be used for social mobilization under Gramya II. The GPWDPs would be prepared by the GPs assisted by FNGOs following a participatory bottom-up planning process with technical backstopping by a Multi-Disciplinary Team (MDT) in WMD. The GPWDPs would describe in detail what is to be done, where, when and by whom, and may include any activity which is: (a) the felt need of the community; (b) conducive to and technically appropriate for watershed treatment; and (c) consistent with the PDO and the criteria set forth in the Project Operating Manual. In addition to various watershed development and agriculture activities, these GPWDPs would also include entry-point activities as well as livelihood enhancing and income-generating activities for the landless and poor that would not directly benefit from land-based activities. Treatment plans for the reserve forest and inter-GP areas would be included in GPWDPs with the participation of the VP of the concerned revenue village. Gramya II would support WMD in: (a) capacity building and training of GPs, WMD and other project staff; (b) building social capital in project villages; (c) hiring and capacity building of NGOs, account assistants and village motivators; and (d) participatory rural appraisal and other activities for preparing, reviewing and approving GPWDPs.

6. **Component 2: Watershed Treatment and Rainfed Area Development (US\$90.3 million, of which IDA US\$72.3 million)** forms the core of the project, constituting 53% of total investment. The Component would enhance biomass production, increase productivity of rainfed and irrigated crops, and improve discharge from the identified water sources. This Component would support GPs in implementing GPWDPs; it has two sub-components: (a) Watershed Treatment and Water Source Sustainability; and (b) Rainfed Agriculture Development.

7. **Sub-Component 2a - Watershed Treatment and Water Source Sustainability (US\$78.5 million, of which IDA US\$62.8 million)** – would focus on GPWDP implementation for effective management of land and water resources for improving groundwater recharge, reducing runoff and soil loss, and harvesting rainwater for irrigation. This sub-component would: (a) enhance area-specific efficiency of natural resource use through catchment treatment and forestry activities on 200,000 ha of non-arable land; and (b) expand the irrigated area by converting about 20% of 40,000 ha of arable rainfed land (7,800 ha) into irrigated land in the targeted GPs.

8. **Watershed treatment:** An indicative list of supported watershed treatment activities would be provided in the Project Operational Manual for inclusion in each GPWDP. The list includes, among others:

- Construction and rehabilitation of check dams, ponds, irrigation channels, irrigation tanks, and roof water harvesting structures, for improving existing irrigation facilities and expanding the irrigated area;
- Repair of agriculture terraces and vegetative field boundaries for reducing soil loss and improving agricultural productivity; and
- Rehabilitation of bridle paths, small bridges and culverts for improving rural connectivity.

9. **Water source sustainability:** The GPWDP would include: (i) activities for enhancing the sustainability of the identified water sources; and (ii) water source identification and various treatment works to be implemented to enhance and sustain water discharge from these sources. The GP, with assistance from the MDT, VP and DPD, will be responsible for implementing and monitoring these activities and the water discharge from the identified water sources. An indicative list of treatment works includes the following:

- Construction and rehabilitation of soil conservation structures, recharge pits, ponds, vegetative structures, forest plantations, vegetative trenches, etc., for rejuvenation and recharging of water sources;
- Construction and rehabilitation of vegetative, stone and crate wire check dams, retaining walls, spurs and diversion drains for drainage line treatment and soil conservation;
- Construction and rehabilitation of water channels, rainwater harvesting tanks, and installation of drip irrigation systems for improving and expanding minor irrigation networks and rainwater harvesting tanks;
- Perimeter rehabilitation with Napier and other grasses for improved fodder availability;
- Plantation of trees for improving vegetative cover, fuel and fodder availability;
- Setting up forest nurseries; and
- Promotion of alternate energy sources such as biogas plants, solar cookers, water mills and pine briquette production to reduce dependence on forest fuelwood and promote energy conservation.

10. **Sub-Component 2b - Rainfed Area Development (US\$11.8 million, of which IDA US\$9.5 million)** - would increase the productivity of field and horticultural (mainly vegetables) crops grown in the project watersheds. Because of topographic constraints only about 20% of the cultivated land in the project watersheds can be brought under irrigation by implementing various watershed treatment measures outlined in sub-component 2a. The following approach will be followed for agriculture development in the rainfed and irrigated areas:

11. **Rainfed areas:** For enhancing rainfed crop productivity, the main thrust will be on improved seeds adoption of low water-requiring crops like finger millet, wheat, maize, other nutritious cereals, pulses and oilseeds. This would be combined with improved crop husbandry and rainwater conservation practices, including life-saving irrigation with stored rainwater at critical stages of crop growth for maximizing productivity. Promising technologies for rainfed areas of Uttarakhand developed by GB Pant University of Agriculture and Technology (Pantnagar), the Central Soil and Water Conservation Research and Training Institute (Dehradun), Vivekananda Parvatiya Krishi Anusandhan Sansthan (Almora) and the Center for Research in Dryland Areas will be promoted. Special attention will be paid to increase the area under pulses for improving soil fertility, reducing soil erosion and supplementing farmer

incomes, since the Uttarakhand pulses command a premium price in the market. Gramya II would educate farmers about the benefits of growing short-duration crop varieties suitable for rainfed conditions, and adopting critical practices like fertilizer application to the crop immediately after a rainfall event in early stages of crop growth.

12. On-farm integrated crop management demonstrations and the associated farmer training would be a central project intervention and the main vehicle for the dissemination of improved technologies to the farmers. These demonstrations will include the complete package of practices for a particular crop from land preparation to crop harvesting (including use of seed of improved high-yielding varieties/hybrids, seed treatment, soil testing-based application of fertilizers, weed control, carrying out all cultural practices at the optimum stage of crop, etc.). Special effort will be made to promote adoption of improved in situ moisture conservation, rainwater capture and storage practices, and use of crop residues as mulches. On-farm demonstrations will also promote resource conservation technologies, and popularize climate-smart agricultural practices. Since improved seeds act as a catalyst for adoption of better crop management practices and seed replacement rates in Uttarakhand are very low, special attention would be paid to production and distribution of quality seeds. The crop demonstrations would be integrated with the on-farm water conservation structures developed under sub-component 2a. Following the year in which the on-farm demonstrations and farmer trainings are organized, Gramya II would provide adoption support in terms of critical inputs like seed to groups of farmers linked to the demonstrations and who are willing to adopt the demonstrated technologies. The detailed guidelines for organizing and monitoring demonstrations and providing adoption support have been developed by the project and are included in the Project Operational Manual.

13. **Irrigated areas:** Building on the success of Gramya I, the focus in irrigated areas would promote diversification to high-value vegetable crops. Because of cooler climate, the farmers of Uttarakhand can produce off-season vegetables which command a high price in the large urban markets in the plains. Special attention will be given to growing disease-free seedlings of new hybrids and high-yielding vegetable crops, and promoting adoption of recommended plant population, integrated nutrient and pest management strategies and productivity-enhancing innovative practices like trellis systems of vegetable cultivation using locally-available materials. Village- and GP-level groups of vegetable growers would be formed into FIGs and facilitated to unite under block- and district-level FFs. Technical assistance will be provided to these FFs for planning and sequencing of vegetable production. The project would also facilitate linking of FFs with output and input markets and with training institutes and multiple sources of knowledge for accessing new technologies. Support would also be provided for adopting greenhouses and tunnels for promoting protected vegetable production, and for producing bio-fertilizers and vermi-compost. Since some of the irrigated areas will remain under field crops, new technologies for enhancing productivity of irrigated maize, wheat and other crops would also be introduced through demonstrations, farmer training and adoption support.

14. The project would also provide needs-based support for planting of new orchards, rejuvenation of old orchards, and homestead plantation. Support would also be provided for construction of mangers and animal shelters, setting up animal breeding and artificial insemination centers, and a fodder production program for improving livestock productivity.

Rainfed and irrigated agriculture development activities would be implemented by WMD with the help of concerned line departments, NGOs and Agribusiness Support Organizations.

15. **Component 3: Enhancing Livelihood Opportunities (US\$18.7 million, of which IDA US\$14.9 million)** would support agribusiness development, improve livelihoods of vulnerable groups, and assist Gramya I GPs in consolidating watershed development activities. The component has three sub-components: (a) Agribusiness Support; (b) Income-generating Activities; and (c) Consolidation of Gramya I Activities.

16. **Sub-Component 3a - Agribusiness Support (US\$9.1 million, of which IDA US\$7.2 million)** - would promote agribusiness development in Gramya II areas and support: (a) formation and capacity building of FIGs and their consolidation into FFs; (b) development of agribusiness plans and supply chains (including marketing support, collection, grading, packaging and processing centers) with technical backstopping by agribusiness support organizations; and (c) capacity building of community-based institutions (FIGs and water harvesting structure user groups). Along with promotion of good agricultural practices, vegetable growers would be linked to markets through different supply chain models.

17. In selected areas, agribusiness activities would be phased in to demonstrate a variety of good practices and develop sustainable and innovative grassroots support from NGOs to farmer groups. Emphasis would be on: (a) formation of viable FIGs for providing scale and voice to the farmers as well as a collective entry point for suppliers and marketing initiatives; (b) dissemination of technologies and provision of advisory services and brand creation; (c) production and distribution of quality seeds and seedlings; (d) training through demonstrations in integrated vegetable crop management practices, improved greenhouses and tunnels and organic farming practices; and (e) establishment of linkages between FIGs, FFs and suppliers for processing and marketing of vegetables, other agriculture commodities and certified organic produce.

18. The watershed development interventions would be backed by a supply chain development agri-business model. It is planned to develop best practices for production and post-harvest handling of high-value perishable commodities that will not only feed into the national IWMP program but also support enforcement of necessary regulatory reforms – particularly for improving the licensing system to farmers’ interest groups for various agriculture products, and making them self-sustaining producer businesses. For achieving economies of scale and developing compact supply chains, farmers would be selected to adopt agribusiness promotion activities in a cluster of two to three villages. One or two crops would be promoted in each cluster for bulk production so that effective models can be developed for dissemination of technology and collective marketing of produce.

19. **Sub-Component 3b - Support for Vulnerable Groups (US\$7.2 million, of which IDA US\$5.8 million)** would promote equity in project benefit through support to vulnerable transhumant, landless and marginal farmer households for improving their livelihoods. Income-generating activities, e.g., carpet weaving, handicrafts, livestock rearing, etc. would be supported through livelihood activities supported under the GPWDPs and the formation of livelihood groups of landless and marginal farmers owning less than 0.1 ha land. The support would finance skill-oriented training, seed capital and marketing assistance. A TAP has been prepared

for improving the socio-economic condition of transhumant Bhotya-Anwal and Gujjar communities. The Bhotya-Anwals rear small ruminants (goat and sheep) and migrate, leaving their families behind. The Gujjars rear dairy cattle (cow and buffalo) and migrate with their families. The TAP aims to promote livestock health and nutrition, fodder production, human health, education and other relevant activities for raising the socio-economic condition of these transhumant communities.

20. **Sub-Component 3c - Consolidation of Gramya I Activities (US\$2.4 million, of which IDA US\$1.9 million)** - would repair the damaged assets created in Gramya I and strengthen the business planning and management capacity of 27 FFs formed under Gramya I to develop them as sustainable producer businesses. The support for agribusiness development will be provided by local NGOs.

21. **Component 4: Knowledge Management and Project Coordination (US\$31.0 million, of which IDA US\$20.1 million)** would ensure effective implementation of project activities, and monitor and evaluate project implementation progress, outputs and outcomes, building on the Gramya I implementation experience with a view to scale up successful approaches. This component would support strengthening of WMD and various community institutions set up under the project. The proposed interventions under Gramya II have relevance to other watershed and rural development programs like the National Integrated Watershed Management Program (IWMP) and GoI's flagship MGNREGA. This component would include capacity development of all stakeholders for promoting convergence in selected micro watersheds. This component would support extensive consultation and planning exercises between IWMP, Department of Rural Development and WMD. In facilitating knowledge management at state, division, and local levels, WMD would establish a Center of Excellence for Watershed Management. A decision support system would be created in coordination with the Indian institute of Technology Roorkee, GB Pant University of Agriculture and Technology and National Hydrological Institute, Roorkee. The component has two sub-components: (i) Knowledge Management; and (ii) Project Coordination.

22. **Subcomponent 4a – Knowledge Management (US\$11.7 million, of which IDA US\$9.3 million)**– would finance institutional strengthening and capacity development activities covering a variety of thrust areas ranging from natural resources management, agriculture systems, development, skill development, livelihood enterprise development, gender sensitization, governance, legal issues, institutional strengthening, general awareness building etc. for GPs, VPs, farmers, livelihood groups, project staff, NGOs and other stakeholders. These would include training and workshops, skill development, exposure visits, farmer field schools, hands on demonstrations, etc. for different groups of stakeholders. Other institutional strengthening activities would include establishment of division-level training cells and development of model microwatersheds as on-site demonstration and training sites for training farmers, village communities and project functionaries. The sub-component would also finance the establishment of a Center of Excellence in Watershed Development to serve as a knowledge hub of participatory watershed development, natural resource conservation, rainfed agricultural development, and agribusiness development, both in Uttarakhand and nationwide. The project would regularly update the communication strategy and develop targeted awareness messages about the project's participatory and transparent approaches. It would also coordinate development of other messages, such as improved technologies for rainfed and irrigated

agriculture, livestock production, marketing, agribusiness development, quality control, food and nutrition security, energy conservation, etc.

23. The sub-component would also finance social accountability measures, such as social audits. Other M&E and learning activities would include: (a) third-party monitoring and evaluation of project activities; (b) input-output monitoring; (c) participatory monitoring and evaluation, social audits and grievance redress mechanisms; (d) evidence-based monitoring, and (e) hydrological monitoring. The hydrological monitoring would be a new tool to monitor the sustainability of watershed treatment at the micro-watershed level and would support hydrological assessment and monitoring of identified water sources in the project area where comprehensive treatment would be undertaken. This monitoring would focus on assessing the water availability prior to implantation and impact of soil- and water-based interventions, and identifies effective structures for future replication. The project would partner with leading national institutes, such as IIT Roorkee, National Institute of Hydrology (NIH), Indian Institute of Science (IISc), in conducting the monitoring and assessment studies. The hydrological monitoring would focus on the following:

- (a) Analysis of the changes in land use and land cover in representative microwatersheds using past remote sensing data, toposheets, digital elevation models, available maps, etc.;
- (b) Identification of water sources and assessment of available water resources in each representative microwatershed using past data;
- (c) Quantification of soil erosion in each representative microwatershed using available past land use and land cover data, soil data, etc. on local and/or regional level;
- (d) Monitoring of changes in land use and land cover patterns induced by the watershed development initiatives implemented in each representative microwatershed using remote sensing data;
- (e) Progressive assessment of the impacts of watershed development initiatives for rejuvenating water resources on water availability in each representative microwatershed using observed data; and
- (f) Progressive assessment of soil erosion in representative microwatersheds using observed data.

Sub-component 4b – Project Coordination (US\$19.3 million, of which IDA US\$10.8 million)- would finance the management and supervision of Project implementation including: (a) incremental expenditures incurred by the Project Implementing Entity for Project implementation, management and supervision; (b) financial management and annual external audits; (c) incremental contractual staff salaries (other than consultants), excluding salaries of civil servants deputed to the Project; and (d) dissemination of Project-related information, including GIS upgrades and establishment of MIS data center; (e) office rental and leasing operation and maintenance of equipment; (f) office supplies and utilities; (g) travel and boarding/lodging allowances; (h) leasing, operation and maintenance of vehicles; (i) advertising and communication expenses; and (j) bank charges

Annex 3: Implementation Arrangements

INDIA: Uttarakhand Decentralized Watershed Development II Project

A Project Institutional and Implementation Arrangements

1. The proposed Gramya II would be implemented by the Watershed Management Directorate (WMD) under the State Watershed Department, which is the nodal state agency to implement all watershed programs, including the GoI-financed IWMP. At the microwatershed level, the project activities will be implemented by GPs and FFs, which will be facilitated by FNGOs. The implementation arrangements at the state, district, and GP levels are detailed below.

State Level

2. WMD, under the leadership of the Chief Project Director (CPD), would be responsible for overall project implementation. WMD has officers on deputation from all the line departments (including Forestry, Agriculture, Horticulture, Irrigation, Animal Husbandry, and Rural Development), which constitute a multidisciplinary team (MDT) at the state and district levels.

3. WMD would be responsible for project management, financial management, including budgeting, disbursements, audits, procurement, and safeguards compliance. WMD would: (a) take the lead role in planning, coordination, and monitoring of project performance in line with the project implementation schedule; (b) facilitate regular decision making for implementation of the project components; and manage inter-institutional coordination. WMD would have the following cells established: (a) Project Management Unit (PMU); (b) ESMF Cell under Deputy Project Director (ESMF); (c) the proposed Center for Excellence for Watershed Management as Research and Extension cell under Deputy Project Director (Training); and (d) Financial Management and Procurement Cell under Project Director (Administration). At the regional level, WMD would have two Project Directors in Garhwal and Kumaon who would manage overall project implementation.

4. The project has established a State Steering Committee under the Chairmanship of the Forest and Rural Development Commissioner. The Steering Committee provides overall guidance and policy support, and facilitate inter-departmental coordination. The CPD is the Member Secretary of the Committee. About fifty percent of State Steering Committee members are representatives of NGOs, academic and technical institutions, with the remainder being representatives from relevant government departments, such as Rural Development, Forests etc.

District level

5. **Deputy Project Directors (DPDs)** at the district level would be responsible for: (a) the administration and financial management of project planning, implementation and monitoring; (b) technical review and supervision of the implementation of GPWDPs ; (c) technical support to MDTs and field functionaries of FNGOs; (d) ensuring compliance of ESMF; (e) signing

subproject agreements with GPs; (f) transferring funds to GPs; (g) conflict resolution among GPs, MDTs, and NGOs; (h) ensuring timely submission of all project level and other reports to WMD; (i) representing the project at all district-level committees; and (j) as member secretary, convening district-level Watershed Committee meetings and recording the proceedings.

6. **Partner NGOs (PNGOs):** In two divisions of the Project area, PNGOs would be recruited by WMD to act as DPDs and MDTs. Their functions will be the same as those for the DPD and MDT. PNGOs would not be responsible for transferring funds to GP accounts after approval of GPWDPs. This responsibility would remain with the WMD.

7. **Multi-Disciplinary Teams (MDTs)** under the DPDs would be comprised of four to six technical specialists, and work in a cluster of 15-20 GPs. The technical expertise of these MDTs would include horticulture, agriculture, animal husbandry, minor irrigation, forestry, and community mobilization. Community mobilization would be carried out by FNGOs contracted by WMD. The MDTs would facilitate interaction with the GPs, FNGOs, participatory appraisals and needs assessment at the revenue village level. The MDTs would be assisted by Village Motivators who are members of the revenue village. The MDTs would be responsible for: (a) dissemination to the community regarding the project's rules, procedures and terms of participation; (b) orienting the community on the project objectives and ensuring that participatory approaches are in place for the stakeholders at the GP level; (c) facilitating the formation of Revenue Village Committees (RVCs) and other appropriate user groups; (d) providing technical guidance to GPs for preparing GPWDPs; (e) facilitating the preparation of RVC proposals for each revenue village/hamlet and assisting the GP to consolidate these plans into a GPWDP; (f) assisting in facilitating a general meeting of the Gram Sabha for its approval of the GPWDP; (g) ensuring integration of ESMF at all levels of planning and implementation of GPWDP; (h) assisting in transmitting the GPWDPs to the DPDs for technical appraisal and financial approval; (i) identifying training needs for the GPs and the community members, and ensuring that timely training (as required) is provided by WMD (or the contracted PNGO) to all stakeholders requiring such training in order to implement the project according to various guidelines and manuals; and (j) verification of the financial documentation for the implementation of GPWDPs.

8. **Zilla (District) Watershed Committees** have been established in each of the eight districts where Gramya II would operate. The Chair of the Committee is the Chair of the *Zilla Panchayat*. The committee includes representatives from the *Zilla Panchayat*, relevant government line departments, NGOs, block-level representatives and VPs. The committee facilitates coordination between the district-level representatives of WMD, GPs and government line departments. It also reviews project progress and make recommendations to improve the effectiveness and efficiency of project implementation.

GP level

9. Responsibility for identification of investment priorities, their implementation (including financial management and procurement responsibility), and operation and maintenance of GPWDPs would be decentralized to GPs. The water and watershed management committee (WWMC) of the GP is the statutory body that would be responsible for GPWDP implementation. The WWMC would be chaired by the Gram Pradhan (elected Head of GP).

GPs would receive subproject funds allocated for GPWDPs including treatment of watersheds, village development and income-generation activities. On the basis of the budget allocated, each GP would initiate a particular planning process assisted by its respective MDT to prepare individual RVCs proposals at the revenue village/hamlet level. These RVC proposals would subsequently be submitted to the WWMC for consolidation into a GPWDP. Special attention would be given during the social mobilization process to ensure adequate representation of all settlement units (revenue villages or hamlets) in the institutional arrangements made at the GP level. GPWDPs, after endorsement by the Gram Sabha, would be technically appraised by the DPDs aspects, after which funds would be transferred to the GPs for implementation. The GPs' primary responsibility would be to ensure that GPWDP planning and execution is inclusive, transparent and efficient.

10. **Gram Panchayat (GP)** comprising Gram Pradhan and Ward Members would: (a) sign subproject financing agreements with WMD for GPWDP implementation; (b) assist FNGOs in mobilizing village communities; (c) open the subproject bank account and judiciously manage subproject funds as per the GPWDP; (d) convene Gram Sabha meetings; (e) ensure complete transparency and accountability by all GP-level institutions and individuals involved in GPWDP implementation; (f) ensure beneficiary contributions, both in cash or in-kind; and (g) conduct participatory monitoring, evaluation and grievance redress.

11. **Water and Watershed Management Committees (WWMC)** a GP Committee under the chairmanship of Gram Pradhan, would: (a) assist FNGOs in mobilization of villagers; (b) lead the process of planning, preparing and implementing GPWDPs including financial management and procurement responsibilities; (c) submit monthly and annual financial reports to WMD; and (d) ensure that the GP annual accounts are audited on a timely basis and submitted to the WMD, as detailed in the Project Operational Manual.

12. **Revenue Village Committees (RVCs)** are constituted by the WWMC under the chairmanship of Gram Pradhan/Ward Member and drawn from a revenue village (i.e., adult voters). RVCs would have at least 50% women voter participation. The RVCs would: (a) lead the process of preparing RVC Proposals for their inclusion in GPWDPs; (b) ensure equity for all, especially the disadvantaged groups; and (c) collect beneficiary contributions through cash or in kind.

13. **Women (Mahila) Aam Sabha (WAS)** consists of all adult women voters of the GP and would: (a) ensure incorporation of women-level proposals into the GPWDP; and (b) participate in the process of participatory monitoring and evaluation.

14. **Van Panchayat (VP)**, comprising Sarpanch and VP members, would be responsible for: (a) preparation of inter-GP space plans; (b) carry out all forest plantation-related activities under the GPWDP; and (c) coordinate with the concerned Forest Department office for technical and management issues.

15. **Farmer Interest Groups (FIGs) and Farmers Federations (FFs)** would work with the project MDTs and Agribusiness Support Organizations to serve technical and marketing support to improve their market linkages.

16. **Livelihood Groups** consisting of Vulnerable Groups (marginal landholders, landless women, and transhumance) that would not directly benefit from land-based activities financed under the project, would organize for entrepreneurial opportunities in the project area.

17. **Women Motivators** at the village level would: (a) mobilize women to ensure their voice and choice is included in the project through Mahila Aam Sabha; and (b) facilitate formation of livelihood groups of vulnerable households and extend all possible support to them.

18. **Women Ward Members** would be nominated by the GP to act as co-signatory along with Gram Pradhan for operating a dedicated account for GPWDP.

19. **Accounts Assistants** would be deployed by GPs and trained by WMD to: (a) maintain all accounts books related to the GPWDP; (b) make all vouchers and prepare checks; (c) collect dues from beneficiaries and issue receipts; (d) ensure that records are maintained for all contributions from beneficiaries; (e) prepare all financial documentation and reports as required by the Project Operational Manual; and (f) assist RVCs and other beneficiaries to prepare accounts related to the GPWDP activities.

B. Financial Management, Disbursements and Procurement

Financial Management

20. **Budgeting:** The proposed IDA funds would flow through budget head 2401-800-97-02 UDWDP, which has been created and amounts have been allocated by the GoUK.

21. **Fund flow:** The existing fund flow system would be followed for the proposed project. The GoUK would provide the budget allocation to WMD which would issue the CCL limits to the DPD offices for works. The DPD would further release money to GPs by checks drawn on treasury and GPs would maintain this amount in a separate bank account. In the case of staff and operational costs, these would be incurred only at the WMD, Project Director and DPD level through state treasury. In the case of PNGO districts, the payments to GPs would be made from WMD directly. PNGOs would be paid for their services based on the bills and as per their contract.

22. A subproject agreement would be signed by the DPD with the GPs for the watershed activities to be carried out under a GPWDP. An initial advance, equivalent to 10% of the annual requirements of funds, would be made by the DPD office to the GP and replenished on the basis of submission of monthly financial reports. The GPs, assisted by the WWMC, would handle all subproject funds, including funds for vulnerable groups, through a dedicated bank account. As per the state bylaws, the bank accounts would be operated jointly by Gram Pradhan and one woman ward member. While WMD would pay 10% of the Annual Work Plan as an advance to the GP, the amount would be claimed from the Bank after expenditures are completed.

23. **FM Staffing and capacity building:** The WMD would be headed by a Chief Finance Officer, supported by a Commerce Graduate, assistant accounts officer and other support staff.

Divisions would require one accountant (i.e., Commerce Graduate) and assistant accountants based on the envisaged workload while one commerce graduate accountant would be appointed at the unit level. The organizational structure and the number of persons would be outlined in the FM manual. Apart from the posts filled by the government, the project would hire commerce graduates trained in Tally for the divisions and Head Office to maintain the project accounting system. In the case of the GPs, an Account Assistant would be employed. These staff would be employed within six months after Credit Effectiveness. Clear job descriptions have been documented in the Project FM Manual.

24. In each GP, the GP Secretary would be responsible for the preparation of accounts, minutes of meetings and subsidiary records of the GP. An Accounts Assistant, appointed for the project, would assist the GP Secretary. The OM and GP Accounting Manual would detail clear roles and responsibilities for the Accounts Assistants. While the GP Secretary would be responsible for the overall financial functions, the Accounts Assistant would maintain the project-specific records.

25. In-house training programs would be arranged by the WMD at project initiation and repeated as and when required. The GP Accounts Assistants would play a pivotal role in maintaining the project books of accounts and providing financial reports. The MDTs of the WMD would identify suitable candidates for this position and provide a short list to the GP to make its final selection. A standard package of training for Accounts Assistants on accounting procedures, record keeping and reporting would be developed to provide a minimum level of training to all Accounts Assistants. All Accounts Assistants would be required to undergo the training which would be provided on an ongoing basis with regular access to resource persons. The GP Accounting Manual would be provided to each of the Accounts Assistants along with pre-printed books and records as part of the training package. A suitable training institution would be engaged to provide the training, under Terms of Reference agreed with the Bank. In addition, training on the accounting and FM arrangements for the project would also be provided to the GP functionaries and the GP Secretaries.

26. **Accounting System:** The budget head wise accounts would be maintained in the State Treasury. The overall accounting for releases/expenditure would be carried out by the State Treasury (for most of the heads except GP Grant in Aid details). Details of the component wise expenditures and advances given to GP would be maintained by the WMD and divisions. These offices would maintain a separate cash book to record project expenditures. Monthly reconciliation of the expenditures with the GoUK treasury would be carried out by the project offices.

27. WMD would maintain detailed project accounts in “Tally”. As Tally accounting is being implemented for IFAD projects, the Bank project would also benefit in adopting the same software. The accounting system should be implemented within three months of Credit Effectiveness. The accounting system would be implemented in WMD, Divisions and Units as required. In the case of PNGOs, the same accounting system would be followed. In the case of GPs, books of accounts would be maintained manually and reports would be sent to the divisions for consolidation and reporting to the Bank. GP accounting would be handled by the GP Accounts Assistant who would maintain the GP account books.

28. **FM Manual:** WMD has submitted the FM manuals (WMD and GP manuals) which have been reviewed and accepted by the Bank.

29. **Report-based disbursement:** Interim unaudited financial reports (IUFs) would be used for reporting as well as financial monitoring and would be submitted to the Bank on a quarterly basis within 45 days from the end of each calendar quarter. The IUFs would disclose receipt and utilization of project funds (both Bank share and counterpart contribution). IUFs would be based on project accounts and would reflect the actual expenditure for the project components. Any advances given by the project would be separately shown in the IUFs. IUFs would provide contract wise payments and project progress in physical and financial terms. The IUF format has been agreed with WMD and would be finalized during Credit Negotiations. In terms of disbursement, WMD would first spend from the budget and then claim reimbursement from the Bank. All expenditures reported in the IUFs would be subject to annual project audit.

30. **External Audit:** The annual external audit of the Project Financial Statements (PFS) would be carried out by the Uttarakhand office of the Comptroller and Auditor General of India (CAG). The PFS, in an agreed format, would be subject to audit by the CAG under terms of reference already agreed between the Bank and CAG. All supporting records and documents under the project would be subject to the external audit. The PFS would summarize all receipts and expenditures reported in the IUFs. The annual audit report would consist of: (a) annual audited PFS; (b) the audit opinion; and (c) a management letter highlighting weaknesses, if any, and identifying areas for improvement. The annual project audit report and accounts would be submitted to the Bank within six months after the end of each fiscal year (i.e., by September 30). Any difference between the expenditures reported in the IUFs and those reported in the annual project audit reports would be analyzed and those expenditures which are confirmed by the Bank to be ineligible for funding would be adjusted in the subsequent disbursements. The following audit reports would be monitored:

Implementing Agency	Audit	Auditors	Due Date for Audit Submission
WMD	Project Financial Statements	CAG	September 30 (6 months after the end of each fiscal year)

31. **Internal Audit:** Internal auditing would be an integral part of the project design and would cover all activities under the project to be carried out by WMD, Divisions, PNGOs and a sample audit of the GPs. The internal audit would be carried out by a Chartered Accountancy firm. The terms of reference for the internal audit would cover a review of internal controls and contract management. The auditors would be appointed based on selection criteria agreed with the Bank, which would be finalized as a part of the FM manual. The internal auditor would be appointed within six months of Credit Effectiveness. The internal audit reports, along with the compliance, would be periodically shared with the Bank on an agreed timetable. Also, WMD would establish an audit committee to review all audit reports and follow up on the action taken.

32. **GP Audits and disclosure:** The subproject accounts of the GPs would be audited by a Chartered Accountancy firm appointed at the district level by the Divisions which would certify the GP subproject accounts annually and would highlight any issues relevant for management

action. GPs would prepare a simplified monthly financial report summarizing: (a) the sources and uses of funds, indicating the balances in cash/bank; (b) contributions in labor and materials; and (c) physical progress of works/activities. GPs would maintain a cash book as designed by the project. Subproject reports and records would be available for scrutiny by members of WWMC. The submission of the monthly financial report to DPDs would be required as a pre-condition for further fund releases. In terms of public disclosure, GPs would publicly post on the notice board in the village the receipts and expenditure from the subproject. In addition, the books/registers, vouchers and bank passbooks would be open for perusal by GP members. The social audit functions at the GP level (where a substantial part of the expenditures would take place) - as set forth in the Common Guidelines for Watershed Projects - requires the Gram Sabha to review the physical and financial implementation progress at its meetings. The Gram Sabha would also approve the annual statement of accounts and approve arrangements for collection of beneficiary contributions.

33. **Internal Control:** All financial controls applicable to routine GoUK expenditures would also apply to the expenditures under the project. All payments would be approved/ vetted in accordance with the schedule of powers in place for WMD. All project-related receipts and payments/ withdrawals would be reconciled with periodic Treasury Statements. GP advances and balances would be monitored on a quarterly basis by the audit committee and reported along with the IUFRRs. Each division should ensure that GP advances are minimized at the financial year end.

34. **Disclosure of information:** WMD would be required to disclose the following on the project website: (a) Quarterly IUFRRs; (b) Annual Project Financial Statements; (c) Annual Project Audit Report; and (d) contract details of major contracts.

35. **Action plan for FM:** The following action plan has been agreed with the Client:

Action	By whom	By when
Final IUFRR Formats	WMD	Credit Negotiations
Appointment of internal auditor	WMD	Six months after Credit Effectiveness
FM staffing	WMD	Six months after Credit Effectiveness
Computerized accounting system	WMD	Three months after Credit Effectiveness

36. **Adequacy of FM Arrangements:** For this project, there is only one implementing entity (i.e., WMD) with simplified implementation arrangements. From an FM perspective, the project is simplified and based on GoUK existing systems, except for funds managed by GPs. The FM risk rating for the project is Substantial, due to the new GPs which would be implementing most of the project activities. Overall, the FM arrangements at WMD, after taking the above-indicated steps, are considered adequate to support the use of Bank funds.

37. **Supervision:** FM supervision would entail semi-annual supervision, given the Substantial risk. In the initial year of implementation, more frequent visits would take place to ensure that the accounting system is in place and that the required output is being derived from the system. Once the system is established, desk reviews, combined with semi-annual missions, should be sufficient. In the first year, two to three weeks of FM supervision is expected.

Disbursement

38. **Disbursement Arrangements:** Disbursements would be made based on quarterly IUFs. The project would submit withdrawal applications supported by IUFs to CAA&A in DEA for onward submission to the Bank for reimbursement. The Bank would reimburse an amount equivalent to the eligible expenditures claimed by the project and as reported in the IUFs. All expenditures reported in the IUFs would be subject to confirmation/certification by the annual audit reports. Any difference between the expenditure reported in the IUFs and those reported in the annual audit reports would be analyzed and those expenditures which are confirmed by the Bank to be ineligible for funding (i.e., refundable to IDA), would be adjusted in the subsequent disbursements.

39. **Disbursement categories:** Two disbursement categories are defined which would finance: (a) goods, works and non-consulting services under Subprojects; and (b) goods, works, non-consulting services (other than under Subprojects), consultants' services, training and workshops and incremental operating costs. The overall disbursement percentage would be 80%, excluding government staff costs.

Category	Amount of the Financing Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Goods, works, non-consulting services under Subprojects	47,800,000	80%
(2) Goods, works, non-consulting services (other than under Subprojects), consultants' services, Training and Workshops and Incremental Operating Costs	31,000,000	80%
TOTAL AMOUNT	78,800,000	

40. **Retroactive financing:** The project is planning to execute certain contracts under retroactive financing. The date after which payments may be made would be June 1, 2013, but in all cases up not more than twelve months prior to Credit signing. A separate IUF would be submitted for claiming the retroactive expenses. Up to SDR7.8 million (US\$12 million equivalent) would be available under the proposed Credit for retroactive financing of activities which are: (i) included in the project description; and (ii) procured in accordance with applicable Bank procurement procedures.

Procurement

41. Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants under IBRD Loans and

IDA Credits & Grants by World Bank Borrowers" dated January 2011 (Consultant Guidelines) and the provisions stipulated in the Credit Financing Agreement. For each contract to be financed by the proposed Credit, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Recipient and the Bank project team in the Procurement Plan. The Procurement Plan would be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The following NCB provisions shall apply:

- a) Only the model bidding documents for NCB as agreed with the GoI Task Force (and as amended from time to time), shall be used for bidding.
- b) The Invitation to Bid shall be advertised in at least one widely-circulated national daily newspaper (or on a widely-used website or electronic portal with free national and international access along with an abridged version of said advertisement published in a widely-circulated national daily inter-alia giving the website/electronic portal details from which the details of the invitation to bid can be downloaded), at least 30 days prior to the deadline for the submission of bids.
- c) No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprise from any given State.
- d) Except with the prior concurrence of the Bank, there shall be no negotiation of price with the bidders, even with the lowest evaluated bidder.
- e) Extension of bid validity shall not be allowed with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank: (i) for the first request for extension if it is longer than four weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of Force Majeure and circumstance beyond the control of the Purchaser/Employer).
- f) Re-bidding shall not be carried out with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank.
- g) The system of rejecting bids outside a pre-determined margin or "bracket" of prices shall not be used in the project.
- h) Rates contracts entered into by Directorate General of Supplies and Disposal will not be acceptable as a substitute for NCB procedures unless agreed with the Bank on a case-by-case basis. Such contracts will be acceptable however for any procurement under the Shopping method.
- i) Two or three envelope system will not be used (except when using e-procurement system assessed and agreed by the Bank).

WMD level

42. **Procurement of Works:** Works procured under the project may include small construction works. These works would be mostly procured following NCB and may involve Shopping in some cases. The procurement of civil works is not likely to involve any ICB. The NCB Standard Bidding documents of the Bank, as agreed with GOI task force (and as amended from time to time), would be used for procurement of all NCB civil works.

43. **Procurement of Goods:** Goods procured under the project would include Information Technology Equipment (e.g., computers, printers, network infrastructure and servers), office equipment and furniture. Some sophisticated research equipment and some software, being proprietary in nature, would be procured by Direct Contracting; other goods and software would be procured by ICB, NCB, Shopping and or using Directorate General of Supply and Disposal rate contracts within the Shopping threshold. The NCB standard bidding documents of the Bank, as agreed with GoI task force (and as amended from time to time), would be used for procurement of all NCB Goods. For ICB/Limited International Bidding (LIB) contracts, the Bank's latest Standard Bidding Documents would be used.

44. **Selection of Consultants:** Some of the major consultancies support project implementation e.g., specialized technical training, development of internet-based information systems, an external M&E agency, hydrological monitoring agency, PNGOs and FNGOs. Short lists of consultants for services estimated to cost less than US\$800,000 or equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. The Bank's Standard Request for Proposal Document would be used as a base for all procurement of consultancy services to be procured under the Project.

45. **Training:** Training would cover study tours, workshops, training for staff, GPs etc. Appropriate training shall be carried out in accordance with the Project Implementation Plan prepared by the WMD, or by specialized training agencies, and agreed with the Bank.

Gram Panchayat level (subprojects)

46. At the community level, the GPs would procure goods, works and services under GPWDPs (subprojects) using the procedures and forms detailed in the Community Procurement Manual that has been prepared specifically for this project and agreed with the Bank. MDTs of the WMD will be the key facilitators and would provide project-related information to the GPs and the communities to facilitate planning within the framework of the project and provide technical guidance and oversight during implementation.

47. The following modalities shall be followed in selecting who will be chosen to carry out the works: (a) first preference would be for the individual landholders in whose property part (or all) of the concerned work falls; (b) if such individuals do not accept to carry out their portion of the work, or if the works fall primarily on common lands, then the GP would first explore the option of awarding the works to eligible user groups, such as RVCs, VPs, self-help groups, etc., that would be responsible for providing all the required labor and material inputs; (c) if (b) above is not possible, the GP may elect to carry out the complete work by mobilizing and providing the labor inputs, and also procuring the required materials, or by contracting out the labor to local groups or petty contractors but procuring and supplying the required materials; and (d) where such technical capacities do not exist in the previous three options and as a last option, the GPs may contract out the work to local contactors through competitive procedures (Shopping or NCB). The Community Procurement Manual contains procedures, thresholds, forms and formats for all types of procurement at the GP level.

48. **Assessment of the agencies' capacity to implement procurement:** The implementation responsibility of the proposed project lies with WMD; it would handle all procurement. At the community level, the GPs would procure goods, works and services using the procedures and forms detailed in the Community Procurement Manual. WMD has past experience in successfully carrying out procurement of goods, works and services in compliance with World Bank Guidelines and successfully implemented Gramya I, which closed in 2012. A procurement cell is created at WMD under the Project Director (Admin.), with the mandate of carrying out procurement for the project.

Procurement Risk Mitigation

49. The main procurement risks, based on the general public financial management in the country, in Uttarakhand and project areas are: (a) procurement of goods and works at the WMD level has normal fiduciary risks of transparency, fairness and capacity but would be realigned to Bank's procedure; (b) inadequate complaint monitoring system; and (c) a lack of an established system of public disclosure of information on procurement actions. The above and the other applicable deficiencies have been addressed in the Operational Risk Assessment Framework (ORAF) risk mitigation measures (see Annex 4). The overall project risk for procurement is Substantial. After mitigation measures implemented, the residual risk would be Moderate.

50. **Disclosure:** The following documents shall be disclosed on the WMD website: (a) the Procurement Plan and all subsequent updates; (b) invitations for bids for goods and works for all NCB contracts; (c) requests for expression of interest for selection/hiring of consulting services; (d) contract awards of goods and works procured following NCB procedures; (e) lists of contracts/purchase orders placed following Shopping procedure on quarterly basis; (f) short lists of consultants; (g) contract awards for all consultant services; (h) lists of contracts following Direct Contracting (DC), Consultant Qualification Selection (CQS) or Single Source Selection (SSS) on a quarterly basis; and (i) action-taken reports on the complaints received on a quarterly basis. The following details shall be sent to the Bank for publishing in the Bank's external website and United Nations Development Business (UNDB): (a) requests for expression of interest for consulting services with estimated cost more than \$300,000; (b) contract award details of all consultancy services with estimated cost more than \$300,000; and (c) lists of contracts/purchase orders placed following DC, SSS or CQS procedures on a quarterly basis. WMD would also publish on its website www.wmduk.gov.in and www.gramya.in any information required under the provisions of disclosure as specified by the Right to Information Act.

51. **Complaint Handling Mechanism:** To address procurement complaints received by the WMD, a complaint handling mechanism for the project, developed in Gramya I, has been modified and improved. On receipt of complaints, WMD would take immediate action to acknowledge the complaint and redress within a reasonable time frame as per the Project Operational Manual. All complaints would be addressed at levels higher than that of the level at which the procurement process was undertaken. Any complaint received would be forwarded to the Bank for information and the Bank would be kept informed after the complaint is redressed.

Procurement Arrangements

52. **Procurement Plan (PP):** WMD has prepared a draft Procurement Plan for project implementation which provides the basis for the procurement methods and review by the Bank. This Plan would be agreed between the Recipient and the Bank’s project team by Credit Negotiations, and made available in the project file. It would also be published on the WMD website and on the Bank’s external website.

53. **Procurement Manual:** WMD has prepared a Procurement Manual for project implementation and a Community Procurement Manual for use by GPs. The Bank has reviewed and agreed with these Manuals. No amendment to these Procurement Manuals shall be carried out without review and clearance from the Bank.

54. **Procurement Staff:** The Procurement Cell at WMD under Project Director (Admin.) would have a Procurement Committee to handle and coordinate all procurements under the project. The pre-requisite for staff to handle project procurement would be attending procurement training regarding Bank Procurement Guidelines.

55. **Methods of procurement:** The following methods of procurement shall be used for procurement under the project. It has been agreed that if a particular invitation for bid comprises several packages, lots or slices, and invited in the same invitation for bid, then the aggregate value of the whole package determines the applicable threshold amount for procurement and also for the review by the Bank.

Table 1: Procurement Methods

Category	Method of Procurement	Threshold (US\$ Equivalent)
Goods and Non-consulting services(excluding TI contracts)	ICB	>3,000,000
	LIB	wherever agreed by Bank
	NCB	Up to 3,000,000 (with NCB conditions)
	Shopping	Up to 100,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
	Framework Agreements	As per para 3.6 of Guidelines
Works	ICB	>40,000,000
	NCB	Up to 40,000,000 (with NCB conditions)
	Shopping	Up to 100,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
Consultants’ Services	CQS/LCS	Up to 300,000
	SSS	As per para 3.9-3.11 of Guidelines
	Individuals	As per Section V of Guidelines
	QCBS/QBS/FBS	for all other cases
	(i) International shortlist	>800,000
(ii) Shortlist may comprise national consultants only	Up to 800,000	

Review by the Bank

56. The Bank will undertake prior review of the following contracts:

- **Works:** All contracts greater than US\$10 million equivalent;
- **Goods:** All contracts greater than US\$1million equivalent;
- **Services (Other than consultancy):** All contracts greater than US\$1 million equivalent; and
- **Consultancy Services:** Greater than US\$500,000 equivalent for firms; and greater than US\$200,000 equivalent for individuals.

57. The first contract issued by WMD will be prior reviewed by the Bank, irrespective of value. In addition, the justifications for all contracts to be issued on LIB, single-source (>US\$30,000) or direct contracting (>US\$30,000) basis will be subject to prior review. These thresholds are for the initial 18 month period and are based on the procurement performance of the project could be modified over the course of implementation. The prior review thresholds would also be given in the Procurement Plan. The Procurement Plan would be updated at least annually and would reflect the change in prior review thresholds, if any. In addition, the Bank would conduct an annual ex-post procurement review of the procurement falling below the prior review thresholds mentioned above.

C. Environmental and Social (including safeguards)

58. Potential environmental and social impacts would arise mainly due to the biophysical and socio-economic characteristics of the project area, such as soil fragility, poverty and a high dependence of the population and livestock on the natural resource base. This has led to stressed environmental resources like land, water resources, grasslands and forests. The project considers these aspects and does not envisage any significant, irreversible impacts due to the small scale of the proposed interventions. These would result in overall positive environmental and social impacts, if planned, implemented and designed with environmentally and socially sound practices.

59. The applicable safeguard policies are as follows

- **Environmental Assessment (OP 4.01):** Watershed-related interventions may adversely impact the hydraulic and geological regime in the area, if improperly planned, designed and/or implemented. There may also be cumulative effects of several inter-related interventions. Temporary adverse impact may also be caused due to improper construction or other practices leading to long-term slope instability, changes in surface water flow, improper disposal of debris or changes in water availability.
- **Natural Habitats (OP 4.04):** The project proposes silvopastoral activities that may affect habitats or important species.
- **Pest Management (OP 4.09):** Activities to improve farming and livestock systems would require pest management for crop and livestock protection. Inappropriate application of

techniques on pest management may cause harm to the environment, including humans and livestock.

- **Physical Cultural Resources OP/BP 4.11:** While no important cultural resources have been identified in the project area, increased focus on activities to support agribusiness may lead to more construction close to settlements.
- **Indigenous Peoples (OP/BP 4.10):** The local population, including tribal and transhumant, would benefit from the project.
- **Forest (OP 4.36):** The project area is largely reserved and protected forest and activities in forest area would affect the health and quality of forests.

Management of safeguard policies

60. Environment and social safeguard policies have been addressed through the Environmental and Social Management Framework (ESMF), including strategies for the policies on Integrated Pest Management (IPM), Indigenous Peoples, Natural Habitats, Forestry and Physical Cultural Resources. The ESMF would be applied as part of the planning process at the Revenue Village level within the GP. This would determine whether location-specific action plans are needed as per the ESMF. In the case of Natural Habitats, subprojects that may result in significant conversion of natural habitats would not be eligible for sub project funding. If the conversion is minimal and potential environmental benefits may be significant, a full Environmental and Social Systems Assessment (ESSA) would be carried out to design appropriate mitigation measures. These would be incorporated into the RVC proposals and integrated into the GPWDPs. In the case of forestry, significant conversion or degradation of reserve forests would not be eligible for sub project funding. Instead, preference would be given to small-scale, community-level management approaches to maximize the forest potential while reducing poverty.

61. The ESMF for Gramya I was reviewed and updated using surveys of Gramya I villages concerning the relevance, compliance and effectiveness of the ESMF in project villages. In addition to this, stakeholder consultations were also undertaken. The ESMF for the project highlights the key feedback that emerged from these consultations.

62. The ESMF includes the ESSA as a tool for decision-making to promote environmental sustainability and equity, both of which are project outcomes. The ESMF includes criteria for screening and exclusion of subprojects that may have irreversible impacts and includes formats to carry out the ESSA during GPWDP preparation, and guidelines for mitigation of environment and social impacts with monitoring indicators that can be used at the local level by the GPs. These would help identify and consider the potential social and environmental impacts of different interventions early in the decision-making process during GPWDP preparation. Provisions have also been made to carry out location-specific ESSAs for subprojects as required. The ESMF specifies environment and social aspects to be considered, implemented and monitored by all partners during GPWDP preparation and action plans for the transhumant population. In addition, the laws and acts applicable in the State of Uttarakhand have been taken into account and referred to where appropriated. This would promote the ability of communities

to select a package of subprojects and activities that will not only minimize the negative environmental and social impacts but also enhance the positive impacts.

63. Under the ESMF, four key principles would guide pest management plan implementation, namely: (a) compliance with World Bank OP 4.09; (b) promotion of biological pesticides and reduced reliance on synthetic chemical pesticides; (c) inclusion of farmers, livestock handlers and workers involved in various pesticide operations; and (d) adoption of Integrated Plant Nutrient Management (IPNM). The aspects to be considered in the screening process are that the approach adopted must be: (a) selective against target pests; (b) safe for beneficiaries; (c) active for about four weeks; (d) weather and u/v proof; (e) without toxic residues; and (f) safe for humans and livestock. Also, the ESMF includes procedures to handle chance finds which reflects the Government of Uttarakhand's requirements in case of such finds.

64. The WMD would provide resource persons and personnel for Training of Trainers for IPM-related activities. It would also provide crop-specific IPM materials and advice on the conduct of the farmer's training at the GP level. In landscapes accustomed to pesticide use, reversal is difficult and time consuming. Therefore, training in Nutrient and Pest Management would also be built into IPM capacity building. These approaches would reduce long-term dependence of farmers on expensive pesticides and fertilizers and are therefore more sustainable. They are also more appropriate for poor marginal farmers who are the target group for this project. Exposure visits of farmers to Nutrient and Pest Management practices would also be used to disseminate the viability of these approaches to farmers and village organizations.

65. A Transhumant Action Plan (TAP) has been prepared and would: (a) sensitize all project partners about the cultural uniqueness of transhumance; (b) ensure informed participation of the indigenous people in the project activities; (c) develop plans which give due consideration to the options preferred by them; (d) ensure that all investments are culturally compatible with their lifestyles; and (e) mainstream their participation to enable them to access a wide range of services under the project. The Client has disclosed the TAP on its website www.wmduk.gov.in and www.gramya.in and the Bank has disclosed the TAP in the Infoshop.

Grievance Redress Mechanism

66. The project places special emphasis on transparency, accountability, openness and disclosure of information to the community. In keeping with these principles, widespread disclosure of information through wall writings, paintings, awareness generation campaigns, radio programs, publications, village-level workshops, and *Samvad* workshops will be carried out. In addition, the websites www.wmduk.gov.in and www.gramya.in have been developed for information dissemination regarding the project. The dedicated project website www.gramya.in would be updated with the monthly physical and financial status of the project.

67. A citizen charter for WMD has been prepared and as per the Right to Information Act, the Public Information Officers at State, Division, Unit and GP levels have been designated and information displayed. At the district level, information regarding the areas/ GPs selected under project will be displayed.

68. In keeping with the guiding principles of transparency, accountability and openness, a grievance redress mechanism for the proposed project has been established and detailed in the Project Operational Manual. Since the GP would play a key role in project implementation, grievance redress mechanisms both within and outside the GP will be adopted. Administrative and legal mechanisms for grievance redress are available for any citizen, institutions, group of individuals representing project area or outside.

D. Monitoring and Evaluation (M&E)

69. The project M&E system would: (a) provide a clear picture of the project, showing the logical link between inputs, activities, outputs, and the sequence of outcomes; (b) outline an institutional/ governance structure for M&E and the roles and responsibilities of stakeholders involved; (c) describe a strategy to track progress, measure outcomes, support the evaluation work, and enable continuous learning and improvement; and (d) provide information regarding what the project aims to achieve, identifies the critical processes and indicators, and how it would measure and report on results.

70. The different levels of monitoring are as follows:

- **Internal Monitoring:** By the WMD staff, through MIS/GIS and field visits.
- **External Monitoring:** Baseline Survey, concurrent monitoring, mid-term review and final impact evaluation by external M&E consultant.
- **Social Audit:** PM&E at the GP level by the Stakeholders.
- **Environmental and Social Safeguard Monitoring:** Integrated with the development and implementation of the GPWDPs.
- **Evidence-based monitoring:** Short studies and consultancies on various aspects of the project by the proposed Centre of Excellence for Watershed Management by engaging external consultants and organizations.
- **Hydrological monitoring:** Hydrological assessment and monitoring of identified water sources in the project areas where comprehensive treatment would be undertaken.

71. **Management Information Systems (MIS):** Input-output and results monitoring would be supported by a web-enabled computerized MIS which would be an integral part of the M&E system, wherever necessary integrated into the overall WMD MIS systems. Support in this area would cover: (a) initial assessment of management information requirements and potential for ICT automation; (b) software development; (c) customization; (d) field testing and system rollout; and (e) sustained technical support for maintenance, including further adaptation and refinement.

72. **Results Monitoring:** The project Results Framework identifies the key outcome and results indicators that are to be monitored and evaluated. The Results indicators for each of the four project components are included in Annex 1. Impact Evaluation by external M&E would

establish the net contribution of the project to natural resources efficiency, productivity of rainfed agriculture, sustainability of water sources, sustainable livelihoods of the targeted families “before” and “after” the project and/or “with” and “without” the project. As necessitated by the nature of the project outcomes and impacts, an appropriate mix of quantitative and qualitative methods would be adopted for the evaluation. This would be especially important to identify attribution. The indicators in the Results Framework would be central to the assessments and therefore guide development of methods, tools and analysis protocols.

73. **Institutional Arrangements:** The M&E responsibilities would be distributed across all the project units and staff. Primary responsibilities at each level would rest with M&E specialists, namely: (a) Additional Director M&E at the state level; and (b) Regional Project Director and Deputy Project Director at the regional and divisional levels, respectively. Besides full-time staff, WMD would hire the services of specialized agencies to undertake the following activities: (a) design, development, operation and maintenance of project MIS; (b) capacity building in M&E in general, and process monitoring in particular; (c) results monitoring and sample-based validation of findings of concurrent monitoring; (d) design and piloting of participatory M&E tools for institutions, and PME training; (e) thematic studies; and (f) baseline, mid-term and end-of-project evaluation studies.

E. Role of Partners

74. Based on the Gramya I experience, the proposed Gramya II would recruit three types of NGOs and would seek technical support from national institutes and universities.

75. **Field NGOs (FNGOs):** The community mobilizers would be provided by FNGOs recruited by the CPD office on contract basis. However, the contracting arrangements would specify that the FNGO would remain the employer of the Community Mobilizer and, therefore, would be required to provide ongoing support, training, career development opportunities and other benefits (e.g. statutory leave, etc.). At the division level, the community mobilization would be under the administrative control of the DPD and would have the same status and decision-making authority as other members of the unit-level MDT (referred to as technical staff). FNGOs would be responsible for the following: (a) mobilize village communities and provide complete information on the project; (b) facilitate Participatory Rural Assessments with MDTs at the Revenue Village and GP levels, with a focus on gender sensitization and social equity as per the ESMF; (c) assist GPs to plan and implement the GPWDP; (d) facilitate conducting of women *Aam Sabha* and formation of livelihood enhancing vulnerable groups; (e) carry out PME; and (f) ensure process monitoring of project interventions and timely reporting to WMD.

76. The DPD office would technically appraise the GPWDPs using the guidelines provided in the Project Operational Manual. After technical appraisal, the DPDs will convey agreement on the proposed GPWDP or propose technical alternatives to the GP to incorporate, including compliance with the negative list of subprojects in the Project Operational Manual and with the ESMF.

77. **Partner NGOs (PNGOs):** In two divisions of the Project area, PNGOs would be recruited by WMD to act as DPDs and MDTs. Their functions will be the same as those for the DPD and MDT. However, they would not be responsible for transferring funds to GP accounts after approval of GPWDPs. This responsibility would remain with the WMD.

78. **Agribusiness Support Organizations:** At the division level, Agribusiness Support Organizations would be contracted by WMD to provide technical support for agribusiness activities to FIGs and FFs in the project area. They would: (a) facilitate formation of FIGs and FFs in the project area; (b) provide marketing support for agribusiness activities; (c) ensure compliance with ESMF in all agribusiness interventions; and (d) ensure process monitoring of agribusiness interventions and timely reporting to WMD.

79. **National institutes and universities:** The project would partner with various state-level and national institutes and universities for technical support in MIS, rainfed area development, etc., e.g., Indian Institute of Technology (IIT), National Institute of Hydrology, and G B Pant University of Agriculture & Technology.

Annex 4: Operational Risk Assessment Framework (ORAF)
INDIA: Uttarakhand Decentralized Watershed Development II Project

1. Project Stakeholder Risks	Rating	Low		
Description: The GoUK is committed to agriculture and rural development in the hills through participatory watershed development. The approach (i.e., watershed development, including rainfed area development) is also supported by the GoI.	Risk Management: GoUK shows a high level of commitment and ownership for the proposed project. GoUK has developed a watershed development strategic plan (2009-27). The proposed Gramya II is to support this strategic plan by building on the lessons learned from the Gramya I and strengthening knowledge management and dissemination at different levels, in particular, at the state level.			
Resp: GoUK/WMD		Stage: Impl.	Due Date : On-going	Status: On-going
2. Implementing Agency Risks (including fiduciary)				
2.1 Capacity	Rating:	Moderate		
<p>Description: Gramya II will also be implemented by the Watershed Management Directorate (WMD) under the State Watershed Department. WMD is a multi-sectoral body participated by departments of Forestry, Rural Development, Agriculture, and Animal Husbandry.</p> <p>Project staffing is a potential risk, which could delay the project implementation. During the Gramya I implementation, turnover of the Chief Project Director was frequent, which may happen in the proposed Gramya II. In addition, there can be a delay in deputation and staffing in remote districts.</p> <p>The proposed Gramya II would engage about 509 new GPs in 20 developmental blocks. As was the case in the Gramya I, their capacity in project management, in particular, financial management and procurement, is expected to be weak.</p>	<p>Risk Management: WMD implemented the Gramya I as well as the predecessor multi-state project, the Integrated Watershed Development Project. It has built substantial capacity in managing these Bank-financed projects, including FM, procurement, environmental and social safeguards, and M&E. For the last 12 months of the Gramya I implementation, IP was rated “highly satisfactory”. With high commitment and ownership by the State Government, WMD is expected to maintain high level of performance during the Gramya II implementation.</p> <p>As done in the previous phase, WMD will contract local, mostly division-based NGOs, which will support project implementation, in particular, GP level activities and agribusiness development. The use of these NGOs would reduce deputations and facilitate sustainability at division level. Moreover, WMD has retained the staffs who were involved in implementation of the GEF-financed activities (closed in August, 2013). They were the project backbone in piloting the micro-watershed level interventions and will kick start the Gramya II implementation.</p> <p>In facilitating comprehensive watershed treatment at micro-watershed level, the new target GPs are contiguous to those targeted by the Gramya I. During the Gramya I, the project developed a comprehensive training program for GPs, including project management, fiduciary and safeguard compliances, and social accountability. Under Gramya II, similar training would be delivered to target GPs, while the facilitating NGOs will identify accounting assistants to support financial management, including audits. In addition, the project would arrange exposure visits for the new GPs to understand the project’s transparency and social accountability mechanisms, such as communication outreach and participatory monitoring and evaluation (PME). In the Gramya I, PME enhanced grievance redress and social audit, in particular, among women and other vulnerable group.</p>			
Resp: WMD		Stage: Prep.	Due Date : Not yet due	Status: Prep.
2.2 Governance	Rating:	Moderate		
Description: Most of the project activities are implemented at GP and VP level, strengthening their capacity in project management and governance.	Risk Management: The Gramya I delivered a targeted training program for GP and VP to strengthen their capacity and implemented key social accountability tools, such as participatory monitoring and evaluation (PME), social audit, and grievance redress mechanism. The Bank team observed that institutional capacity at the target GPs was strengthened considerably in planning, implementation, monitoring, financial management, and women’s participation. 50 percent of GP elected posts were occupied by women in the Gramya I GPs. The proposed Gramya II will continue to deliver the training program and implement the social accountability tools in			

	new GPs.			
	The Gramya I implemented social accountability mechanisms at GP level, such as PME, social audit, and grievance redress mechanism. Four PME exercises were undertaken by WMD, which was facilitated by NGOs. The PME became a state model and was replicated by other project in Uttarakhand, such as the Bank-financed Swajal (sanitation project) and GoI-supported MGNREGA. As done in the previous phase, the Gramya II will also comply RTI by posting information officers at state and division levels.			
	Resp: WMD	Stage: Prep.	Due Date : Not yet due	Status: Prep.
3 Project Risks				
3.1 Design	Rating:	Low		
Description: The proposed Gramya II will have five components: (a) social mobilization and participatory watershed planning, (b) watershed treatment and rainfed area development, (c) enhancing livelihood opportunities, (d) project management, and (e) contingent emergency response. The emergency response component will be a new addition, which would support GoUK capacity building to respond to emergencies, such as flash floods in June 2013.	Risk Management: The proposed Gramya II will build on the lessons learned from the Gramya I. It will enhance natural resource management by treating micro-watershed from ridge to valley, develop rainfed areas by using watershed development tools, and strengthen agribusiness development. These activities will be planned and implemented in a participatory manner. Because this is a repeater project, the risk is minimal in implementing these activities in the new GPs. However, the Gramya II also includes the contingent emergency response component, which may support the target GPs in restoring the project investments. If GoUK is to use this provision, there would be a risk of delay in allocating funds in this component, which would be mitigated by the Bank task team's handholding support in defining emergencies and identifying eligible activities..			
	Resp: WMD	Stage: Prep.	Due Date : Not yet due	Status: Prep.
3.2 Social & Environmental	Rating:	Low		
Description: The proposed project is a category B project. Environmental assessment, natural habitats, pest management, forests, physical cultural resources, and indigenous peoples have been triggered. These are unchanged from the previous phase, except for the physical cultural resources to ensure follow up of chance find. Lessons learned from the phase one has been incorporated in the ESMF.	Risk Management: The Gramya II ESMF builds on the framework of the previous phase. There was a high level of awareness on the ESMF in the previous phase, and all GPWDPs complied with the ESMF. In the Gramya II ESMF, the major changes include (a) follow-up procedure for chance find in physical cultural resources, (b) a structured reporting system for implementing mitigation/management measures for each type of activity and (c) reinforcement of a grievance redress mechanism.			
	The proposed project will continue to be inclusive of vulnerable groups, such as women, landless, SC, and ST (including transhumant) to ensure their participation in GPWDP development. The project will also support income generation activities, including increased labor availability in constructing water harvest structures. The transhumant action plan has been updated, which would enhance monitoring and sustainable livestock and health service provision. The Gramya II will also continue enhancing social accountability through the participatory monitoring and evaluation (PME).			
	Resp: WMD	Stage: Prep.	Due Date : Not yet due	Status: Prep.
3.3 Program & Donor	Rating:	Moderate		
Description: In addition to the proposed Gramya II, the State Government has two watershed development projects: GoI-financed IWMP and IFAD financed project.	Risk Management: Both IWMP and IFAD project are also implemented by WMD. The Gramya II developed a capacity development/knowledge management plan, which includes the establishment of the centers of excellence in watershed development at state and division levels. The centers will be the information hub on natural resource management and alternative livelihoods development by providing various training to community members. The Gramya II will reach out to IWMP and IFAD project staff and beneficiaries through these centers.			
	Resp: WMD	Stage: Prep.	Due Date : Not yet due	Status: Prep.

3.4 Delivery Monitoring & Sustainability	Rating:			Moderate			
<p>Description: WMD developed a comprehensive MIS during the implementation of the previous phase and also used a participatory tool, such as participatory monitoring and evaluation (PME). The MIS will further be enhanced during the Gramya II implementation.</p> <p>The proposed Gramya II is to enhance sustainability in natural resource conservation, rainfed agriculture, and agribusiness by further strengthening local institutions, including target GPs, VPs, water user groups, FIGs, and FFs.</p>	<p>Risk Management: The MIS will be enhanced through real time data collection. Moreover, the project will install hydrological monitoring stations at micro-watershed level, and the data will be captured by the improved MIS. These tools are expected to improve project outcome monitoring and would facilitate the use of data in decision making by the project management.</p> <p>The Gramya II will work in the target GPs under the previous phase to provide comprehensive watershed development at micro-watershed level, including inter-GP areas and reserve forests. The project will also enhance the farmer federations formed by the previous project by building their capacity and facilitating market linkages. NGO district support agencies (DSAs) will continue to provide support to these federations. It will build capacity of local institutions in managing and sustaining the project investments through training and knowledge management activities initiated by the center of excellence in watershed development.</p> <p>As done in the previous project, the project will provide a number of extension and technical support in agriculture, horticulture, and livestock sectors. These supports will be delivered in collaboration with relevant state departments, which will ensure service delivery to the target farmers beyond the project life.</p>						
Resp: WMD		Stage: Prep.		Due Date : Not yet due		Status: Prep.	
Resp:		Stage:		Due Date :		Status:	
4. Overall Risk Following Review							
4.1. Preparation Risk Rating: Moderate			4.2. Implementation Risk Rating: Moderate				
<p>Comments: The proposed project would build on and strengthen the watershed development model developed by the previous phase by consolidating watershed treatment and natural resource management at micro-watershed level, agribusiness development and alternative livelihoods, and knowledge management. The implementation agency, WMD, has good track record of the project management.</p>			<p>Comments: Because WMD also implements IWMP and IFAD-financed watershed project in Uttarakhand, it is well-positioned to facilitate knowledge dissemination at the state level. However, it is not yet clear how the lessons learned at the state-level project could contribute to the proposed National Watershed Development Project. The Bank will ensure consistency and synergy between the two.</p> <p>There also is a slight risk in implementing the new contingent emergency response component, if GoUK is to allocate funds in this component.</p> <p>There also is a risk of sustainability in the agribusiness activities, in particular, among new farmer federations to be formed during the Gramya II implementation. The proposed project is to stabilize the farmer federations formed during the previous phase by establishing an agribusiness support model, which would help the new federations in contiguous GPs through trickling effects.</p>				

Annex 5: Implementation Support Plan

INDIA: Uttarakhand Decentralized Watershed Development II Project

Strategy and Approach for Implementation Support

1. The proposed Gramya II is a multi-sectoral project and would require implementation support in the following technical or thematic areas: natural resource management, irrigation, agriculture, horticulture, livestock, forestry, environment (e.g., hydrology, climate change, and safeguards), social development (i.e., Community Driven Development, institutional development, gender, vulnerable groups, social accountability, and safeguards), agribusiness/value chain development, M&E (including MIS), FM, and procurement.

2. Regular, biannual implementation support would be envisaged. The Bank implementation support team would have the appropriate skill mix in the above-referenced areas and provide the Client with national, regional and international good practices in watershed treatment, natural resource conservation, rainfed agriculture and agribusiness development. The day-to-day implementation support would mainly be provided by the Bank staff based in the India Country Office and local consultants, while additional technical and operational backstopping will be provided by staff based in Headquarters or in the region. This has proven effective during the Gramya I implementation. Support from FAO staff is also expected under the World Bank and FAO Cooperation Program (FAO/CP), mostly during the regular implementation support visits.

Implementation Support Plan

<i>Time</i>	<i>Focus</i>	<i>Skills Needed</i>	<i>Resource Estimate</i>	<i>Partner Role</i>
PY 1-2	Mobilization, watershed treatment	Social and institution development, natural resource management	See below	
PY 3-5	Watershed treatment, rainfed agriculture development, agribusiness, GP and VP capacity building, knowledge management	Natural resource management, agriculture, horticulture, livestock, agribusiness, environment, institution development	See below	FAO/CP, ILRI
PY 6-7	Consolidation, sustainability	Natural resource management, agriculture, horticulture, livestock, agribusiness, environment, institution development	See below	FAO/CP, ILRI

Skills Mix Required

Skills Needed	# Staff Weeks/FY	# Trips/FY	Comments
Task Team Leader	8	3	PY 1-7
Agriculture, horticulture, irrigation	4	2	PY 1-7
Livestock	4	2	PY 1-7
Agribusiness and value chain development	4	2	PY 1-7

Skills Needed	# Staff Weeks/FY	# Trips/FY	Comments
Natural resource management, forestry	4	2	PY 1-7
Social, M&E	4	2	PY 1-7
Environment	4	2	PY 1-7
MIS	2	2	PY 1-7
FM	2	2	PY 1-7
Procurement	2	2	PY 1-7
Economist	4	2	PY 1-7

Partners

<i>Name</i>	<i>Institution/Country</i>	<i>Role</i>
TBI	FAO	Technical support in agriculture, horticulture, agribusiness
TBI	ILRI	Livestock

Annex 6: Economic and Financial Analysis

INDIA: Uttarakhand Decentralized Watershed Development II Project

1. **Project Costs:** Gramya II targets comprehensive development of watershed-based natural resources to sustainably increase their efficiency and to increase the income of about 55,600 rural families in 1,066 project villages.² Total project cost, including contingencies, is estimated at Rs 10,198 M (US\$170 million).

- **Component 1 - Social Mobilization and Participatory Watershed Planning** - would ensure community-led participatory watershed planning, implementation and maintenance functions in 509 targeted GPs covering 82 microwatersheds and accounts for 18% of total project costs.
- **Component 2 - Watershed Treatment and Rainfed Area Development** – would integrate arable and non-arable land development with a ridge-to-valley comprehensive approach by the communities to conserve and develop the productive potential of natural resources in the project area. Proposed interventions will cover: (i) watershed treatment and source sustainability investments for 218,787 ha of non-arable lands including inter-GP areas; (ii) rainfed agriculture development investments for arable lands (45,050 ha) to conserve soil moisture and enhance rainfed crop productivity in 37,157 ha (net); harvest and recycle rainwater runoff to expand irrigation coverage and enhance productivity of high value crops in 7893 ha (Net), and (iii) ensure localized fodder production as a part of moisture conservation package to support cross bred cattle and increase milk productivity for 47,440 households, all at a projected investment cost of 53% of total project costs.
- **Component 3 - Enhancing Livelihood Opportunities** - would ensure market access and better prices for the high-value vegetable producers (20,816 farm families) in 1,066 project villages and supporting individual and group-based income generating activities for the targeted 13,420 vulnerable households in the project area. The component would account for 11% of the project costs.

2. **Project Area:** The total geographic area of the project, spread over 82 microwatersheds, is 263,837 ha covering 509 GPs and 1,066 villages in eight mid Himalayan districts located between 700 m and 2700 m above mean sea level. Non-arable land accounts for 83%, and arable lands cover only 17% of the area, supporting 55,600 households in the project area with a population of 263,979. Only 10% of the farmers have access to irrigation and the remaining 90% depend on rainfed agriculture. Some 78% of the project farmers are marginal farmers (< 1 ha), of which two-thirds have less than 0.5 ha.

3. **Project Benefits:** The project targets to increase the efficiency of natural resource use and productivity of rainfed agriculture. Realizing resource conservation outcomes and improved efficiency in its use requires collective community participation in planning, management and maintenance, which provides the rationale for public sector provision in this project as no other

² Baseline Survey, Gramya II, Watershed Management Directorate, Uttarakhand, Dehradun

alternative is considered possible to deal with these unique nature of degraded natural resources to be managed by 59,300 HHs, through 509 GPs, and the associated externalities. The Gramya II design is based on the earlier Bank-funded Gramya I and SLEM project experiences in the State of Uttarakhand focusing on decentralized community-led participatory watershed development and a comprehensive ridge-to-valley prioritized approach covering inter-GP areas. The World Bank brings global practices into community-driven development and state-of-the-art technologies for hydrological monitoring of the targeted project watersheds which remains weak within the State. Major project outcomes linked to the proposed project interventions are given in the Results Framework (Annex 1) and include the following, which will have positive impact on Uttarakhand's economic development:

- Improved watershed-based resource conservation and ecological functions through: (a) reduced runoff and soil erosion from 218,787 ha of non-arable lands; (b) rejuvenated traditional natural water sources in 1,530 sites; and (c) improved carbon storage;
- Increased production of fuel, fodder and small timber from 21,734 ha of plantations;
- Increased production of cereals, pulses and vegetables from 37,157 ha of arable rainfed lands (net) and 7,893 ha of arable irrigated lands (net);
- Increased production of green fodder and milk for 47,440 rural families;
- Increased profit margin for 14,571 farm families due to value chain improvement;
- Increased income for 13,420 vulnerable families; and
- Increased on-farm employment for 5,724 persons to benefit 10% of the landless households.

4. **Efficient and Inclusive Growth:** Balancing the project investments between non-arable and arable lands with resource conservation-centered efficient production management would: (i) conserve soil and water, improve biomass production from non-arable lands, increase and stabilize rainfed crop yields in arable rainfed farming, increase irrigation coverage and productivity of high value crops in arable irrigated farming, increase producer price realization, enhance livestock productivity, and increase household incomes (including rainfed and vulnerable) from multiple sources.

5. **Database:** The data for the economic and financial analyses are compiled from the Gramya I, including GEF-financed SLEM project documents including in-house case studies, baseline reports and impact assessment reports. The impact assessment studies covered 1,287 treatment sample households from 76 project GPs and 400 control sample households from 21 non-project GPs.³ Projections for Gramya II are based on this available evidence. To quantify

³ Final Impact Evaluation of Gramya I, Watershed Management Directorate, Government of Uttarakhand, March 2012, and Final Impact Evaluation of GEF-SLEM Project of Uttarakhand, Watershed Management Directorate, August, 2013.

the water supply and watershed service benefits, published reference documents and similar project experiences from elsewhere in India and other countries are used.

Watershed Treatment and Source Sustainability

6. *Non-arable lands*, covering 83% of the project area would be treated with resource conservation measures, including the inter-GP areas accounting for 44% of the project area, which would ensure a prioritized ridge-to-valley approach as compared to Gramya I. About 15% of the project's total microwatershed area is categorized as moderately erodible (E-1) and 85% as medium to highly erodible (E-2 and E-3, respectively). Annual soil loss ranges from 11 t/ha (moderate) to 65 t/ha (high). About 1,530 traditional natural water sources are unsustainable, of which 50% are completely dried up. Project interventions are designed to reduce overall sedimentation and runoff losses and to ensure source sustainability by rejuvenating all the affected traditional natural water sources. Enhanced biomass production from the non-arable lands will increase timber, fuel and fodder production.

7. Forest ecosystem services are valued based on the study of Himachal Pradesh (HP) state⁴ by converting them to constant 2013 prices. Annual net benefits of forest ecosystem services is estimated at Rs 82,100 per ha, contributed by watershed services, carbon storage, biomass production and ecotourism. Watershed services, including the value for natural resource conservation and hydrological services, accounted for nearly half of the value of forest ecosystem services, followed by carbon storage, which accounted for 28% (Fig. 1). Biomass production, including fuel, fodder, timber and non-timber forest products, is underestimated

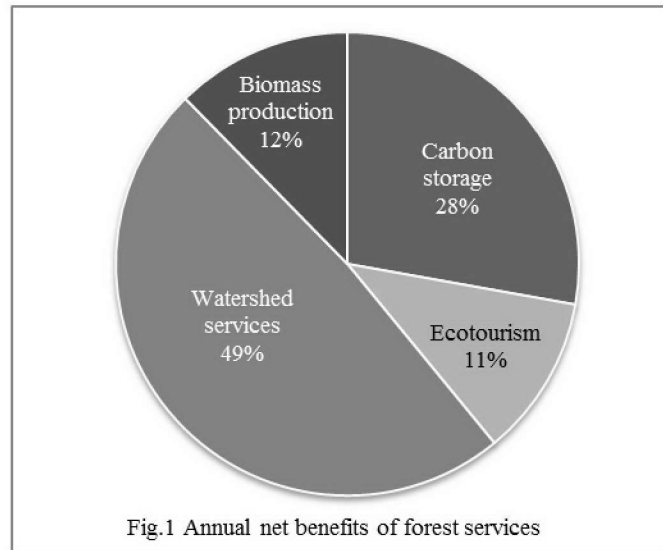


Fig.1 Annual net benefits of forest services

since the study considered only unprotected forest areas. For this analysis, only watershed services and carbon storage are valued and included in the project benefits. Biomass production (e.g., fodder, fuel and small timber) values are estimated separately and included under afforestation benefits to avoid double counting. Forest cover in Gramya II project districts⁵ are classified as very dense (15%), moderately dense (55%) and open forests (30%). Using the HP study⁶ and forest cover types in Gramya II project areas, annual net benefits from watershed services and carbon storage for the Gramya II project area are assessed at Rs 46,421 per ha in constant 2013 prices at full development. The incremental area to be covered under afforestation, silvipasture and fuelwood plantations is projected at 21,734 ha based on Gramya I

⁴ Report of the Expert Committee on Net Present Value, Constituted by IEG, Delhi as mandated by the Supreme Court of India, 2005.

⁵ Based on the satellite imageries, done by Forest Survey of India, 2009 (Ref: Uttarakhand Forest Statistics, 2011-12, Forest Department, Uttarakhand, 2012).

⁶ HP study moderated the value of watershed services to 80% for very dense and moderate dense forest cover types and 60% for open forests.

experiences. Gramya I recorded a 45% survival rate⁷ in the plantations, while Gramya II assumes a 50% survival rate for the plantations. Based on these conservative assumptions, annual net financial benefits from watershed services and carbon storage are estimated at Rs 504 M per year, at full development.

8. **Afforestation:** As a part of watershed treatment and source sustainability, about 21,734 ha of forest plantations would be taken up in the Gramya II microwatersheds. Projected coverage based on the Gramya I experience is: (a) afforestation model in 5,446 ha; (b) silvipasture model in 6,001 ha; and (c) fuelwood model in 7,258 ha. Plant density varies from 800 to 1,600 plants/ha. No systematic documentation of forest plantation interventions in non-arable lands was done under Gramya I. Hence, projections for Gramya II are based on the available WMD database for Uttarakhand resulting from their afforestation interventions. Across the forest plantation models, fuelwood yield varies from 3 to 15 MT/ha; fodder yield varies from 2 to 6 MT/ha; and small timber yield varies from 100 to 450 MT/ha. Annual average production from forest plantation area is projected at 14,387 MT of fuel, 37,603 MT of fodder and 108,691 MT of small timber. Valued at constant 2013 prices, average annual benefits (undiscounted) from forest plantation area are projected at Rs 101 M from fodder, Rs 185 M from fuel, and Rs 2,917 M from small timber. Gramya I recorded a 45% survival rate⁸ in the plantations, which was slightly increased to 50% and applied for Gramya II plantations to quantify benefits. Incremental financial benefits from forest plantations in Gramya II are projected at Rs 3,203 M per year, at full development.

9. **Rainfed Agriculture:** The project area has 55,600 farmers, currently cultivating 45,050 ha of arable lands, of which, 77% are rainfed lands, 12% are irrigated lands, and the remaining 11% are under fallows. Rainfed cropping patterns are dominated by cereal, millet and pulse crops. Major crops are ragi, wheat, paddy, pulses and rapeseed mustard, which occupy 75% of the cropping pattern in project villages. With Gramya II, resource conservation interventions would shift fallow lands into cropping to increase the rainfed arable lands for cultivation by 7%. Cropping pattern and crop intensity are assumed at the same levels for economic analysis (Table 2).

Table 2: Gramya II: Rainfed agriculture area impacts

Project level	Unit	WOP	WP
Rainfed area	Ha	34,695	37,157
Cropping Intensity	%	150%	150%
Paddy	ha	7,980	8,546
Ragi	ha	20,817	22,294
Pulses	ha	4,163	4,459
Wheat	ha	17,348	18,579
RMustard	ha	1,735	1,858
Adoption Rate	%	10%	70%

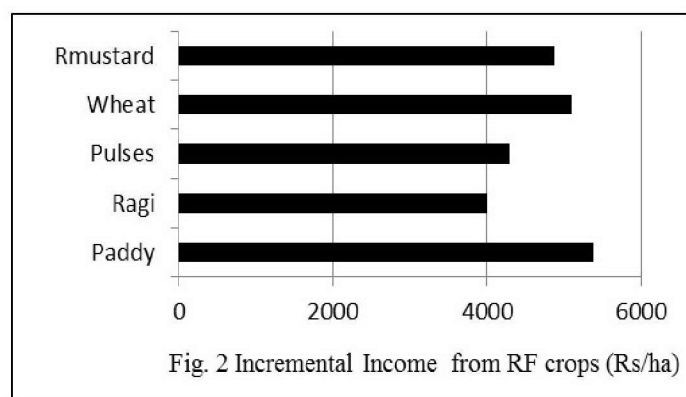
10. *Rainfed crops* occupy about 88% of the arable lands. Average rainfed crop yields (without project or WOP) are low, varying from 1.2 to 1.8 t/ha for cereals and 0.6 to 0.7 t/ha for pulses/oilseeds. Actual crop yields are only 40% of the potential crop yields in rainfed agriculture. Resource conservation-cum-improved production technology packages are critical to close this yield gap and stabilize the productivity across diverse rainfall situations in the project area. Gramya II is designed to promote community-led comprehensive resource conservation measures in the arable lands and disseminate moisture conservation-based efficient crop

⁷ Gramya I Implementation Completion Report Watershed Management Directorate, Uttarakhand, Dehradun, March 2012

⁸ *ibid*

production management in cereals, coarse cereals, pulses and oilseeds in about one million farming terraces, packaged with vegetative (fodder) boundaries.

11. To promote improved resource conservation cum production technologies, a total of 14,300 demonstrations are planned during the project implementation period, covering major crops in all 1,066 project villages. Adoption support would be provided to all rainfed farmers who would be actively linked to implementation of demonstration programs, in which soil and moisture conservation within the rainfed terraces would remain the central focus for all crop



production technologies. At full development, about 70% of the rainfed farmers are projected to adopt and sustain *in situ* soil and moisture conservation practices along with efficient crop production technologies in the project villages (Table 2).

12. Average annual rainfall in the project area is 184 cm, ranging from 100 cm to 268 cm across project districts. About 74% of the annual rainfall occurs

during June to September. Improved inter and intra-terrace conservation techniques, promoted through farmer participatory demonstrations, along with the adoption of location-specific efficient crop production packages is projected to enhance crop productivity by 40 to 43% and crop income by 42% to 55% over WOP levels (Fig.2). Baseline crop yields are assessed based on secondary data covering the eight project districts. Based on annual productivity growth trends during the last decade (2001-10), which varied from 0.65 to 2% across major crops, WOP crop yields are estimated for the analysis. Based on the projected cropping pattern under Gramya II, financial income at full development would go up to Rs 26,052 per ha, 49% more than the WOP level at constant 2013 prices. For the overall project, annual incremental financial income from rainfed arable lands is projected at Rs 362 M at full development (Table 3).

Project level	Unit	WOP	WP
Crop yield			
Paddy	t/ha	1.8	2.5
Ragi	t/ha	1.2	1.7
Pulses	t/ha	0.7	1.0
Wheat	t/ha	1.3	1.9
RMustard	t/ha	1.0	1.4
Financial Income	Rs/ha	17,477	26,052
	Rs M	606	968

Irrigated Agriculture:

13. *Irrigated agriculture* takes place in 13% of the arable lands (5,262 ha). Gramya II would support investments in location-specific water harvesting systems to be shared by groups of rainfed farmers to harvest and efficiently recycle

Project level	Unit	WOP	WP
Irrigated area	Ha	5,262	7,893
Cropping Intensity	%	171%	250%
Paddy	%	75%	74%
Wheat	%	75%	78%
Potato	%	3%	14%
Vegetables	%	18%	84%
Adoption Rate	%	25%	80%

the runoff to increase the irrigation service to 19% of the arable lands and produce high-value crops which would further enhance household-level income. Irrigated cropping patterns are dominated by cereals, followed by vegetables and potatoes. Current irrigated cropping intensity is 171%. Potato and vegetables account for only 21% of the gross irrigated area. Project watersheds receive average annual rainfall of 184 cm in about 90 rainy days. Project interventions include runoff harvesting and recycling structures to capture, store and use the rainwater for increasing irrigation coverage by 50% to reach 7,893 ha, by end-project. The choice is community driven, which is projected based on the Gramya I experiences. In Gramya I, community-led irrigation infrastructure investments created 188,107 M³ of water holding capacity in the project watershed villages, with a realized incremental irrigation potential of 5,079 ha (gross) at full development.

14. To promote efficient use of harvested rainwater, improved crop production technologies with emphasis on major vegetables, would be popularized through 18,950 demonstrations, which

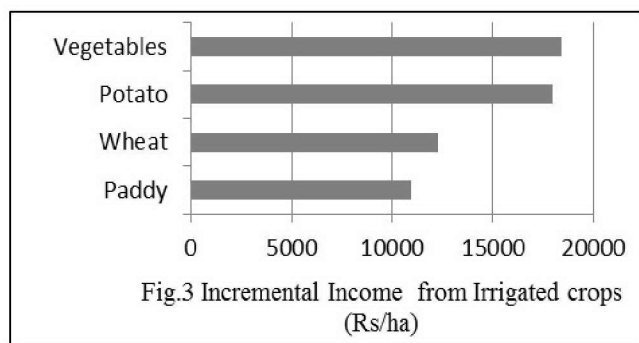


Fig.3 Incremental Income from Irrigated crops (Rs/ha)

would be linked to adoption groups covering all irrigated farmers with adoption support. About 15,500 greenhouses and tunnels would be supported in the project villages to ensure quality seedlings of short duration off-season high-value crops for the farmers in 1,066 project villages. Project interventions in irrigated agriculture would benefit 16,660 irrigated farmers covering 7,893 ha of irrigated lands to get maximum benefits per

unit of water. With-project (WP) irrigated cropping intensity is projected at 250%, 46% more than WOP level (Table 4). Cultivation of high-value crops will be promoted in incremental irrigated area.

15. At full development, about 90% of the irrigated farmers are projected to adopt and sustain efficient irrigated crop production technologies in the project villages. Crop productivity at full development would be 33% to 60% higher than WOP productivity levels across major irrigated crops. WP crop income would increase by 53% to 74% as compared to WOP levels in irrigated agriculture (Fig.3). Based on the assumed cropping pattern, financial income at constant 2013 prices would increase to Rs 101,609 per ha, 172% more than WOP levels. For the project as a whole, incremental financial income at constant 2013 prices is estimated at Rs 606 M per year at full development (Table 5).

Project level	Unit	WOP	WP
Crop yield			
Paddy	t/ha	2.8	4.4
Wheat	t/ha	2.9	4.5
Potato	t/ha	17.5	24.5
Vegetables	t/ha	11.4	17.3
Financial Income			
	Rs/ha	37,328	101,609
	Rs M	196	802

Animal Husbandry:

16. About 80% of rural households in the project area have two dairy animals per household, yielding on an average 2.4 kg/day/animal.⁹ Low milk yield in the project area is due to lack of breed improvement (cross bred, 14%), acute fodder deficit (>30% gap), and inadequate health care support. Gramya II focuses on: (a) breed improvement by supporting 50 trained para-vets and 180 natural breeding centers to serve remote areas; (b) extensive demonstration of terrace borders in the arable lands with 3.8 million running meters of green fodder slip planting; (c) fodder nursery in each GP to provide quality slips to the project farmers; and (d) 1,250 veterinary camps to provide health care in all project villages.

17. Project interventions are designed to facilitate green fodder production within the project villages, by comprehensively promoting resource conservation cum green fodder production by planting fodder slips along the terrace borders. The project farmers, collectively, have 2.25 million terraces. Green fodder productivity is modestly projected at 11.5 MT per farm. Underlying assumptions are: (a) at least 70% of the beneficiary farmers would become sustained adopters; (b) adopters would cover at least 2/3 of the terraces with vegetative boundaries; (c) annually 11.5 MT of green fodder would be produced per adopting farm; and (d) 509 fodder nurseries would supply quality slips to maintain the green fodder production cycle by the adopters. Adopting households would be able to self-sustain green fodder production to maintain at least two dairy animals with improved feed management. While feed and health care support would enhance milk productivity in phases starting from year 3 onwards, breed improvement would register its impact only after year 5. Weighted overall milk productivity would increase by 45% at full development to be realized from year 10 onwards. Incremental financial benefits due to animal husbandry improvement are estimated at Rs 262 M per year, at full development,

sustaining direct benefits to about 33,208 households in project villages (Table 6).

Agribusiness Support:

18. In Gramya I, 27 FFs were formed with 690 FIGs to benefit 9,850 farmers (Table 7). Out of this, 8,410 farmers

Project level	Unit	WOP	WP
Livestock HHs	No.	47,440	47,440
Dairy animals	No.	94,880	94,880
GF production	000 MT	29	326
Adoption rate	%	15%	70%
Weighted Milk Yield	kg/d/a	2.40	3.48
Milk production	000 MT	83	121
Financial Income	Rs M	582	844

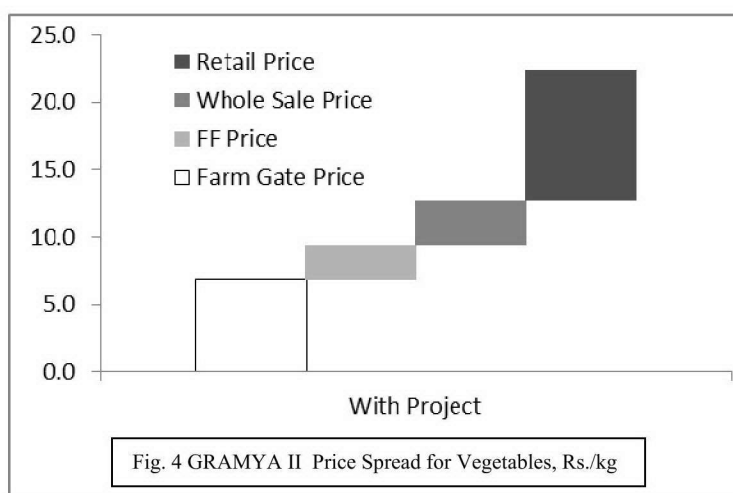
Project	FIGs No.	Farmers No.	Products	Produce Marketed		
				MT	Value, Rs M	Rs/ Kg
Total	690	9,850	Total	41,475	487	11.7
Linked to Agribusiness FFs	589 410	8,410 6,745	Vegetables Fruits	36,355 4,343	402 60	11.1 13.8
Value addition	315	5,040	Value Added	776	25	31.6

Source: Gramya I, Implementation Completion Report, UDWDP, Watershed Management Directorate, Uttarakhand, Dehradun, March 2012

⁹ Integrated Sample Survey, Department of Animal Husbandry, Uttarakhand State, 2009/10

through 589 FIGs were involved in agribusiness activities, of which 6,745 farmers from 410 FIGs were directly linked with FFs. Collectively, they marketed 41,475 MT of products consisting of vegetables (89%) and fruits (11%) produced by the project farmers, valued at Rs 462 M. About 5,040 farmers from 315 FIGs benefited due to value addition during the Gramya-1 project period, collectively producing 776 MT of processed products, valued at Rs 25 M. At constant 2012/13 prices, weighted average price realized varied from Rs 11.10 (vegetables) to 31.60 (value added products). Across products, about 35% of the sale price is accounted for FF/processing unit related costs. Average annual turnover is estimated at 500 MT, since: (a) most of the FFs were started during the later period of the project implementation with only three to four years of functioning; (b) only one-fourth of FFs were fully functional by end-project and (c) many FFs suffered from inadequate working capital. If only, fully functional FFs are considered, annual turnover is over 1,700 MT.

19. Gramya II is designed to overcome the above constraints for effective implementation of agribusiness interventions. A total of 14,571 farmers, mobilized through 509 FIGs spread over all 1,066 project villages would be linked with 32 FFs/processing units, to access efficient production techniques, post-harvest (e.g., collection, processing, value addition and processing) facilities and market linkages (e.g., input and output) during the project period. This also includes about 27



FFs/processing units of Gramya I planned to be covered under Gramya II to make them financially self-sustainable. In the project area¹⁰, weighted average farm gate prices for major vegetables (i.e., potato, tomato, peas, cabbage and cauliflower accounting for 70% of vegetable production) is Rs 6.80 per kg, which is 54% of WSP and 31% of consumer retail price at constant 2013 prices (Fig.4).

Project	FIGs No.	Farmers No.	Products	Marketed/year	
				MT	Rs M
Total	509	15,270	Total	58,500	842
<i>Linked to</i>					
Agribusiness	509	15,270	Vegetables	44,418	492
FFs	407	12,216	Fruits	5,307	73
Value addition	407	12,216	Value Added	8,775	278
<i>Incremental Benefits</i>					
Gramya-II	407	12,216	As above	58,500	344
Gramya-I	511	8,600	As above	28,000	165

20. Currently, only 20% of the major vegetables produced are sold through organized marketing. Organized marketing of vegetables fetches higher price for the producers by about 30% over unorganized marketing of their products. Based on Gramya I evidence and published secondary data, it is projected that: (a) at least 80% of the 32

¹⁰ National Horticulture Board, Government of India, 2010-13; and Statewise Horticulture Status, National Horticulture Mission, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi, 2010/11

FFs/processing units of Gramya II and 27 FFs/processing units of Gramya I would become financially self-sustainable by end-project; (b) annual turnover per FF will reach 2,250 MT, at full development, composed of vegetables (76%), fruits (9%) and value-added products (15%); (c) producer price realization would increase from 54% of WSP to 74% for the direct project beneficiaries. After netting out the FF/processing unit costs, incremental financial benefits from 42 financially self-sustaining FFs/Processing units of Gramya I and Gramya II are projected at Rs 509 M every year at full development to be realized from year 10 onwards (Table 8). At full development, about 38% of vegetables produced in Gramya II project areas will be marketed through FF-led organized marketing.

Income Generating Activities:

21. In Gramya I, some 8,819 households received funds to establish individual- (3,819) as well as group- (754) based income generating activities (IGA). Average IGA investment came to Rs 18,404 for individual IGA and Rs 66,788 for group IGA at 2013 prices. WMD conducted impact assessment studies, using a sample of 340 individual and 16 group IGAs in the project villages. Based on this, overall average annual income from IGA across diverse performances is Rs 7,184 for individual and Rs 19,892 for group IGA, realized at full development in the second or third year from the start of IGA (Table 9). The Gramya I impact assessment found that one-fifth of beneficiary households did not continue the IGA. About half of beneficiary households were able to maintain the IGA to generate sustainable returns from IGA to supplement household incomes.

Table 9: Gramya I Impacts of Income generating activity Groups at 2013 prices

IGA Groups			Inv. Funds Rs	Income Rs/year	IGA Individuals		Inv. Funds Rs	Income Rs/year
Activity	No	Members			Activity	No		
Goats	181	1,181	93,114	21,130	Dairy	791	17,907	4,562
Greenhouse	166	1,097	75,067	13,819	Poultry	700	16,116	6,186
Dairy	60	420	79,087	29,548	Goatry	625	22,284	7,525
Others	347	2,302	46,955	20,471	Others	1703	18,151	8,686
Over all	754	5,000	66,790	19,890	Over all	3,819	18,405	7,185

Source: Gramya I, Implementation Completion Report, Watershed Management Directorate, Uttarakhand, Dehradun, March 2012; and Vulnerable Group Fund in UDWDP, Watershed Management Directorate, Dehradun, 2011/12

22. In Gramya II, about 20,333 vulnerable households would be benefited through 2,179 group IGAs and 7,262 individual IGA interventions. It is assumed that the IGA portfolio of choice by the vulnerable households would be similar to what was observed in Gramya I. Income levels from IGA are projected based on Gramya I experiences. In Gramya II, unit

Table 10: Gramya II IGA: Projected impacts at full development

Project	IGA		Inv. Funds Rs M	Income Rs/year
	No.	HHs		
Individual IGAs	7,262	7262	30,000	11,710
Group IGAs	2,179	13071	100,000	29,784
Over all	9,441	20333	46,150	15,880
Inc. Benefits (Rs M)				113.0

investment cost for IGA has gone up for both individual and group IGAs by about 50 to 63% as compared to Gramya I at constant 2013 prices. Overall weighted average income from IGA is projected to be Rs 15,880 per year at full development, to be realized in year-3 from the start of IGA. About 2/3rd of the vulnerable HH beneficiaries are expected to continue with the IGA to generate sustainable returns to supplement their income levels. Incremental financial benefits from IGA are projected at Rs 113.0 M per year, at full development (Table 10).

Economic and Financial Analyses:

23. Cost-benefit analysis is conducted for a project period of 30 years. Costs and benefits are estimated at 2013 prices over 30 years with 12% opportunity cost of capital. Present value of discounted project financial benefits over the project life, due to the project interventions, are estimated at Rs 15.2 billion, contributed by watershed services (14%), forest plantations (39%), agriculture (28%), animal husbandry (6%), agribusiness (11%) and IGA (2%). Total project costs, including contingencies, are Rs 10,198 M. Beyond the project implementation period annual recurrent costs and replacement costs for the assets like water harvesting infrastructure are provided for. Since the economic life of this infrastructure is about seven years, if maintained adequately, investment costs for up to four replacements during the project life of 30 years at constant 2013 prices are included in the analysis. Financial analysis is done at market prices. The estimated financial rate of return (FRR) for the project as a whole is 22.7%. Net Present Value at 12% opportunity cost of capital for 30-year project life is Rs 7.9 billion (Table 11).

Project Interventions	PVB	PVC	NPV	ERR	PVB	PVC	NPV	FRR
Project as a whole	13.1	6.6	6.6	21.6%	15.2	7.3	7.9	22.7%
WS Treatment and RF Area Development	10.8	5.4	5.4	20.7%	12.6	6.0	6.6	21.8%
Enhancing Livelihood Opportunites	2.3	1.2	1.2	27.6%	2.6	1.3	1.3	27.6%

Present value of benefits (PVB), Present value of costs (PVC), Net Present Value (NPV) are in Rs Million.

24. *Economic analysis* is conducted after making appropriate adjustments to financial benefits and costs. Economic project costs are estimated at Rs 9178 M after adjusting for transfers, taxes, subsidies, and converting financial prices to economic prices. Economic prices for internationally traded commodities (fertilizer, paddy and wheat) are derived and used. While deviation between the parity prices and market prices for paddy and wheat is marginal (less than 8%), parity prices for fertilizer nutrient is two and half times that of market prices. This difference in economic and market prices for fertilizers and use of human labor by small farmers in the project area has resulted in economic rate of return (ERR) marginally lower than financial rate of return. Present value of discounted project benefits over the project life, due to the project interventions, are estimated at Rs 13.1 billion, contributed by watershed services (15%), forest plantations (40%), agriculture (25%), animal husbandry (6%), agribusiness (12%) and IGA (2%). Economic project costs are estimated at Rs 9178 M after adjusting for transfers, taxes, subsidies, and converting financial prices to economic prices. The estimated economic rate of return for the project as a whole is 21.6%. Net Present Value at 12% opportunity cost of capital for 30-year project life is Rs 6.6 billion.

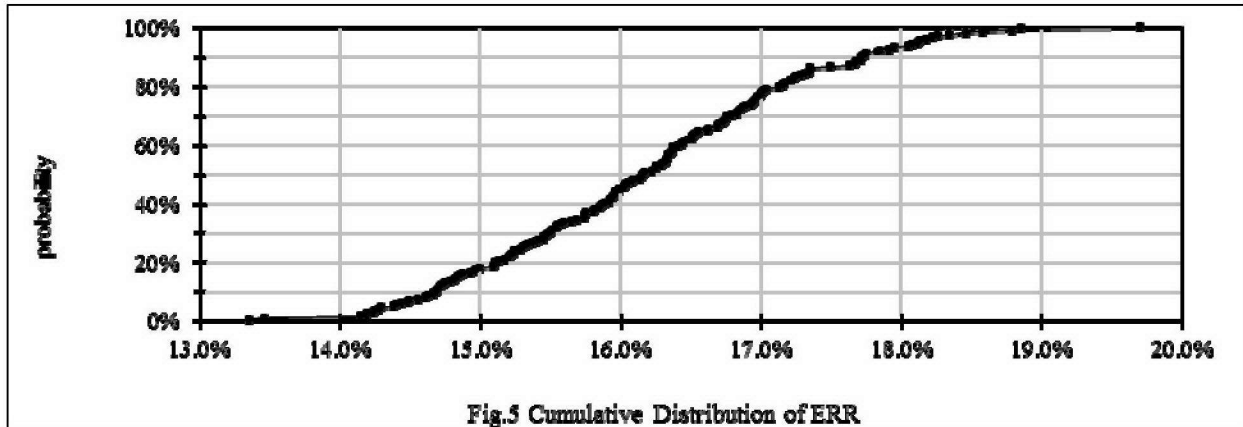
25. *Sensitivity and Risk Analyses*: A number of sensitivity and risk analyses were conducted using various scenarios. The objective of sensitivity and risk analysis is to test the robustness of the ERR to changes in projected benefits and costs (Table 12). A reduction in project benefits can occur if watershed treatments in arable and non-arable lands generate lesser benefits than projected or community institutions perform below par to maintain and efficiently use and replace water harvesting structures whenever needed or fall in the projected productivity and/or adoption levels. This is captured by assuming only 80% of projected benefits from arable and non-arable lands, and project benefit flow getting limited to two-thirds of the project life. Delay in project implementation is also considered along with 20% increase in project costs. All these deviations are considered independently for sensitivity analysis. Maximum reduction in ERR occurred with: (i) 20% increase in project costs and 20% reduction in project benefits occurring together; (ii) two-year delay in project implementation; and (iii) benefit flow getting restricted to only first 20-year of project life. The associated impacts are significant for NPVs, which came down by 61% to 80% as compared to base model levels. Hence these variables are considered for risk analysis to probe further the joint impact of deviations occurring simultaneously on the estimated economic rate of return to the project investments.

Sensitivity Scenarios	NPV	ERR
Base Model	6.6	21.6%
<i>Changes in Costs and Benefits</i>		
Costs at 120%	5.2	18.6%
Benefits at 80%	3.9	17.9%
Costs at 120% and Benefits at 80%	2.6	15.4%
<i>Switching Values for</i>		
Costs to increase by 91%	0.0	12.0%
Benefits to fall by 49%	0.1	12.1%
<i>Deviations in projected benefits</i>		
Non-arable land benefits limited to 75%	4.7	19.7%
Arable land benefits limited to 75%	5.1	19.0%
Benefit flow limited to 1/3 rd of project life	1.3	16.4%
Implementation delayed by two years	2.4	15.7%

26. The *risk analysis* considered pre-defined lower and upper limit for project costs and the benefits. Joint deviations were considered as follows: (i) all project costs; (ii) benefits due to possible variations in the impact of watershed treatment in arable and non-arable lands, and livelihood enhancement interventions; (iii) sustainability of assets' maintenance and utilization; and (iv) delays in project implementation. The analysis considered pre-defined lower and upper limits for all project costs and the above-mentioned benefits and other possible risks. In summary, project costs were allowed to increase up to 25 percent above the base level, and the three sources of benefits were allowed to decrease up to 25 percent below their base levels. Sustainability impacts are captured through reduced flow of project benefits by up to one-third of project life. Delay in project implementation up to two years is considered. This risk analysis estimates the effects of uncertain returns to investments and generated confidence limits for realizing expected benefits.

Risk Analysis results	ERR	NPV
Expected value	16.2%	2425
Standard deviation	1.2%	857
Minimum	13.4%	741
Maximum	19.7%	5315
Coefficient of variation	0.071	0.353
Probability of (-) outcome	0.0%	0.0%

The above joint variations caused the ERR to vary between 13.4 percent and 19.7 percent with a coefficient of variation of 7 percent. The expected ERR is estimated at 16.2 percent and is reasonably stable because the risk model predicted 0.83 probability of ERR exceeding 15.0 percent (Table 13 and Fig. 5).



27. **Cost Effectiveness Analysis:** The decentralized comprehensive watershed development approach adopted by the project is cost effective. Water harvesting structures and resource conservation investments under Gramya I covering irrigation tanks, drainage line treatment works, irrigation channels, forest plantations, and village ponds are analyzed and compared with publicly-funded similar comparable investments. Community-led investments led to asset creation, whose unit costs (at 2013 prices) are higher by 2 to 57% in case of plantations, irrigation tanks, village ponds and drainage line treatment works; and lesser in case of irrigation channel by 4%. But performance wise, plantations registered 45% survival in the Gramya II area, as against no survival under control (i.e., public sector-led investments), necessitating repeat forest plantation investment. Economic life of the community-led assets is always more by 40% to 100% across diverse investments in Gramya I areas as compared to the control. Annual operation and maintenance cost in Gramya I areas is less by 60% to 67%, compared to the control. At 12% opportunity cost of capital, annual amortized investment costs and Operations and Maintenance costs together registered 10% to 30% less costs as compared to the control across diverse water harvesting structures and conservation structures.

28. **Domestic water supply:** The proposed watershed development under the project is targeted to revive 1,530 traditional water sources, which are either dried up and/or partially affected with reduced discharge and/or flow duration. Source sustainability is one of the project's interventions in the decentralized watershed planning. Gramya I has documented the following impacts of source sustainability interventions as compared to baseline¹¹ : (i) duration of water flow has increased by 60%; (ii) water discharge has gone up by 68%; and (iii) each such revived traditional water sources through source sustainability interventions supports the domestic water needs including drinking water for about 30 families. It is projected that at least 1,071 out of 1,530 traditional water sources will be sustainably revived to benefit about 32,130 families in

¹¹ SLEM Implementation Completion Report, Watershed Management Directorate, Uttarakhand, August 2013.

remote hilly terrain locations. Impact assessment for the SLEM¹² has documented that, on average, each household benefitted by this intervention has reduced the time taken to access domestic water by about 45%. Saved time for the household members has a high opportunity cost due to additional labor needed for arable land farming as well as project-led income generating activities especially for the vulnerable households, which is however not quantified for want of adequate data, and to that extent estimated rates of return to project investment is conservative.

Table 14: Gramya II Proposed interventions and projected benefits

Proposed Project Interventions	Unit	Incremental Benefits	Unit
1. Afforestation/ Silvipasture/ Fuelwood Plantations	Ha 21,734	Fuel production	t/yr 14,387
		Watershed Services	Rs/ha 46,421
2. Runoff harvesting/ capacity created	m ³ 226,272	Fodder production	t/yr 37,603
3. Drainage line treatment/Soil conservation	Ha 263,837	Timber production	t/yr 108,691
		Soil loss	% -30
		Runoff	% -30
		Rejuvenation of water sources	No. 1,530
4. Terraces repaired for resource conservation	No. 901,000	Gross cropped area	Ha 14,427
5. In situ soil management and conservation practices/ technology adopted	Ha 33,134	Gross irrigated area	Ha 10,734
		Crop productivity	% 33 to 60
		Crop income	Rs/ha 19,199
		Annual on farm employment	Person jobs 5724
6. Terraces adopted with vegetative boundaries	No. 901,000	Green fodder production	t/yr 296,752
		Lactation yield	liters 657
7. Agribusiness linkages	House-holds 14,571	household farm income	Rs/yr 24,447
8. IGA support/adoption	House-holds 13,420	household income	Rs/yr 15,881

¹² Final Impact Evaluation of GEF-SLEM Project of Uttarakhand, Watershed Management Directorate, August, 2013

