Sustainable Land, Water and Biodiversity Conservation and Management for Improved Livelihood in Uttarakhand Watershed Sector (SLEM)

[GEF grant TFO94443-IN]

Implementation Completion Report

August 2013

WATERSHED MANAGEMENT DIRECTORATE, UTTARAKHAND

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Abbreviation

ANR	Assisted Natural Regeneration
CAG	Comptroller and Auditor General
CBOs	Community Based Organizations
CIMAP	Central Institute of Medicinal and Aromatic Plant
CPD	Chief Project Director
DLT	Drainage Line Treatment
DEA	Department of Economic Affairs
DPD	Deputy Project Director
EDP	Entrepreneurship Development Programme
ESG	Environmental and Social Guideline
ESMF	Environmental and Social Management Framework
FIG	Farmer Interest Group
FNGO	Field/Facilitating Non Governmental Organization
FY	Financial Year
GEF	Global Environment Facility
GOI	Government of India
GP	Gram Panchayat
GPWDP	Gram Panchayat Watershed Development Plan
GIZ	German Technical Corporation
IGA	Income Generation Activity
INR	Indian National Rupee
LPG	Liquefied Petroleum Gas
MAP	Medicinal and aromatic plants
MDT	Multi Disciplinary Team
MPR	Monthly Progress Report
M&E	Monitoring and Evaluation
MWS	Micro Watershed
NCB	National Competitive Bid
NTFP	Non-Timber Forest Products
O&M	Operation & Maintenance
PDO	Project Development Objective
PME	Participatory Monitoring and Evaluation
RF	Reserve Forest
RVC	Revenue Village Committees
SHG	Self Help Group
SLEM	Sustainable Land, Water and Biodiversity Conservation and Management for Improved Livelihood In Uttarakhand Watershed Sector
SMC	Soil Moisture Conservation
SOE	Statement of Expenditure
TERI	The Energy and Resources Institute
UG	User Group
UDWDP	Uttarakhand Decentralized Watershed Development Project
UREDA	Uttarakhand Renewable Energy Development Agency
WMD	Watershed Management Directorate
WWMC	Water and Watershed Management Committee
VP	Van Panchayat

Contents

Executive Summary

The Government of Uttarakhand through the Watershed Management Directorate (WMD) has received a grant from Global Environment Facility (GEF) Trust Fund for 7.49 million US$ for implementing the project on Sustainable Land, Water And Biodiversity Conservation and Management For Improved Livelihood In Uttarakhand Watershed Sector (SLEM). This project is an additional financing to the World Bank aided Uttarakhand Decentralized Watershed Development Project (UDWDP) which was implemented from 2006 to 2012 in 76 MWS covering 468 Gram Panchayat in 11 hilly district of the State at a project cost of 106.89 Million US$ (consisting of 75.44 million US$ IDA financing, 21.99 million US$ state govt. share and 9.46 million US$ beneficiary share).

The project development objective (PDO) is : To restore and sustain ecosystem functions and biodiversity while simultaneously enhancing income and livelihood functions, and generating lessons learned in these respects that can be up-scaled and mainstreamed at state and national levels.

The GEF additional financing has been utilized for sustainable bio-diversity management, land and water source protection and creation of sustainable livelihoods through community participation. The Project specifically aims at assisting the vulnerable regions to cope with the projected impacts of climate change.

Out of the 76 micro-watersheds covered in the parent project UDWDP, the SLEM Project was implemented in 20 selected MWS covering 60,823 ha in 126 GPs in the middle Himalayan region between 700-2000 mtr in the hill districts of Rudraprayag, Bageshwar, Uttarkashi (Chinyalisaur), and Nainital. About 74000 population has benefited from project interventions. Micro-watersheds included in this project were identified based upon the severity of erosion, poverty and lack of infrastructure facilities.

PROJECT COMPONENTS

1. Watershed planning through community participation.
2. Controlling land degradation through the SLEM approach at watershed level.
3. Reduce pressure and dependence on the natural resource base through Fostering markets for NTFP
4. Enhance Bio-diversity conservation & management through watershed planning & community participation.
5. Improve adaptation to climate change in natural resource based production systems.
6. Documentation of best (worst) practices to share them within the state as well as through the SLEM Partnership.
7. Information Management and Monitoring Evaluation
8. Project Management and capacity building of project staff

FINANCIAL PROGRESS

Till closure of project in August 2013, an expenditure of INR 3760 hundred thousand has been incurred. The final reimbursement received till the closure of project is 7.47 million US$.

FOCUS AREAS AND COMMUNITY PARTICIPATION

The conservation and sustainable use of biodiversity and poverty eradication are two of the major global challenges of our time. Our watersheds are repositories of rich biodiversity and support a variety of forest eco systems. Further watersheds in general and hilly areas in particular, constitute a major source of livelihood and income for people living in and around them. Over the years, these watersheds have become degraded due to increased anthropogenic interventions which are seriously impacting the sustenance of people living in these watersheds.

The parent project UDWDP focused on improving the productive potential of natural resources and increasing incomes of rural inhabitants in selected watersheds through socially inclusive, institutionally and environmentally sustainable approaches. Participatory planning resulted in the formulation of Gram Panchayat watershed development plans (GPWDP) at the GP level. The GPWDP comprised of activities prioritized by the community for soil conservation works on arable & non arable land, drainage line treatment, afforestation, improving irrigation facilities and improved horticulture and agriculture practices in the Gram panchayat area only. The inter GP areas which are the reserve forest areas under control of forest department could not be taken up for treatment works for water source sustainability, drainage line treatment, water recharge, plantation and other such interventions. As an additional financing the SLEM project was implemented in the selected 20 MWS of the parent UDWDP project. The focus of the SLEM project was on biodiversity conservation through land and water source protection, sustainable livelihood development, use of alternative energy resources and capacity building of communities on biodiversity issues through demonstration, documentation and dissemination of good practices. The SLEM project followed an integrated approach to watershed management where by all the GPWDPs were integrated at the MWS level. MWS level watershed development plans where formulated in which interventions were proposed by the community for both inter GP areas (RF) and GP areas. With a focus on biodiversity conservation, the community with the technical and social facilitation of project team carried out soil conservation works on arable & non arable land, drainage line treatment, afforestation, assisted natural regeneration, fire management, water recharge and harvesting activities and water source sustainability works. The project also successfully promoted the use of alternative energy through Pine Briquette, Bio gas, Solar energy. Special emphasis was placed on capacity development of community on bio diversity issues, land and water source protection and livelihood issues through a dedicated capacity building programme.

Community participation in all project intervention was achieved through Gram Panchayat (GP), revenue village committee (RVC), Van Panchayat (VP), Self help groups (SHG) and user groups. In addition to above, the project has been successful in bringing about policy change in the paradigm of forest management in the state whereby the Van Panchayat which are the oldest people's institution involved in local management of natural resources have been authorized by the State Govt. (Vide GO Dated 2nd

December, 2009) to treat the reserve forest area, under any project, within a prescribed plan, so that the holistic treatment of any micro watershed can be achieved.

PROJECT ACHIEVEMENT

- 20 Micro Watershed plans were finalized and implemented through community participation with the technical and social facilitation of project team.
- Under forestry activity 830 ha. of afforestation (in civil and reserve forest area) has been carried out.
- Assisted Natural Regeneration (ANR) of oak has been done in 115 ha. forest areas.
- Under drainage line treatment and soil conservation activities, 50875.50 cum crate wire check dams, 21569.66 cum dry stone check dams, 91711 construction of contour bunds and trenches, 22613.05 cum river bank protection works, retaining wall 12819.2 cum, road side erosion control work of 4682.44 cum and 10755.1 m diversion drain have been constructed.
- Under water recharge and harvesting activities, 318 village ponds, 125 roof water harvesting tanks have been constructed and 423 water sources have been treated. About 1087 water recharge pits and 18 irrigation tanks with delivery systems have been constructed.
- Forest fire management works have been done in 186.9 ha in RF areas.
- 17 decentralized forest and 19 MAP nurseries have been raised.
- 203 Pine Briquette making machines have been demonstrated and regular briquette productions have begun.
- 4984 Pine Briquette stoves have been distributed to the Villagers.
- 3378 solar lantern have been distributed and 190 solar street lights have been installed.
- 66 Bio-gas plants have been installed.
- 179 Farmer Interest Groups (FIGs) have been formed for cultivation of medicinal and aromatic plants such as Aloe vera, Large cardamom, Satavar, Sarpgandha, Anwala, Stevia, Rosemary, Turmeric, Ginger, Lemon grass, Chamomile etc.
- 581.5 ha. plantation of medicinal and aromatic plants have been carried out by the Farmer Groups.
- 247 poly houses have been installed for protective cultivation.
- Under capacity building 3038 staff members, 28171 SHGs / User Groups/ Farmer Groups members, have participated in training and workshops.
- Internal Audit for the years 2009-10, 2010-11 and 2011-12 has been completed & Annual Financial statement submitted to World Bank and DEA (Govt. of India). Internal Audit for year 2012-13 upto second quarter has been completed.
- AG Audit for the year 2009-10, 2010-11 and 2012-13 has been done and audit report submitted to World Bank and DEA (Govt. of India).

MONITORING AND EVALUATION

Baseline survey and impact assessment of the project was conducted by The Energy and Resources Institute (TERI) New Delhi. Participatory Monitoring and Evaluation (PME) was carried out in all project GPs by a GP level PME team representing all stake holders.

IMPACT ASSESSMENT BY TERI - HIGHLIGHTS

- Use of a truly participatory approach from planning to implementation stage has been a hallmark of the project.
- About 21% of eligible area under the selected MWS has been brought under SLEM techniques involving soil moisture conservation works, drainage line treatment works, afforestation, medicinal and aromatic plant cultivation, water augmentation and water source sustainability works.
- 82.34% of households spend less than 1 hour to access water in dry season as against 68.37% at the start of the project.
- 7% increase in house hold income in real terms due to promotion of livelihood activities
- Reduction of fuel wood dependence on forest has been a major impact largely on account of promotion of alternative energy sources such as pine briquettes, bio-gas and solar energy devices. About 19% of households have partially shifted to alternated energy use viz pine briquettes, biogas and solar energy.
- 31% of SHGs making pine briquettes are marketing them and earning incomes.
- Increase in bio mass production due to afforestation activities
- The revival of traditional water mills (Gharat) has also been a major success and has yielded high economic return.
- Capacities of local level institutions viz GP, VP, RVC, SHG and User groups have been strengthened due to their participation from the planning stage to O&M.
- State Govt. initiative in authorizing Van panchayat as work agency in reserve forest area through govt. order is a progressive step toward involvement of community institutions in natural resources management.

PROJECT LEARNINGS

- SLEM project focused on biodiversity conservation and sustaining of eco system functions while simultaneously enhancing livelihood opportunities for the rural inhabitants. All project interventions directly and indirectly resulted in conservation of biodiversity at the MWS level in the project area.
- Watershed development planning with community participation was done at the MWS level and interventions were proposed by the community for both inter GP areas (RF) and GP areas. This integrated approach has resulted in comprehensive watershed treatment at the MWS level. The MWS plans also provide for convergence with other departments at the MWS level.
- Involvement of community institutions such as Van panchayat and Biodiversity groups constituted under Biodiversity act 2002 in natural resources management activities at the local level is a progressive step resulting in greater ownership at the community level.
- Drying up of the traditional water sources such as Naula, Dhara is a major area of concern in the state of Uttarakhand with some of the areas facing drought like situation in summer months. SLEM project focused on improving water source sustainability in MWS areas where the discharge in the traditional water sources reduced or dried up. About 423 such sources were treated and water availability was improved. Interventions for waters source sustainability should be

an important component related to land development in the hill state in future projects.

- Decentralized approach to watershed management with the local institutions as de facto planners and implementers resulted in greater ownership of project at local level.
- Capacity development of Gram panchayat and other local institutions (viz RVC, User Groups, SHGs, Van panchayat) has resulted in strengthening of these institutions vis a vis administrative capacity, financial working and skill development. This has resulted in improvement in governance.
- The project had a definite focus on women related issues. SLEM project provided mandatory 50% representation of women in project committees, separate Mahila Aam sabha for integrating women concerns in MWS plans, women ward member as cosignatory for operating project account, drudgery reducing interventions, local level employment generation and financial assistance for taking up income generating activity. All these interventions has led to capacity building of women in the project area.
- SLEM project promoted the use of alternative energy fuels like pine briquettes, biogas and solar cookers successfully. This has resulted in reducing dependence on forest based fuel wood to some extent. Due to high adoption rate, these activities can be scaled up in future projects.
- Pine briquetting can become a major livelihood activity with an efficient marketing system. The marketing

system should be strengthened to attract enough people to scale up pine briquette production as a viable IGA.

- Project has resulted in the revival of traditional water mills (Gharat) which has been a major success and has also yielded high economic return. Convergence with the state agency for renewable energy development (UREDA) was successful in conversion of traditional Gharats for hydro electricity production at the village level which has helped in rural electrification.
- Uttarakhand has tremendous potential for cultivation of medicinal and aromatic plants. Cultivation and marketing of medicinal and aromatic plants (MAP) was promoted in the project through package of practices, marketing support and linkage with State Medicinal Plant Board (SMPB). All these interventions will go a long way in enabling the MAP growers and FIGs to get technical support, extension facilities, quality planting material and viable market linkages.
- Under the SLEM project, the importance of post project sustainability of project interventions was duly recognized and the sustainability issues were addressed right from the project conceptualization and design stage to project implementation at field level. The state government order vide letter no. 251/XIII (II)/2011-31(05)/2011 dated 08 Dec. 2011(Annexure 2) regarding the utilization and maintenance of the various assets created during the project period has resulted in convergence with line departments for Operation and maintenance of assets.

chapter

1

Introduction of SLEM project Uttarakhand

BACKGROUND

The Government of Uttarakhand through the Watershed Management Directorate (WMD) has received a grant from Global Environment Facility (GEF) Trust Fund as an additional financing to the the World Bank aided Uttarakhand Decentralized Watershed Development Project (UDWDP) which was implemented from 2006 to 2012. The GEF additional financing of 7.49 million US$ has been received under the project -Sustainable Land, Water And Biodiversity Conservation and Management For Improved Livelihood In Uttarakhand Watershed Sector or SLEM. Out of the 76 micro-watersheds covered in the parent project, the SLEM Project was implemented in 20 selected MWS covering 60,823 ha in 125 GPs in the middle Himalayan region between 700-2000 mtr in the hill districts of Rudraprayag, Bageshwar, Uttarkashi (Chinyalisaur), and Nainital. About 74000 populations has benefited from project interventions. Micro-watersheds included in this project were identified based upon the severity of erosion, poverty and lack of infrastructure facilities. The project specifically aims at assisting the vulnerable regions to cope with the projected impacts of climate change.

PROJECT DEVELOPMENT OBJECTIVE (PDO) :

To restore and sustain ecosystem functions and biodiversity while simultaneously enhancing income and livelihood functions, and generating lessons learned in these respects that can be up-scaled and mainstreamed at state and national levels.

PROJECT DESCRIPTION

Out of 76 micro-watersheds in which UDWDP was implemented, 20 have been included for the implementation of SELM activities for this project and are within the existing boundaries of the UDWDP divisions. Project consists of selected micro-watersheds in the divisions of Agastyamuni, Bageshawar, Chinyalisaur, and Nainital.

Project areas included are from selected micro-watersheds of Agastyamuni, Bageshawar, Chinyalisaur, and Nainital Divisions.

PROJECT DURATION

The project duration is for four years from Year 2009-10 to 2012 -13.

Date of Effectiveness - 12th November, 2009.

Closing date- 31st August, 2013

PROJECT AREA

This project is located in the Mid Himalayan area within the height of 700m to 2000m msl in Uttarakhand. The project focus is on the rural populations and the watersheds. Micro-watersheds included in this project were identified based upon the severity of erosion, poverty and lack of infrastructure facilities. There are 126 GPs covering a total area of approx. 60823 ha. The project aimed at benefitting a population of 74000 persons in the identified project area.

Division	MWS	MWS Area (ha.)	Forest Area (ha.)	Agriculture Area (ha.)	No. of GP	Area of GP (ha.)	GP Population
Agastyamuni	Surgad	2650	1165	1466	11	2423.7	9802
	Bainyari	2275	862	1206	11	1735.5	9412
	Chinka+ Pogtagad	8974	4781	2750	15	3653.7	9433
	Kunjgad	6450	3641	2534	15	2155.8	9464
Bageshawar	Kanalgad	1431	1000	270	1	328.02	1404
	Genargad	1556	1034	503	3	1126.8	1659
	Jargad	1675	1466	209	3	596.4	1362
	Kunmgad	1743	998	372	3	810.3	2526
	Gaganigad	2337	1810	307	1	584.51	1106
Chinyalisaur	Kyari	2050	1901	149	1	473.9	379
	Chamargad	1225	612	381	2	336.5	832
	Gairgad	1625	569	944	9	1339.8	4337
	Ghatu	1857	1175	463	3	500.6	1151
	Malogigad	1600	787	682	7	892.1	3715
Haldwani	Dolgad	7094	5608	1412	6	1871.5	3936
	Paisiyagad	7431	4813	2393	16	3119.8	6530
	Dythi Gad	2725	2129	596	4	654.8	1422
	Kuyet Gad	3239	2466	773	6	915.3	2805
	Sunkot	2886	2239	647	8	1593.3	2981
	TOTAL -	**60823**	**39056**	**18057**	**125**	**25112.2**	**74256**

PROJECT ACTIVITY AND FINANCING

Sl. No.	Activity Category	Total GEF Financing	IDA Co-financing	
		Value	Value	Total project cost
1	Watershed planning through community participation	0.42	17.63	18.05
2	Controlling land degradation through the SLEM approach at watershed level	3.12	46.66	49.78
3	Fostering markets for non-timber forestry products	1.35	20.56	21.91
4	Biodiversity conservation and management through watershed planning and community participation	1.54	9.49	11.03
5	Improve adaptation to climate change	0.15*	0.00	0.15
6	Documentation and dissemination of project experiences and practices	0.23	2.25	2.48
7	IMME	0.38	2.11	2.49
8	Project management and Capacity building of PM staff	0.31	8.18	8.49
9	Contingencies	0.00	0	0
	Total	7.49	106.89	114.38

* Study could not be carried out and funds were utilized for scaling up of SLEM activities in selected MWS

PROJECT COMPONENTS

Component-1: Watershed planning through community participation (USM$ 0.42)- This component involved integration of Gram Panchayat level watershed plans at the micro-watershed level. At the end of the process, 20 Micro Watershed Management (MWS) plans were finalized for implementation.

Component-2: Controlling land degradation through the SLEM approach at watershed level (USM$ 3.12)- The component involved implementation of 20 MWS plans. Activities prioritized by the community including soil conservation works on arable & non arable land, forest regeneration, pasture development, silvi-pasture development, soil erosion bunds, vegetative barriers, fire management, and water augmentation and source protection activities were taken up.

Component-3: Fostering markets for NTFPs (USM$ 1.35)- Under this component, up scaling of the pilot introduction of Chir pine briquette making initiated in UDWDP project was done. The utilization and conversion of Chir pine needle biomass into briquette can be used as fuel for meeting household and other energy requirements of community. The surplus pine briquette are being marketed by SHGs involved in this activity.

Component-4: Bio-diversity conservation & management through watershed planning & community participation (USM$ 1.54)- Under this component, domestication and cultivation of at least 5 local medicinal and aromatic plants by communities in 20 micro watersheds was undertaken. A cluster approach was adopted to be able to produce marketable quantum with viable linkages.

Component-5: Improve adaptation to climate change in natural resource based production systems (USM$ 0.15)- Study for enhancing understanding of the impacts of climate change on natural resource based mountain economies and preparation of adaptation strategy was proposed . The study could not be carried out and funds were utilized for scaling up of SLEM activities in selected MWS.

Component-6: Documentation of best (worst) practices to share them within the state as well as through the SLEM Partnership (USM$ 0.23)- Documentation and dissemination of innovative, best practices and success stories through through different media (Printed and audio-visual).

Component-7: Information Management and Monitoring Evaluation (IMME) (USM$ 0.38)- This includes the monitoring and evaluation of the project at different levels.

Component-8: Project Management, Monitoring and capacity building (USM$ 0.31)- Project management includes operating cost, monitoring & evaluation and the capacity building of the project staff and other important stakeholders.

PROJECT IMPLEMENTATION ARRANGEMENT

SLEM is a community driven project based on joint relationship among three entities viz. Village communities, local institutions and Watershed Management Directorate. The SLEM project benefited from the institutional mechanism for project planning and implementation established under UDWDP. The institutional mechanism involved GP, VP, RVC, FIG, SHG and User groups. These local institutions were broad based representing all the socio- economic strata and or specific stakeholders. Under SLEM project, all the institutional mechanism formed during UDWDP were continued

Gram Panchayats- were the key planning and implementation agencies. GP was responsible for handling of funds, procurement and maintenance of assets. To assist in account & book keeping, a local youth of the village was appointed as account assistant and training was imparted to him on various aspects of accounting. The authority of withdrawal and disbursement of funds from the watershed account of the project was vested with Gram Pradhan and one of the elected women ward member of the GP.

Van Panchayats- Due to an initiative of the State government, VPs were made the key institution for working in reserve forest areas. Funds were provided to them through the GPs.

Self Help Group/ User Group- SHGs existing in the project area were strengthened. Trainings were imparted for variety of on- and off- farm income generation activities. Project support to these SHGs was in terms of providing grant, various Entrepreneur Development Programmes (EDPs), exposure visits, technical advice, support and forward & backward linkages.

Farmer Interest Group- To address the existing constraints and to leverage the access of farmers to production and marketing services, the project supported farmers to organise into Farmer Interest Groups (FIGs) and those groups who were functional and active were linked to form Federations. Total 179 FIGs were formed for cultivation of medicinal and aromatic plants in project area.

PROJECT RESULT FRAMEWORK

Project outcome and impacts were monitored through following indicators:-

- 20 number of Micro watershed management plans completed and under implementation
- 10% increase in livelihood opportunities in treated areas (measured by increase in no. of person engaged in different livelihood opportunities)
- Sustainable Watershed Management mainstreamed into 20 GP plans including parts of watersheds for which two or more GPs have shared governance responsibility
- 20% of the area in selected MWS under improved SLEM techniques
- Increase in availability of water in the dry season by 5% in the treated MWS
- 10% increase in vegetative and biomass index in the 20 MWS.
- Implementation of 5 to 10 alternative technologies and approaches for enhancing water availability for agriculture and other domestic use
- Reduction in dependency of 2000 households on forest for fuel wood.
- At least 20% of targeted households enter market with pine briquettes (produced from pine needles)
- 20% reduction in incidence of fire in treated MWS
- Cultivation of at least 5 local MAPs (medicinal and aromatic plants) by communities in 20 microwatersheds.

FINANCIAL PROGRESS

The financial progress till closure of project in August 2013 is around INR 3760 hundred thousand. The reimbursement received till closure of project is 7.47 million US$.

POLICY INITIATIVE

- The project has been successful in bringing about policy change in the paradigm of forest management in the state whereby the Van Panchayat which are the oldest people's institution involved in local management of natural resources have been authorized by the State Govt. (Vide GO Dated 2nd December, 2009) to treat the reserve forest area, under any project, within a prescribed plan, so that the holistic treatment of any micro watershed can be achieved.
- Under the SLEM project, the importance of post project sustainability of project interventions was duly recognized and the sustainability issues were addressed right from the project conceptualization and design stage to project implementation at field level. The state government order vide letter no. 251/XIII (II)/2011-31(05)/2011 dated 08 Dec. 2011 regarding the utilization and maintenance of the various assets created during the project period has resulted in convergence with line departments for Operation and maintenance of assets.

chapter

2

Controlling land degradation through SLEM approach

COMPONENT–1 WATERSHED PLANNING THROUGH COMMUNITY PARTICIPATION

A community based participatory approach to watershed planning is a key feature of the project. The planning process under SLEM benefitted from the institutional mechanism and capacities built in UDWDP.

- The integration of Gram Panchayat level watershed plans at the micro-watershed level by inclusion of inter GP areas comprising reserve forest has been an important feature of the project.
- Community participation at the revenue village, Gram Sabha and Micro Watershed levels has been done through participatory decision-making processes
- Geographically contiguous areas of micro watershed, even if outside the Gram Panchayat (GP) but under the Forest Development, were included to ensure holistic management of watersheds.
- Apart from the GP, the Van Panchayat (VP), Revenue Village Committee (RVC) and other user groups were involved in the development of these watershed development plans. Twenty micro watershed plans were developed and implemented through community participation.
- A Novel policy initiative was taken to involve Van Panchayat as an institution for carrying out treatment works in reserve forest areas through a government order dated 2nd December 2009. (Annexure- 1)

Afforestation

Box- 1. POLICY INITIATIVE:

Van Panchayat (VP) as an institution for treatment inside the reserve forest area

Van Panchayat (VP)- Van Panchayat is one of the oldest institution in the State involved in management of village forest. This is a legal institution created under Indian Forest Act 1927. The executive of Van Panchayat is an elected body of the villagers. The usufruct and revenue sharing arrangements are defined by the rules known as Uttarakhand Van Panchayat Niyamawali, 2005. This is also the sole authorized institution which can act as a partner with the Forest and other department under Joint Forest Management.

Under SLEM project, the MWS plans included watershed treatment activities in both reserve forest area and outside the reserve forest area within the GP. The VP were carrying out treatment works in the forest area within the GP area but could not take up treatment work in the reserve forest area of the MWS which are under the management of forest department. The Government of Uttarakhand came out with a unique model of synergy between reserve forest area and outside the reserve forest area by involving the Van Panchayat (VP) as an institution for undertaking treatment works inside the reserve forest area.

The Govt. issued a G.O. on 2nd December, 2009 authorizing the VP as an institution to treat the reserve forest area, under any project ,within a prescribed plan, so that the holistic treatment of any micro watershed could be carried out. The detailed plans were prepared in compliance with working plan of the forest area and after the approval of the concerned Divisional Forest Officer (DFO), work was carried out in the Reserve Forest area by the VP.

Funds were directly transferred to the Van Panchayats for undertaking watershed treatment works in inter-GP spaces (RF) within the MWS.

COMPONENT-2 CONTROLLING LAND DEGRADATION THROUGH THE SLEM APPROACH AT WATERSHED LEVEL

This component involves implementation of 20 MWS plans. Activities prioritized by the community including soil conservation works on arable & non arable land, drainage line treatment, afforestation, assisted natural regeneration, fire management, water recharge and harvesting activities and water source sustainability were taken up.

Status of implementation of 20 MWS plan is annexed in Annexure-3.

1. FORESTRY ACTIVITIES

1.1 Afforestation

To improve the vegetative cover in the project area, afforestation has been included as an important activity. Under this, 830 ha (203 ha. in RF and 627 ha. in other areas in GP) plantation has been raised. The details are given below:-

Name of Division (GP)	Area planted (ha.)			Species Planted
	Reserve Forest	Others	Total	
Bageshwar (11)	47	160	207	*Grevia spp, Bauhinia spp, Alnus spp, Oak spp., Ficus spp., Albizzia spp, Toona spp etc.*
Nainital (40)	108	109	217	
Agastyamuni (52)	48	183	231	
Chinyalisaur (22)	0	175	175	
Total	**203**	**627**	**830**	

1.2. Nurseries

Community was motivated to raise forest and medicinal plant nurseries. 17 Forest nurseries and 19 Medicinal and Aromatic Plant (MAP) nurseries have been established by the Farmer and Women Groups. Medicinal and aromatic plant species like Van tulshi (Ocimum sp), Stevia rebaudiana, Tejpat (Cinnamomum tamala), Lemongrass (Cymbopogon flexuosus), Aloe vera (Aloe barbadensis), Brahmi (Centella asiatica) and Vach (Acorus calamus) were raised in these nurseries. The detail is given below:

Name of Division (GP)	No. of Nurseries		No. of Plants raised in'000'	No of Planted in '000'	Remarks
	Forestry	Medicinal			
Bageshwar- 11	11	3	213	160	26 Nurseries presently exist as Kisan/ Mahila Nursery. They are now raising horticulture, forestry and medicinal plants
Nainital -40	2	1	814.82	635	
Augustmuni -52	2	7	214	78.43	
Chinyalisaur- 22	2	8	201.2	156	
Total	**17**	**19**	**975.84**	**569.94**	

About Rs. 83000 per annum earned by the kisan/ mahila nursery group through selling of planting material to the different agencies.

1.3 Assisted Natural Regeneration (ANR) of Oak

The forest areas of Kumaon and Garhwal are blessed with patches of Oak (Quercus sp) in the vicinity of the Gram Panchayats. These OAK forest have been subjected to extensive felling for fuel wood and fodder needs of the neighbouring villages. Wherever the Van panchayats were active or had positive mind set regarding the future of their natural wealth, they had restricted the indiscriminate felling of trees and encroachment in such areas. Studies conducted by the forest department have shown that Oak (Quercus species) are difficult to grow in the nurseries and have poor survival rate. Therefore Assisted Natural Regeneration (ANR) of Oak was taken up. Under ANR, cultural operations (viz Pruning, singling etc.) were carried out. In Nainital Division, in addition to cultural operations, 200 Oak plants were also planted in each hectare of the selected forest area. Such activities could only be taken up after extensively educating the rural inhabitants, especially the womenfolk regarding the importance and ways of preserving and enhancing these patches because they not only help in maintaining the moisture regime in the area, but also recharge their natural water resources in summers, when they need them most.

Table- 3 : Status of ANR Oak

Name of Division (GP)	Reserve Forest (in ha.)	Other (in ha.)	Total
Nainital (40)	10	45	55
Augustmuni (52)	33	27	60
Total	43	72	115

2. DRAINAGE LINE TREATMENT (DLT) AND SOIL & MOISTURE CONSERVATION (SMC) WORKS

2.1. Construction of vegetative check dams or brush wood check dams

Vegetative check dams or the Brush wood check dams are established across the first order streams of the catchments, usually at the origin sites of nallahs/ Gully. These first order streams if left untreated, result in widening and increase the length of the stream towards upper ridge due to scouring action. Such nallahs are treated with vegetative or brush-wood check dams supported with Agave and other shallow rooted plantations. 536 vegetative check dams have been constructed in the project area.

2.2 Construction of dry stone check dams

Dry stone check dams are usually constructed in the upper and middle catchment of the nallah. It is often constructed intermittently along with the crate wire or gabion check dams for providing strong support to the land where the nallah widen and the flow of the water becomes more ferocious. 21569.38 cum of dry stone check dams have been constructed in the project area.

2.3 Construction of crate wire check dams

Massive erosion due to heavy rains in the project area led to inclusion of crate wire check dam in the Annual Work Plans for treatment of these areas. The local leaders were quite vocal in the general body meetings that more such check dams be constructed in the nallah in the vicinity of their Gram Panchayats. About 50875.52 cum of crate wire check dams have been constructed in the project area.

2.4 Construction of contour trenches

Under UDWDP project, construction of large 'kuccha' ponds with contour trenches sized 3.0 x 0.5 x 0.5 m, have been found to be useful. 91711 contour trenches have been dug in the SLEM project area. On the lower side of each trench, two rows of fodder or lemon grass, along with two broad leaved tree species were planted. These efforts

have been helpful in recharging and increasing the availability of water even during summer months.

2.5. Diversion drain

Diversion drain are placed at the top of the arable area to intercept the water running off the slope above and divert it across the slope into a natural drainage course. 10755.1 m diversion drain have been constructed.

2.6. Cross barrier / retaining wall

Retaining wall (Crate wire) 8630.94 cum, dry stone retaining wall 4187.61 cum have been constructed.

2.7. River Bank Protection

River bank protection works were also taken up after 2010-11. Due to heavy rain many people lost their standing crop when the river changed its course and started cutting into their agriculture lands. Large areas of land covered under crops were washed away in the floods in the Gram Panchayats of the project area. Nearly 22613.05 cum of river bank protection works has been carried out through construction of crate wire, bonded wall, mortar work and spur construction work.

2.8 Road side erosion control

4682.44 cum road side erosion control work has been done.

Table 4 - : Status of soil and water conservation structures

Name of Dist./ Division	Vegetative check dam (No)	Dry stone checkdam (cumt)	Crate-wire checkdam (cumt)	Crate wire spurs (cumt)	Contour Trenches with Bunds (No)	River Bank Protection works (cumt)	Retaining wall/ cross barrier (cumt.)	Diversion drain (mtr)	Land slide treatment works (cumt)	Road side Erosion Control (cumt)
	1	2	3	4	5	6	7	8	9	10
Bageshwar (Bageshwar)	48	966.41	1300.21	51.91	8987	9158.81	1224.81	458	118.87	0
Nainital	358	5305.27	28437.33	442.62	63948	8658.59	7727.94	8837.1	0.00	0
Rudraprayag (Agastyamuni)	130	8501.7	12678.98	1500	18776	2587.65	2963.12	1460	0.00	4682.44
Tehri Garhwal (Chinyalisaur)	0	6796	8459	0	0	2208	903.33	0	389.10	0
Total	**536**	**21569.38**	**50875.52**	**1994.53**	**91711**	**22613.05**	**12819.2**	**10755.1**	**507.97**	**4682.4**

3. WATER RECHARGE AND HARVESTING STRUCTURES

3.1. Village Ponds

Dug out ponds were found to be very effective in water recharge and water conservation during the UDWDP Project and were continued in SLEM project. Small ponds of 100 cum and large ponds of 200 cum size have been dug in many hamlets of the project area. 318 village ponds have been constructed. About 47700 cum of water has been harvested for recharging springs downstream. In some areas, the water has also been used for irrigation.

3.2 Irrigation Tanks

18 Irrigation Tanks of 15 cum size have been constructed. These have created an additional water storage capacity of 270 cum. These tanks have created an additional irrigation potential of approx 18 ha.

3.3 Tal/Naula/Khala Rejuvenation

A large part of Uttarakhand hills face an acute water shortage during the peak summer months. Therefore activities for revival of drying water sources were taken up on priority basis in the project area. The good experience of

UDWDP project has encouraged and motivated the beneficiaries in most of the villages to opt for rejuvenation of their traditional water sources (naulas) as they are the main sources of potable water in their area. Under SLEM project, Naula/Khala rejuvenation works have been taken up in 423 sources.

3.4 Recharge pit

1087 water recharge pits were constructed in the project area for water recharge.

3.5 Roof water harvesting tank

125 Roof water harvesting tanks have been constructed in the project for rain water harvesting. The water is being utilized by the beneficiaries for domestic purposes.

Table 5 : Status of water harvesting structures

Type of structures	No.	Utility
Village Pond	318	For recharging springs and irrigation
Roof Water Harvesting Tank	125	For Domestic use
Water storage tank	18	For Irrigation purpose
Recharge pit	1087	For recharging springs

4. FOREST FIRE MANAGEMENT

The project area lies in the chir pine zone which makes the forest extremely vulnerable to forest fires. Fire management activities were under taken in 186 ha. of forest area. The activities included fire line cleaning, fire safety tools distribution and Capacity development by training & awareness generation programs on forest fire management and safety issues.

IMPACT OF SLEM APPROACH

- The MWS Plans were prepared and implemented by the community keeping in view the Environmental and Social safeguard guidelines. Technical and social facilitation was provided by the project. This has resulted in greater sensitization of the community to issues of natural resource conservation and sustainable management.
- Soil and moisture conservation measures have improved the moisture regime of these MWS which is reflected in increase in agriculture productivity in irrigated and rain-fed areas. The soil conservation and DLT interventions have resulted in arresting soil loss of about 142437.90 cum of top soil loss.

This has protected approx 185.17 ha of agriculture land from degradation. In economic terms this translates into a return of Rs. 44.90 lakh per annum from the protected land when it is used for cultivation of 2 crops (Finger millet, Wheat) in rain fed conditions. Impact analysis of soil and moisture conservation works is as follows:-

Table- 6 : Impact of Soil and Moisture Conservation Works

	Total	Soil loss reduction cumt.	Assumed Total soil reduction
Veg. Checkdam (No.)	536	0.25	134
Stone Checkdam (Cumt.)	72445.16	1	72445.16
Diversion Drain (m)	10755.1	0.1	1075.51
Contour Tranches (No.)	91711	0.75	68783.25
Total Assumed Soil Reduction in Cumt.			142437.9
1 cumt of soil loss reduction = 0.0013ha. Top soil protected			0.0013
Total area of agriculture top soil protected			185.17 ha. area protected
1 cumt.of soil loss = 1.5 MT of Soil			1.5 MT
Total Soil Loss reduced in MT			213656.88 MT
Gross culturable land (ha.)			277.76

Assumptions in Economic Terms:

1) Net total Agriculture land protected (ha.)= 185.17
2) Gross culturable land (ha.) = 277.76
3) Average yield per ha of Finger Millet (Mandua) =15 qtl/ha. Rate of Mandua per qntl Rs. 700. Net profit per ha. = Rs. 10500 and average yield per ha of Wheat=25 qtl/ha. Rate of Wheat per qntl Rs. 1100. Total rate per ha. = Rs 27500. Net profit per ha. = 13750
4) Total profit per ha. = Rs 24250
5) Total profit from 185.17 ha. of land= Rs. 44.90 lakh

- The intervention of diversion drain helped in checking the loss due to excessive run-off into habitation and agriculture lands. The diversion drains were constructed in Nainital Division of about 8.84 km. length. The command area saved through this is approximately 5 ha. for every 100 mtrs. of diversion drain constructed, thus about 442 ha. of agricultural land was saved from excessive run-off during monsoon.
- River beds have been protected by various structures which have not only saved agricultural land on both sides of these rivers, but has also increased the irrigated agricultural land by recovering land lost to bank cuttings and repeated silting.
- Water harvesting structures like rain-water harvesting tanks, irrigation tanks, village ponds and recharge pits were constructed in the project area to enhance water recharge and improve irrigation facilities. Due to irrigation tanks, additional irrigation potential on 10.2 ha. was created.

Table – 7 : Impact of Water Harvesting Structures

Type of structures	Creation of additional structures No.	Water holding capacity per structure (cum)	Additional Water holding capacity created (cum.)	Remarks
Village Pond	318	150	47700	For recharging springs, improving moisture regime and irrigation
Irrigation tank	18	15	270	For Irrigation purpose
Roof Water Harvesting Tank	125	2.59	323.75	For Domestic use and backyard garden
Recharge pit	1087	1.2	1304	For recharging springs and improving moisture regime.

* Two fills per year are considered * 25% evaporation loss

The above calculation have been done on the basis of following water storage capacities of structure

Table- 8 Water holding capacity

S.No.	Activity	Water holding capacity (cum)
1.	Water Harvesting tank	2-3 cum
2.	Irrigation tank	18-51 cum
3.	Village Pond	100-120 cum
4.	Recharge pit	1.2 cum

Source (Gramya ICR March 2012 WMD)

- Water source protection activities have resulted in revival of water sources in the project area where the discharge had been reduced due to degradation. Upto 82% HH (as against 68% before project interventions) spend less than 1 hrs. to access water in dry season (TERI impact report).
- The water source conservation activities under taken in SLEM project in Gram Panchayat Selalekh by the community with the social and technical facilitation by the project team were recognized at the national level by the Ministry of Water Resources of Govt. of India. The Gram Panchayat Selalekh was awarded with the National Ground Water Augmentation Award 2010 for its efforts.

Community members of Gram Panchayat Selalekh with the project team of Nainital division receiving the National Ground Water Augmentation Award 2010 at New Delhi.

Box-2 Rejuvenation of water sources- Gram Panchayat Selalekh District Nainital

Residents of Selalekh Village were facing problem of water scarcity inspite of the occurrence of 4 water sources in the area. Over the years, the discharge in these sources had considerably reduced with the water being available only for 7-8 months in a year. The issue was raised in the Mahila Aam Sabha and thereafter taken up by the Gram Panchayat. Catchment Treatment of the area was under taken by the Van Panchayat. 4 village ponds, 1166 staggered contour trenches, 8 vegetative check Dams, 63 Dry Stone check dam and 9 crate wire check dams were constructed. In addition plantation of local species (Oak, Bhimal, Utees, Majnu, Tejpat along with lemon grass) on 5 ha land was also carried out. This treatment resulted in revival of the water sources. The Van Panchayat and the project team was recognized for its efforts at the national level with the National Ground Water Augmentation Award 2010 by the Ministry of Water Resources of Govt. of India.

Water Sources	Before Project (2005)				After Project (2011-12)			
	No. Of HH. Dependent on Source	Duration of Water Availability (Months)	Months for which water is Unavailable	Water Discharge (LPM) March	No. Of HH. Dependent on Source	Duration of Water Availability (Months)	Months for which water is Unavailable	Water Discharge (LPM) March
Ratoura Naula	43	8	4	8	48	12	-	14
Lamejar Naula	29	7	5	6	32	12	-	12
Badna Naula	28	8	4	8	25	12	-	12
Kanala Dhara	22	7	5	8	22	12	-	12.5
Distance of Alternate source	0.75 km from Lamezar Naula 1.25km from Badna Naula 2.0 km from Lamezar is Ladua Gadera.							
Crop Cycle	Potato – Wheat, Potato – Cabbage.				Potato, Tomato, Pea, French bean – Pea, Cabbage, Cauliflower, French bean			

Box 3- Water conservation activities in Village Malkhi of Baniyarigad MWS in Rudraprayag district

Village Malkhi is located on the higher reaches of Baniyarigad MWS. It has good forest cover but faces severe scarcity of water in the summer season. Over the years there was a decline in the overall production of various agricultural crops due to non availability of water during summers. The farmers were not practicing any water and moisture conservation activities in the area. The rain water was neither being harvested nor could be utilized to recharge the water sources or to help in keeping the moisture content in the soil. The rain water which could irrigate around 40 hectare area was going waste due to lack of infrastructure. This issue was taken up by the community members with the project team and a treatment plan was formulated. Afforestation activities were taken up in 19 ha of land and 8 small water bodies and one new pond were constructed. These interventions have resulted in increasing the availability of water in summer season. Now farmers are raising nurseries of paddy during summer and transplanting them with the onset of monsoon. Increase in agriculture production has resulted in increase in income of farmers up to Rs 80000.00 per year. Container filling exercise for Before and After scenarios from the water sources in the treated areas was carried out and it was found that the 20 liter container which before the treatment took 10 minutes to fill was now being filled in approximately 6.5 minutes after the treatment. This study clearly indicated the positive outcome of the project interventions.

Box- 4 River bank protection in Gram Panchayat Sumati Baisani in Bageshwar district.

Sumati-Baisani gram panchyat of Bageshwar Division is located at an altitude of 1300 m above M.S.L. and comes under “Gagnigad microwatershed”. Most of the agriculture land in GP is situated near by the Gagnigad, Sumati nala, Jagthana and Pausari nalla. Heavy rains, which is a common feture here, caused heavy erosion and lot of silt deposition along side the streams. After the calamity in Sep. 2010 and cloud burst incident on 12 Sep 2012, the massive errosion became a frequent hazard to the agricultural lands and lives of the residents. Thus the people of the village put proposals for comprehensive treatment of the catchment area through DLT works. As per proposals, the DLT works done in GP Sumati Baisani are; Vegetative Check dams 16 nos., Dry stone Check dams 224.17 cum, Create wire Checkdams 111.21 cum, River bank protection works 2385.53 cum and Dry stone retaining wall 153.12 cum.

Now about 2.30 ha. agriculture land belonging to 86 farmers and 6.75 ha barren land has been saved from erosion. The work successfully reduced the amount of soil erosion and protected the kharif crop cultivated along the Gagnigad bank side.After the construction of a wire created cross barrier at Pausari nala, farmers are getting assured irrigation in 50 nali (1 Ha) area even during lean season. Approx. 0.8 Ha additional area is now under irrigation. Now the productivity has also increased by 20% (by sowing improved varieties) due to assured irrigation. Besides this, the existing assets nearby the stream i.e. 6 Gharat, 6 footbridge, 3 houses and a primary school have also been saved by these protection measures.

chapter

3

Reducing pressure and dependence on natural resource base

COMPONENT 3 - FOSTERING MARKETS FOR NTFP

The rural hill population is highly dependent on forest resources for meeting its livelihood security with regard to fuel, fodder and timber. Fuel-wood consumption per capita varies from 2.8 kg per capita per day at higher altitudes (>2000 mtr) to 1.42 kg per capita per day at lower altitudes (1000-1500 mtr). This translates into almost 2 million tons of fuel-wood per year for the Uttarakhand Himalayas or about 1.0 million tons of carbon4. In addition, the increased interaction of animals with humans entering the forests for collection of fuel-wood and fodder is resulting in rising incidences of may/animal conflicts and this is reflected in people collecting fuel-wood from reserve forests when community forests are unable to meet their demands. Although agriculture is one of the core economic activities for over 80 percent of the population, the role of forests in sustaining the agriculture and animal husbandry system is immense. According to an estimate, to generate one unit of energy from agriculture, 10-12 energy units of forest biomass are used.

Such high levels of dependency on forests, combined with the depletion of their resources, implies that a continuous supply of environmental services from the forest will not be possible to conserve without enabling the poor people to have access to modern and efficient energy sources, and through other interventions that will reduce the pressure on forests and the environmental services they provide.


DIESEL
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The objective of this component was to undertake project interventions to reduce the dependence of the rural households on natural resource base for meeting their domestic energy requirements. Under this component, up scaling of the pilot introduction of Chir pine briquette making which was undertaken in the parent UDWDP project was done. The utilization and conversion of Chir pine needle biomass into briquette can be used as fuel for meeting household and other energy requirements of community. In case of pine briquette, first and foremost, the project focus was on meeting the domestic energy requirement and there after provide marketing support for any surplus production as an income generating activity by self help groups functional in the area.

The project also promoted other alternative energy resources viz bio-gas and solar energy use through demonstration and providing adoption support to villagers. This component also provided capacity building support by conducting workshops and trainings and creation of small infrastructure facilities for market support. Creation of small infrastructure facilities for marketing support has also been done. The market linkage to sell the pine briquette has been developed with help of DSAs in the divisions.

1. Chir pine briquette making

An Alternate Fuel and Livelihood Option

Pine Briquette making was introduced in UDWDP as an experimental endeavor with the intent of reducing the drudgery of the womenfolk of Himalayan villages in the project area and also to address the perpetual problem of forest fires caused by pine needles. This activity has been further upscaled under the SLEM project.

About 85% of the rural households are engaged in the collection of fuel wood in the project area. The average family size in the project area is five adult units, with an annual consumption of fuel wood per rural household of 2.7 MT collected by 183 women labour days. Pressure on forest resources, health problems because of smoke pollution, drudgery in fuel wood collection and transportation, and opportunity cost of women labour days spent are the costs associated with the use of fuel wood based energy for household use.

The usage of Pine briquettes as fuel not only brought a relief to the forest but also reduced the drudgery of women to an extent. The average requirement of pine needle briquettes per household is 1.1 MT per annum. The calorific value recorded for pine needle briquette is 5,885 Kcal/kg, which is 47% more than the fuel wood. About 3 to 3.5 kg needles are required for each kg of briquette and about 40 kg briquettes can be produced in an hour. The response from women folk is quite encouraging as the frequency to visit forest for fire wood has reduced and they can now spend more time on other chores.

Shifting out of fuel wood based energy in the beneficiary households saves 110 women days per annum. The opportunity cost of saved women labour is therefore high, and even at the current wage rate, its value works out to Rs 8,250 per annum per household. Reduced drudgery and pollution effects on health were additional gains for the households.

Pine briquetting technology

A. Charring of Pine Needles:

The charring kiln is used to convert pine needles into charcoal. The needles are fed gradually in a specially designed charring

kiln. After the batch is completely fed, the door of the kiln is closed. Due to partial oxidation the needles are charred and not burnt.

B. Power operated briquetting machine

The char obtained from the charring kiln, is mixed with 10% of suitable binder (cowdung, starch, soil) and the mixture is fed in the hopper of the machine, which is conveyed by the augur to the exit tubes from where the cylindrical briquettes come out and fall on the pan, placed under the machine.

The briquetting machine is made of mild steel and works on two HP Motor. The production capacity of the machine is 60Kg /hr.

C. Biomass fuel cooking stove

Considering the importance of design of cooking stove, a new kind of advanced design of cooking stove for the purpose of using biomass fuel briquettes and in particular to reduce the loss of heat due to radiation and convection, has been developed. In this stove, the briquettes burn efficiently with less smoke production.

The heating value of pine needle cooking fuel is 5885 kcal/kg. (as per IIT Roorkee Test Report)

Pine Needle Charcoal Briquettes : An Ideal Fuel

The pine needle charcoal briquettes are proving to be an eco- friendly and renewable fuel. It has a high burning efficiency due to low moisture and high density. It has low ash low content and no sulphur is emanated when it is burnt. It can be easily transported and the demand for its market is high due to rising fossil prices.

Project support

Several training Programmes were organized in the Gram Panchayats of the project area to motivate beneficiaries to take-up this activity. The beneficiaries were organized into SHG of 10 to 12 members each. Each SHG was provided with a pine briquette machine and all members with improved stoves. About 203 Pine briquette making machine were provided to 109 SHG of the project area. About 4984 improved stoves have also been provided to the beneficiaries. The groups have since been actively involved in the production and marketing of the briquettes. About 3000 households have produced 4201.25 quintals of pine briquettes.

Tara Devi, a member of the Sherawali Maa SHG, Bageshwar division has been trained as Master Trainer for training on pine briquetting in the local area.

Before distributing the stoves among the SHG members, they were given hands on training by technical experts and the master trainers, who are from among the users groups or the Self Help or Vulnerable groups of these villages. Vulnerable groups have been trained and educated to take up this venture as an income generating activity. Upto month March 2012, 7977 members (repetitive) of SHGs / UG have been trained.

Table – 9 Status of Pine Briquetting

Name of Division	Machines distributed (No.)	Production (in Qtl.)	SHGs (No.)	Household consumption (In Qtl.)	Marketing		
					No. of SHG	Produce in Qtl.	Amount in INR
Bageshwar	38	693	25	566	23	127	190500
Haldwani	48	1680	50	1493	22	187	233000
Augustmuni	53	1834.74	53	1083.31	53	749.79	1337869
Chinyalisaur	64	264	64	220	11	44	66000
Total	**203**	**4201.25**	**192**	**3355.32**	**109**	**1138.00**	**2967692.0**

Market linkage

For marketing NTFP product viz pine briquettes, SLEM project provided support to institutions and individuals engaged in the activities. About 109 SHGs have taken up this activity as an IGA. Surplus production (after domestic consumption) is being sold in the local market for Rs. 12 to Rs. 15 per kg. So far about 1138.00 qtl of pine briquette have been marketed to the tune of Rs 29.67lakh.

- *In Bageshwar division, Pine briquettes are being sold to Bagnath Zila Swayatt Sahkarita, SARAS Bazar and Shikhar Swayatt Sakarita, with an earning of Rs.78000/-*
- *In Augustmuni division, pine briquettes are being sold in the local market, supplied to schools in rural areas for cooking mid day meal and to workers of hydro power companies viz (L&T, Lanco) working in the area.*
- *In Chinayalisaur and Nainital division, pine briquettes are being sold in the local market.*

Box – 5 Successful Pine Briquetting in Gram Panchayat Kamsal of Agastyamuni division

Gram panchayat Kamsal is located 17 kms away from the main road and loses connectivity for nearly 04-05 months during rainy season. The villagers are predominantly dependent on firewood from adjoining forest areas for meeting their domestic energy needs. LPG cylinders in normal conditions cost them Rs. 700-800 and during rainy session when the road is closed, cost increases due to additional carriage charges. On an average one family gets 4 cylinder in a year which is sufficient only for 4 months for a family having 4 -5 members. For remaining months they have to remain dependent on fuel wood which is collected from nearby forest area. Thus a family of 5-7 members need on an average 10 kgs of fuel wood per day which comes out to 300 kgs a month. Women have to spend 2-3 hours daily for nearly 15 to 20 days every month to collect this quantity of fuel wood to meet her family's domestic energy requirements. Under SLEM project, pine briquetting was introduced in 2009-2010 and after imparting training to two SHGs viz Jai Kamleshwar and Jai Kali having 18 members, one set of briquette making machine was given to each group. Slowly but steadily these groups have picked up the pace of briquette making and are not only using them for domestic consumption but also selling to other villagers. Till December 2012, they have produced 37.86qts of briquettes. About 16.42 qts of briquettes have been sold by the two groups for Rs. 27840. The groups have also tied up with a local school to provide briquettes for cooking food in mid day meal scheme. Prior to introduction of pine briquetting they remained engaged for 1080 hrs in a year but now they remain engage only for 540 hrs saving 540 hrs and also earning additional income. Observing the above results, groups from other villages also approached the project team for adopting this activity. A set of machine was given to SHG Agastrishi from GP Nakot in last week of October 2012 and by August 2013, they have produced 20.45 qtls of which 10.82 qtls was self consumed and 9.55 qtls was sold in local market for Rs 14325.00. This group is so enthusiastic about the activity that they are planning to market the entire surplus of neighbouring GPs and for this they have already tied up with local hotels and shops. Continuation of training programmes are also playing a major part in motivating groups

2. BIOGAS: AN ALTERNATIVE RENEWABLE ENERGY SOURCE

Biogas plants are a source of clean, non-polluting and low-cost fuel in rural area. It contains about 55 - 75% methane, which is inflammable. Biogas in the plants is produced from cattle dung, human waste and other organic matter by a process called "anaerobic digestion" in a biogas plant. In most of the cases in rural area, a biogas plant uses cattle dung (Gobar), therefore it is commonly known as Gobar Gas plant. Under the SLEM Project, 66 biogas plants were installed in project area.

Cost Benefit Analysis of biogas Plant having generation capacity of 3 m^3/day

a.	**Capital Cost**	
	Gas holder and frame	33000.00
	Piping and stove	
	Civil engineering construction (tank, inlet and outlet, etc.)	
	Total	**33000.00**
b.	**Annual Expenditure**	
	Depreciation on bio- gas plant @ 7.5% p.a.	2475.00
	Depreciation on piping and stove @ 7.5% p.a.	
	Depreciation on structure @ 7.5%	
	Cost of painting, once a year	500.00
	Total	**2975.00**
c.	**Annual Income**	
	30 Kg. fresh dung is used daily and it will give 1.25 Cum. Daily. (1Cum. of biogas equivalent to 0.43 kg. Butane) = 365X1.2X0.43=188.34 Kg. butane = 13 Gas Cylinder @ Rs. 400 each.	5200.00
	Manure 365X30X 0.16X0.6 = 1051.20 Kg. @ Rs.3.50/- kg.	3679.00
	Total	**8879.00**
d.	**Net Annual Income (c-b)**	**5904.00**

The net annual income of approximately Rs. 5904/- shows that the capital investment of Rs. 33000/- can be recouped in about six years.

Box- 6 Successful Bio gas intervention in Uttrauda gram panchayat of Bageshwar division

Shri Nandan Singh of Uttraura Village had been using bio-gas successfully for the last 20 years for meeting his domestic energy requirement. He was a beneficiary from an earlier govt. scheme promoting bio gas use. The other villagers wanted to adopt this activity but in the absence of any govt. scheme could not do so due to high cost. SLEM project provided the villagers with the opportunity to take up this activity. 15 biogas plants were installed at Chhuria Pannaura village of Uttrauda gram panchayat. The beneficiaries were organized into a user group which would be responsible for future maintenance of plants in a collective and participatory mode. All these plants are successful and functional at present. The group is also linked up with Mini Bank (Saadhan Sahkari Samiti), Uttrauda, a sister concern of Almora District Cooperative Bank at Nyay Panchayat Level having a present saving of Rs. 9000. Some of the beneficiaries are also supplying surplus bio-gas to other households.

- Fuel wood worth Rs. 108000/- saved annually by 15 user household (Annual cost of fire wood estimated at Rs. 7200 per HH)
- Saving in annual income is Rs. 88560/- (Rs 5904 per family)
- Women's drudgery in collection and stacking of fuel wood reduced from 120 days to 30 - 35 days in the months of Dec-March. Average net saving per household per women found to be 2 hours 30 minutes per day
- Firewood use reduced by 75 to 80%. Firewood used in winters (Nov to Feb) for heating or /and cooking dinner only.
- Biomass losses in forest reduced from a total of estimated 34170 kg to 8542 kg.
- Conserved 25628 Kg biomass estimated to reduce 35 tons of carbon dioxide (CO_2) emission in the environment annually.
- 56 tons dry bio-slurry recycled 230 tons fresh dung improved the texture and water holding capacity of 8 hectares agricultural land.

Use of NPK rich slurry is estimated to increase crop yield by 30% and overall improvement of soil texture.

3. Revival of water mills (Gharat)

In Uttarakhand, people have been traditionally utilizing the natural potential of the gushing waters as an unceasing energy resource for running of Gharats or the watermills.

The 'Gharats' or water flour mills run on a stream's kinetic energy to turn the shaft of the grinding mill. The water is diverted from the stream or river along a channel or canal to the water wheel. The force of the water's movement drives the blades of a wheel or turbine, which in turn rotates an axle that drives the mill's other machinery. The water leaves the wheel through the continuation of the channel. This may in-turn feed another mill. The passage of water is controlled by sluice gates that allow maintenance.

Over the years, these Gharats were not being used to their full potential and were in very bad state. These Gharats had low efficiencies ranging from 10%- 15% only. The project under took the task of rebuilding and rejuvenating these water mills and funding support has been provided.

SLEM project has supported the revival of 78 water mills (Gharat). Before the intervention, the condition of Gharats was very poor, the roof was kachha and made from timber and grass which had to be repaired annualy. The floor of Gharat was usually plastered with clay, so the wheat grinded from these gharats usually contains particle of clay. Now project has funded Rs. 35000/- for renovation of building, repairing of water channel, milling house, equipment,Patnaala etc. of the gharats.

Now the above mentioned problems has been resolved after and efficiency of Gharat has also increased and villagers are getting fresh (atta flour). Now maintenance cost of Gharats has reduced very much and efficiency of these Gharats has also been increased from 5-6 kg. to 10-12 kg./hour.

- These Gharats are popular due to its simple and cost effective mechanism
- The Gharats are eco-friendly
- On an average each group is earning Rs. 50400/ year (average operation of Gharat is 8 months/year) as maintenance cost of Gharat is very low
- The flour from these water mills is rather coarse as compared with the ones from the power mills of the plains and has more roughage (fiber content) hence, considered healthy
- Self Help Groups were encouraged to start their Water mills for grinding of grains. Total members involved in this groups are 418 (321 male and 97 female).
- Potential annual saving in Diesel consumption 78247.3 lt.
- The milling capacity of the traditional watermills among the sample gharats increased from 80 to100 kg/ day during July-October; 42 to 60 kg per day in November –June and 25 to 35 kg/ day April-June.
- Overall, sample villages studied together show that the average efficiency increased from 46.79 kg to 68.76 kg/ day per annum an increase of 31.95 %.
- Average per capita income in terms of bhagwari (grinding charges taken in the form of flour per unit of grain ground) been increased from 2.25 quintals in before intervention period to 3.12 quintal in after intervention period annually showing an increase of 27.88% over the traditional gharats.
- The bhagwari measured in terms of monetary benefits at local value of raw material, the per capita income of a household/ member was estimated to be Rs. 6243 against Rs. 3606 per year in traditional gharats.

BOX 7 - HIWAL FRESH - MARKETING OF GHARAT FLOUR BY SHG

In 2013, Hiwal SHG at Baisani in Bageshwar division started collection, grading, grinding, packaging and marketing of Mandua flour milled from the gharats.The group markets packaged Mandua flour to SARAS market, retailers and customers at Bageshwar market. By the end of Feb 2013, the Group marketed more than 10 Qt Mandua flour at the rate of Rs. 18/ kg. The group sells the flour with the brand name "HIWAL Fresh in the market.

Modernzation of Gharats through convergence with Uttarakhand Renewable Energy Development Agency (UREDA)

SLEM project has facilitated the a modernzation and upgradation of Gharats in Nainital and Bageshwar division for production of electricity at local level. This has been possible with the technical support of UREDA. The electrictiy being generated through the improved Gharats is being used by the inhabitants for domestic lighting, rice mill etc.

Box- 8 Production of Electricity from Gharat by Jai Siddhnath SHG of GP Sumati Baisani of Bageshwar division

Jai Siddhnath SHG of Baisani has installed improved mechanized system to run rice mill and to generate electricity of 2.5 KW. with the facilitation of UREDA. Electricity is being distributed to one Junior High School, 12 Household and 10 shops. The beneficiries (household and shokeeper) are contributing Rs. 100 per month to the SHG for O&M and other related work. During the day time, SHG is planning to establish a welding and tyre puncture repairing shop

4. Solar Energy

[To promote the use of Non Conventional energy in the project area, 3378 Solar Lanterns, 190 Solar street lights, 69 Solar cookers were distributed among the beneficiaries of the project area, having no access or limited access to electricity.

IMPACT OF INTERVENTIONS

- Due to various project interventions promoting use of non conventional/ alternative energy, approximately 19% households have partially shifted to alternative cooking energy (TERI report 2013).
- By adopting pine briquette making and consumption, women's drudgery in collection and stacking of fuel wood reduced from 120 days to 30 -35 days in the months of Dec-March. Average net saving per household per women found to be 2 hours 30 minutes per day
- Households are saving Rs 4800- Rs. 16260 per annum which was being spent on fuel wood and LPG.
- 31% of SHGs involved in pine briquette making and selling it (Rs 12-15 per kg.) are earning an additional income of Rs. 8480 per group.
- In the project villages, Bio gas intervention has been able to replace the fire wood as fuel by 75 to 80%. Bio mass losses due to fire wood in the adjoining forest have been reduced from 50 kg. to 8830 kg. The net 32120 kg. of bio mass thus conserved is equivalent to protecting 30 trees annually and reducing more than 45 tons of CO_2 emission
- Biogas production from each plant is estimated at 488 cum equivalent to 2010kg firewood valued at Rs. 8040/year. The value of slurry is Rs. 5256 per year. In field trials conducted in project area, it was found that the yield of crops and vegetables had increased by 10 to 30 % after application of biogas slurry. Women Saving approx 2.5 hrs daily after installing bio-gas plant
- The average efficiency of water mills in the project area after intervention has increased by 31.95 %. This has resulted in enhancing the income from Bhagwari (grinding charges taken in the form of flour per unit of grain ground) by 27.88%.
- About 29.3% of households have reported a reduction in the number of days (in a year) that are spent for fuel wood collection.(TERI report 2013).
- There are also incidental advantages of hygienic improvement, the absence of smoke and soot in gas burning, convenience in burning, and the increased richness of manure.

chapter

4

Bio Diversity Conservation and Livelihood support

COMPONENT–4

BIO-DIVERSITY CONSERVATION THROUGH WATERSHED PLANNING & COMMUNITY PARTICIPATION

CULTIVATION OF MEDICINAL AND AROMATIC PLANTS

In the SLEM Project, bio-diversity conservation & management through watershed planning & community participation was a major focus area. Under this component, domestication and cultivation of medicinal and aromatic plants was promoted. To ensure supply of quality seeds and seedling, nurseries have been established in all the project divisions. A cluster approach has been adopted so as to be able to produce marketable quantum with viable linkages. Linkages have been established between the Farmer Interest Groups (FIG) and suppliers for processing and marketing of medicinal and aromatic plants. Funding support has also been provided to SHGs to take up income generating activities.

STRATEGY AND APPROACH

- Organization of farmers into farmers interest group or medicinal plant grower group.
- Capacity building of groups.
- Demonstration of improved cultivation practices of medicinal and aromatic plants.
- Provision of input support.
- Linkage development with concerned department / organization for certification.
- Coordination with state agency and Herbal Research and Development Institute.
- Assistance in value addition of products and market linkages.
- Documentation of good practices and success stories.

ACHIEVEMENT

- In the project area 247 polyhouses (size of 100 sq.m) were provided to the progressive farmers and they were motivated to venture into cultivation of medicinal and aromatic plant species. Mainly medicinal plant species such as; Aloevera (Aloe barbadesis) , Stevia rebaudiana, Satavar, Sarpgandha, Rosemary, Lemon grass (Cymbopogon flexuosus), Aonla, Large Cardamom (Amomum subulatum Roxb.), Tej patta (Cinamomum tamala) Turmeric (Curcuma longa L.) and ginger (Zingiber officinale) are being cultivated in the project area.
- 19 MAP Nurseries have been established
- 179 FIGs have been formed for cultivation of medicinal and aromatic plants.
- 581.5 ha. Plantation of medicinal and aromatic plants has been carried out by the Farmer Groups.
- Change in rainfed agriculture practices
- 1.25 ha. Barren land changed for Ginger and Turmeric cultivation (Agastyamuni Division)
- About 6513.70 qt. of Ginger & Turmeric produce has been marketed from the project area. A total sale price of this produce was about Rs. 82.99 lakhs.
- Planting material, dry leaves of Stevia, fresh leaves of Aloe vera were sold by 12 FIGs to the tune of Rs. 3.68 lakh in a year (i.e., about Rs. 30,500/- per annum / FIG).

Small Infrastructure facilities for marketing support

SLEM project provided support to FIG, individuals and institutions for marketing MAP products from the project area. Grading and packaging machines, utensils for preparing, storing and packaging the pickles and seeds, kilta (a plastic carrying basket to carry agriculture produce), crates for using as containers for storing and carrying ginger, turmeric and other products, electric balance were provided. The FIGs were linked to the processing centers established in UDWDP-I.

MARKET LINKAGE

Product	Market Linkage
Ginger and Turmeric	**Augustymuni**- Appropriate Technology Institute (ATI) and Mandakni Khadya Prasncekarn Udhyog, Bhatwarisain. **Nainital** – Farmer's registration with CAP and MoU with Dabur Industries is under process **About 6513.70 qt. (Ginger & Turmeric) produce has been marketed from the project area. A total sale price of this produce was about Rs. 82.99 lakhs.**
Stevia	**Chiniyalisaur**- Vedik Foods, Dehradun Planting material, dry leaves of Stevia, fresh leaves of Aloevera so ld by 12 FIGs for Rs. 4.0 lakhs
Aloe vera	**Chiniyalisa**ur - Patanjali Yogpeeth and Shivdhara foods, Uttarkashi **Bageshwar**- SARAS and local market
Lemon Grass	**Chiniyalisaur**- Center for Aromatic Plants (CAP) Dehradun

Box 10 - Opening New Vistas in Ginger and Turmeric Cultivation

Ginger and Turmeric were selected for commercial cultivation under MAP on the basis of their high medicinal and market value, better shelf life, price security against market fluctuations due to adjustability of harvesting period, unharmed by wild boars, monkeys, porcupine, rats and scope/potential of value addition.

Turmeric	Ginger
Area (ha) – 60 ha	Area (ha) – 11 ha
FIGs benefited (nos.) – 43 ha	FIGs benefited (nos.)- 20 ha
Farmer families benefited (nos.)- 525	Farmer families benefited (nos.) 175
Production (qt) – 5350 qtl	Production (qt) – 1325 qtl

Value addition and marketing	Turmeric	Ginger
Marketed as fresh and value added (qt)	3500	950
Marketed through cooperative (qt)	10	15
Marketed as seed (qt)	30	20
Used for processing (qt)	10	-
Stored for seed (qt)	950	225
Income (Rs.)	80,38,500	35,57,000
Net Income (Rs.)	45,72,500	27,15,500
Net Income/ Family (Rs.)	8681	15346

Box- 9 Medicinal Plant "Aloevera" has changed the destiny of Mr. Shyam Singh

Mr. Shyam Singh Kanoli, Van Panchayat Sarpanch of Nankanyalikot Gram Panchayat (Bageshwar Division) has planted Aloe vera suckers in 0.30 ha. area in March 2010. Presently he is selling Aloe vera suckers in Bageshwar market @ Rs. 10/ sucker and Aloe vera juice @ Rs. 200/ lit. respectively. Till date Mr. Shyam Singh has earned app. Rs. 62,500/- profit. Shyam Singh has become a master trainer and imparting training at Central Institute of Medicinal and Aromatic plants (CIMAP) Lucknow on Aloe vera processing. He is also training local farmers interested in taking Aloe vera cultivation and processing.

IMPACTS

- Reduction of pressure on natural forests for medicinal & aromatic produce, thereby increasing conservation of biodiversity of the forests.
- Income generation from cultivation of medicinal & aromatic plants.
- Barren land converted into arable land by cultivation of medicinal plants.
- Direct interventions such as afforestation activities directly impacted biodiversity conservation by enhancing species richness, higher diversity index and significantly higher number of natural regenerating seedlings in project sites as compared to control sites.
- ANR of Oak forests have direct impact on biodiversity conservation.
- Forest Fire Management in plantation and ANR area has led to improved biodiversity conservation.
- Planting of broad leaved species which are linked to water & soil conservation & fodder enhancement (oak, bhimal, kachnar, Angu, Terminalia, Alnus, etc.)
- Closure of plantation area enhanced fodder production and species diversity.
- Promotion of income generation activities for sustainable livelihood options, cultivation and marketing of MAP, DLT and SMC works, promotion of alternative energy options have also directly and indirectly contributed to biodiversity conservation in project area.
- Training of the SHG & market linkages has caused adoption of right management practices for Rhododendron arboreum (Buransh) and Bayleaf (Tejpatta)

LIVELIHOOD SUPPORT

The main objective of SLEM project is to restore and sustain ecosystem functions and biodiversity while simultaneously enhancing income and livelihood functions. To achieve above objective, financial assistance was provided for taking up income generation activities to existing self help groups formed during earlier UDWDP phase. The project team supported the SHGs in the selection of suitable IGA and preparing proposals for financial assistance and training programme for the IGA.

Table-10 Status of SHG

No. of SHG receiving financial assistance	No. of Male	No. of Female	No. of members	Amount (in INR)
314	707	1763	2470	1,04,02,500

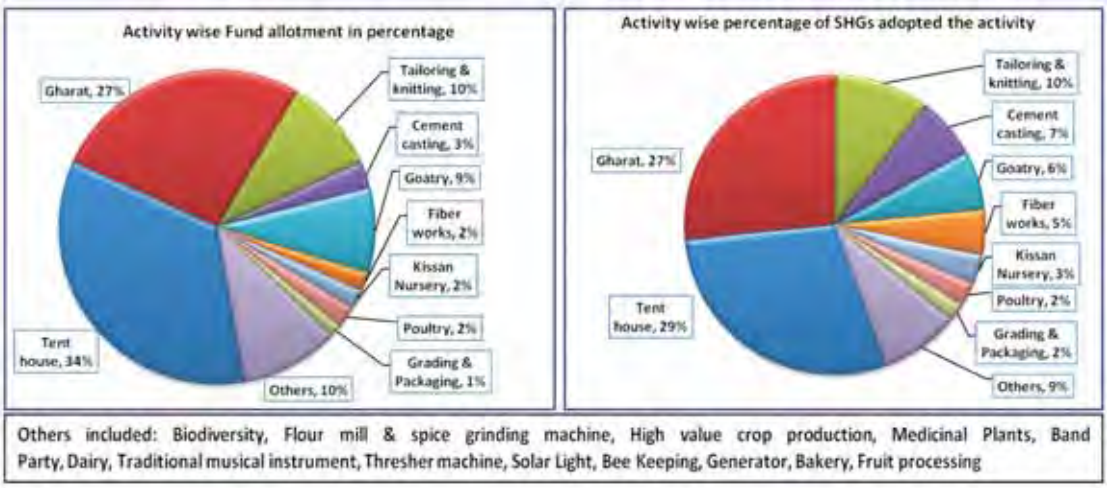
About 314 SHG linking 707 Male and 1763 female were provided funding assistance for taking up IGAs for supporting livelihoods and improving their economic status.

Project supported 22 IGA and funding assistance of Rs. 1,04,02,500/- was provided to the SHGs.

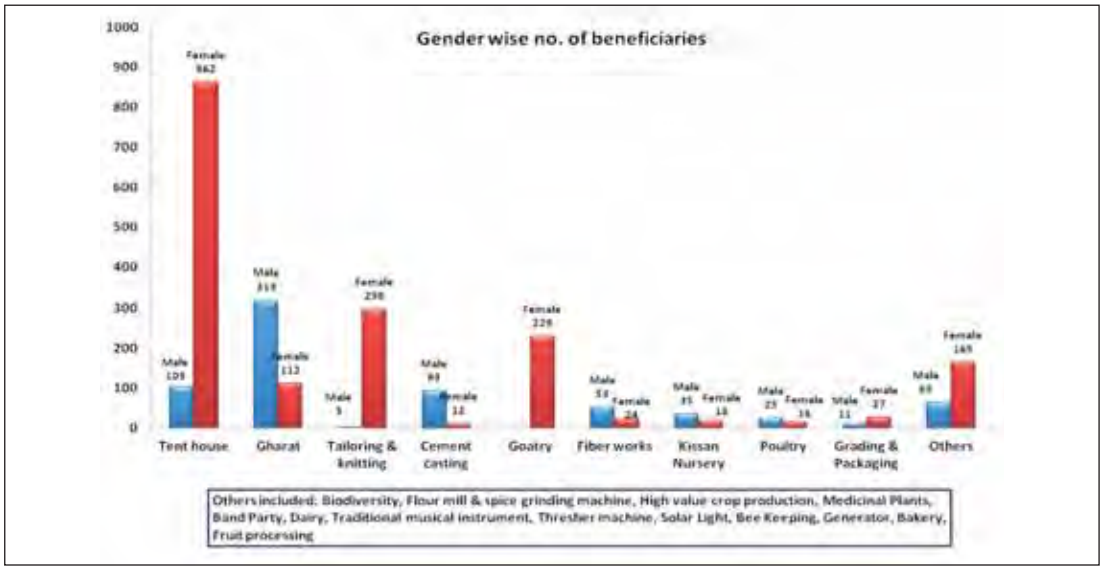
Table-11 Activity wise funding assistance

S.N	Activity	No. of SHGs involved	Male	Female	Total	Funding (in Rs.)
1	Bakery	1	4	1	5	25,000
2	Band Party	2	11	0	11	65,000
3	Bee Keeping	1	4	2	6	80,000
4	Biodiversity	5	18	11	29	1,25,000
5	Brooder unit & Poultry	8	25	16	41	2,30,000
6	Cement casting	21	93	12	105	2,90,000
7	Dairy	2	5	9	14	1,00,000
8	Fiber works- Basket making	15	53	24	77	2,00,000
9	Flour mill & spice grinding machine	4	0	48	48	2,31,000
10	Fruit processing	1	0	12	12	75,000
11	Generator	1		11	11	45,000
12	Gharat	84	319	112	431	27,77,000

13	Goatry	20		229	229	8,99,800
14	Grading & Packaging	6	11	27	38	1,35,000
15	High value crop production	3	17	4	21	1,50,000
16	Kissan Nursery	10	35	18	53	2,03,000
17	Medicinal Plants	3	6	9	15	65,000
18	Solar Light	1		13	13	25,000
19	Tailoring & knitting	32	3	298	301	10,15,000
20	Tent house	91	103	862	965	35,96,700
21	Thresher machine	1		14	14	40,000
22	Traditional musical instrument	2		31	31	30,000
	Total	**314**	**707**	**1763**	**2470**	**1,04,02,500**



Beneficiaries (Male/ Female)



Economic analysis of selected IGA for livelihood support

Economic analysis of the most preferred IGAs by the SHG was carried out with the objective of assessing the earnings of the groups. For the purpose of analysis, 180 SHGs were selected on the basis of following criteria:

- most preferred IGA by the groups
- SHGs which had received financial assistance and were functional for one year

The analysis at a glance is given below-

Table-12 Income analysis of SHG

Name of Activity	No. of groups	Group Size (No. of min. to max. members)	Total Members in SHGs			Grant Allotted (range min. to max. in Rs.)	Earning in one year (range min. to max. in Rs.)	Grant alloted (in Rs.)	Earning (in Rs.)	SHGs Savings
			Male	Female	Total					
Gharat	69	4 to 7	269	88	357	10000-75000	115046-4250	2287000	1606205	165854
Tent house	74	5 to 20	83	715	798	125000-2250	137525-3600	2839910	1140499	2177398
Tailoring & knitting	16	5 to 14	0	130	130	10000-70000	291226-4500	441000	476491	297068
Cement casting	21	5	93	12	105	10000-30000	42871-4900	290000	344725	60620
Total	180		445	945	1390			5857910	3567020	2700940

Results

- The activities which were mostly adopted by the beneficiaries in order of preference are Tent House, Gharat, Tailoring & Knitting and at the fourth place cement casting. Further, if we analyse these activities in terms of returns on investment, Gharat is the activity in which beneficiaries are getting highest returns, followed by Tent house, Tailoring & Knitting and cement casting activity.
- SHGs have adopted Gharat as major activity and income is ranging from Rs. 4250.00 to Rs. 1,15,046.00. Some of the groups through support from UREDA are also producing electricity. Of the overall grant, total 26.70% fund is allocated to these groups. Gharat is a preferred activity by male members.
- In Bageshwar division, a group consisting of 5 male members from village Baisani of GP Sumati Baisani has received a grant of Rs. 72000.00 for Gharat activity in the year February 2011. The group renovated an old Gharat and established a flourmill to grind grains. An electric dynamo was also fitted to generate electricity in collaboration with UREDA. From the electricity generated, electricity connection has been provided to a nearby school, shop and houses. By this they have earned Rs. 1,15,046.00 till August 2013 and also have savings of Rs. 3100.00 in their bank account.
- There are four Gharat SHG which have generated earning of Rs. 90,000 and above

Table – 13 Status of Gharat SHGs earning Rs. 90,000 and above

Division	GP	RV	Name of SHG	M	F	T	Date of funding	Grant Allotted (in Rs.)	Earnings (in Rs.)	Saving (in Rs.)
Bageshwar	Sumati Baisani	Baisani	Jai Siddthnath	5		5	26-2-2011	72000	115046	3100
Bageshwar	Sumati Baisani	Sumati	Bhairavnath	7	0	7	26-2-2011	72000	97760	4060
Bageshwar	Harseela	Kaufauli	Jai Chandika	5		5	16-3-2011	72000	96590	2900
Bageshwar	Sumati Baisani	Pausari	Bhagwati Mata	7		7	26-2-2011	72000	95830	4060

- Tent House and Tailoring/knitting has emerged as the most adopted activity among women members. About 715 women are involved in this activity.
- Tent House is selected mostly by female beneficiaries in all four divisions. The income is ranging between Rs.137525.00 to Rs. 3600.00. Of the overall grant, total 34.58% fund is allocated for this activity. Fund is given as per the group's requirement for utensils, tent house, chair & table etc.
- There are four tent house SHGs which are earning Rs. 90,000 and above as follows-

Table – 14 Status of Tent House SHGs earning Rs. 90,000 and above

Division	GP	RV	Name of SHG	M	F	T	Date of funding	Grant Allotted (in Rs.)	Earnings (in Rs.)	Saving (in Rs.)
Nainital	Talla-kanda	Malla-kanda	Edi Devta VG	8	0	8	03-10-2013	25000	137525	11800
Nainital	Selalekh	Selalekh	EktaVG	0	7	7	12-05-2012	25000	123834	32535
Nainital	Nai	Nai	Devi Maa VG	5	0	5	12-05-2012	20000	119320	5820

- Tailoring & Knitting is the activity which is completely dominated by female beneficiaries. In the selected 16 groups total 130 women have adopted this activity. Against the grant, the returns are also promising and within a year it ranges between Rs. 291226 to Rs. 4500 in various sizes of groups. Of the overall grant, total 9.76% fund is allocated to 32 groups of Tailoring & Knitting.
- Cement casting is the fourth most adopted activity. The income of the group ranging between Rs. 42871.00 to Rs. Rs.4900.00. Of the overall grant, total 2.79% fund is allocated to 21 groups of Cement casting.
- The SHG of Silalekh, division Nainital, consisting of 5 members (3 male and 2 female) had received a grant of Rs. 10,000.00 in February 2011 and till July 2013 they had generated earnings of Rs. 42871.00. This group is also saving and has Rs. 6750.00 in their account.

Tent House SHG – Village Putkuni (Bageshwar division)

COMPONENT-5: IMPROVE ADAPTATION TO CLIMATE CHANGE IN NATURAL RESOURCE BASED PRODUCTION SYSTEMS

Study for enhancing understanding of the impacts of climate change on natural resource based mountain economies and preparation of adaptation strategy was proposed . The study could not be carried out and funds were utilized for scaling up of SLEM activities in selected MWS.

chapter

5

Monitoring & Evaluation and Institutional Strengthening

COMPONENT-6: DOCUMENTATION OF BEST (WORST) PRACTICES TO SHARE THEM WITHIN THE STATE AS WELL AS THROUGH THE SLEM

Documentation of best practices in the project is being carried out.

- Booklet on pine briquette
- Booklet on Medicinal plants
- Booklet on organic agriculture and IPM
- Booklet on Bio-gas
- Brochures on Bio-gas and Gharat
- Flyers on use of non conventional energy resources, Watershed Treatment and Cultivation of Medicinal plants

Directorate of Extension of Indian Council of Forestry Research and Education (ICFRE) which is the Technical Facilitation Organization (TFO) for SLEM- CPP has also documented the activities undertaken for revival fo water mills (Gharats) and rain water harvesting and augmentation of water resources in the SLEM project Uttarakhand.

- Rejuvenation of Gharats (water mills) for sustainable land and ecosystem management in Uttarakhand.
- Rain water harvesting and augmentation of water resources for sustainable land and ecosystem management.

COMPONENT-7: INFORMATION MANAGEMENT AND MONITORING EVALUATION

Monitoring arrangements

1. External monitoring (Baseline and final Impact assessment)

The Energy and Resource Institute (TERI), New Delhi was the external M&E consultant for baseline and final impact assessment consultancy for SLEM project. The procurement was carried out through an NCB process using to CQS method. TERI was involved with the project for developing the project baseline. It involved developing sampling framework, designing questionnaires, field testing, pilot surveys, refining questionnaires, field surveys, data cleaning and entry and finally data cleaning and entry and finally data compilation and aggregation.

- Baseline survey was carried out at the level of MWS, GP, RV and household (HH). Both quantitative and qualitative methods of research were employed. Several approaches such as interview interviews and group discussions were adopted to generate desired information from the respondents. The baseline data for 51 GPs, 102 RVs and approx 1000 Households was provided.
- Final impact assessment was carried out by TERI on a sample of 487 households, 49 RVs and 26 GPs out of the 51 GPs covered in the baseline survey by TERI. The sample was selected from the baseline sample based on proportional representation to the four SLEM divisions covered, the topography of the sampled GPs (middle, valley, ridge) under the project and with due consideration to the need for covering all the project intervention. The same RVs and HH (within the set of GPs selected for the final assessment) were selected for the final

survey as were covered in the baseline survey for the most effective comparison. The same baseline control group comprising 5 GPs, 10 RVs and approx 100 HH from MWS outside the project area was used in the final survey.

2. Internal Monitoring

As part of internal monitoring, the progress of annual works programme was monitored on monthly basis through Monthly Progress Report (MPR) generated at the divisional level and consolidated at WMD level; the data was captured on the MIS. From time to time, monitoring teams were constituted with members drawn from various technical wings of the Directorate who regularly visited the project area. Random field visits, monthly meetings, checklist, brain storming, amidst all stakeholders at district level at monthly intervals and at regional level on half yearly basis was an integral part of the internal monitoring. At the district level there was a District Level Governing Committee under the Chairmanship of Zila Panchayat Adhyaksh for monitoring and supervision of the project. The committee reviewed the project progress at the district level at half yearly intervals. At the state level there was a State Steering Committee under the Chairmanship of FRDC, Govt. of Uttarakhand, with representatives from concerned line departments and NGOs. The State Steering Committee reviewed the project progress at half yearly and annual intervals. Periodic field visits by senior govt. and project officers was undertaken.

3. Participatory monitoring and evaluation (PME)

Participatory monitoring by community members was introduced in the parent project UDWDP-II to ensure stake holder participation in the in the monitoring of implementation of works. This was continued in the SLEM Project. The participatory indicators in use for evaluation in UDWPD were modified to include indicators relevant for the GEF additionality. The PME is being carried out by GP level PME teams which include representatives from all stakeholder groups at GP level.

The composition of PME team was as follows:-

- Gram Pradhan- Chairperson of the Gram Panchayat
- Ward member (Co- signatory)- Elected woman ward member
- 2 members from RVC- Revenue village committee members
- 2 members from FIG- Farmer Interest Group
- 2 members from SHG / VG- Self Help Group/ Vulnerable Group
- 2 members from Van Panchayat
- 3 Community members

The PME team has the mandate of carrying out participatory monitoring and evaluation of project implementation in respective Gram Panchayat on a half-yearly basis. The project's team of experts from different technical disciplines and for social mobilization provided technical and social facilitation in conduction of PME exercise. To ensure maximum community participation, other community members (apart from the designated 15 members of PME team) were also encouraged to participate in the exercise. Participatory monitoring is linked to capacity building of community institutions to allow them to monitor the entire process during both implementation and post implementation. The tools applied were mainly ballot box exercise, FGD, physical verification of assets, review of records and open meetings.

Highlights of PME report.

- Total 91% respondents were aware about the budget envelop and 95% were aware about beneficiary selection for various activities of AWP.
- Awareness about budget envelop was 92% among males and 91% among females.
- Awareness about beneficiary selection for various activities of AWP was 96% among males and 95% among females.
- More than 95% males and females were satisfied with beneficiary selection. Employment generation through GPWDP work also indicates that 97% community was satisfied.
- Community is aware about the process of information display. The awareness about display of information reflected 98% among male and female; awareness about expenditure status up to month reflects 92 % overall and awareness about place of display was 98% among the PME participants.

AUDIT ARRANGEMENTS

Internal Audit

The project accounts are being subjected to quarterly internal audit by a firm of chartered accountants engaged by the WMD. M/S Sachdeva and Com. have been hired as the Internal Auditor for the project. The Internal Auditor is conducting quarterly and annual audits and submitting Annual Financial Statement to the World Bank and Department of Economic Affairs (GoI). The Internal Auditor has completed audit for the FY 2009-10 and 2010-11. Internal Audit for year 2011-12 upto second quarter has been completed. The audit objections/clarifications have been adequately complied with. So far no serious financial deviations have been observed by the auditors.

The status of the reports of Internal Auditors is given below:-

Table – 15 – Status of internal audit

Sl. No.	Financial Year	Dates of submission of Annual Financial Statement to the World Bank and DEA (GoI)
1	2009-10	208/3-7-1(S.O.E.) Dt. 30-07-2010 (SLEM)
2	2010-11	417/3-7-1(S.O.E.) Dt. 16-08-2011 (SLEM)
3	2011-12	218/3-7-1(S.O.E.) Dt. 25-07-2012 (SLEM)
4	2012-13	170/3-7-1(S.O.E.) Dt. 17-07-2013 (SLEM)

External Audit·

The CAG through its offices in Uttarakhand are the statutory auditor for the project. The CAG's office conducts annual audit of the operations of the WMD and its constituents at the divisional and district levels. So far the CAG audit for FY 2009-1, 2010-11 and 2011-12 has been completed. The audit objections/clarifications have been adequately complied with. So far no serious financial deviations have been observed by the auditors. The status of various SOE audits are given below-

Table – 16 – Status of SOE audit

Sl. No.	Financial Year	Dates of submission of Annual Financial Statement to the World Bank and DEA (GoI)
1	2009-10	1320/3-7-1(S.O.E.) Dt. 26.11.2010 (SLEM)
2	2010-11	1012/3-7-1(S.O.E.) Dt. 13.10.2011 (SLEM)
3	2011-12	1012/3-7-1(S.O.E.) Dt. 04.12.2012 (SLEM)

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Status of Post Review Audit:-. The post review audit for the year 2009-10, 2010-11 and 2011-12 has been completed by M/s Global Procurement Consultants Limited, Mumbai. The observations have been adequately addressed by WMD.

GP Audit Arrangement:

Annual GP audit was mandated by the project by a firm of Chartered Accountants empanelled with CAG. Audit upto financial year 2010-2011 of all the GPs has been completed.

COMPONENT– 8 PROJECT MANAGEMENT AND CAPACITY BUILDING OF PROJECT MANAGEMENT STAFF

This component supported capacity building efforts and the project operating cost at WMD level. Project expenditure details are given in physical and financial progress of the project.

Institutional Mechanism

SLEM is a community driven project based on joint relationship among three entities viz. Village communities, local institutions and Watershed Management Directorate. The SLEM project benefited from the institutional mechanism for project planning and implementation established under UDWDP. The institutional mechanism involved GP, VP, RVC, FIG, SHG and User groups. These local institutions were broad based representing all the socio- economic strata and or specific stakeholders. Under SLEM project, all the institutional mechanism formed during UDWDP were continued.

Gram Panchayats- were the key planning and implementation agencies. GP was responsible for handling of funds, procurement and maintenance of assets. To assist in account & book keeping, a local youth of the village was appointed as account assistant and training was imparted to him on various aspects of accounting. The authority of withdrawal and disbursement of funds from the watershed account of the project was vested with Gram Pradhan and one of the elected women ward member of the GP.

Van Panchayats- Due to an initiative of the State government, VPs were made the key institution for working in reserve forest areas. Funds were provided to them through the GPs.

Self Help Group/ User Group- SHGs existing in the project area were strengthened. Trainings were imparted for variety of on- and off- farm income generation activities. Project support to these SHGs was in terms of providing grant, various Entrepreneur Development Programmes (EDPs), exposure visits, technical advice, support and forward & backward linkages.

Farmer Interest Group- To address the existing constraints and to leverage the access of farmers to production and marketing services, the project supported farmers to organise into Farmer Interest Groups (FIGs) and those groups who were functional and active were linked to form Federations. Total 179 FIGs were formed for cultivation of medicinal and aromatic plants in project area.

Women focus in the project

- **Involvement of female social mobilization workers:** Motivator or female extension workers at village level, facilitators at cluster level and coordinators at division level were used for social mobilization in the project area.

They assisted them in their need assessment, initiation of income generation activities (IGA), take women groups for exposure visits, co-ordinate necessary trainings and motivate them to join the village user group communities.

- **Women Aam Sabha-** To ensure inclusions of women specific issues and concerns the concept of women Aam Sabha introduced in UDWDP was continued in the SLEM project.
- **Drudgery reducing interventions-** Through focus on NRM activities and promotion of pine briquetting and use of alternative energy resources such as a biogas and solar energy
- **Involvement of women in governance-** Women ward members were the co-signatory with the Gram pradhan for the operation of the project account
- **Livelihood support for taking up income generation activity by the SHGs:** The SHG linking 1763 members were provided financial assistance and skill trainings for taking up IGA.

Capacity building of Gram panchayats and other local community institutions

Capacity building is the final step towards autonomy of the local institutions in their independent functioning. For smooth implementation of project activities, capacity building of all the stakeholders including women and other vulnerable sections of the society is essential to build their conceptual, managerial, technical and operational capabilities. The SLEM project through its capacity building programme further strengthened the capacities of the Gram panchayat and other local level groups through trainings, workshops and exposure visits. About 28171 community members (no. are repetitive) have been trained under the different components (biodiversity conservation, fostering markets for NTFP and documentation and dissemination of good practices) of project. The trainings and workshops were conducted at the village level, Gram panchayat level and division level on the following issues-

- Training of GP and RV office bearers on different project components
- Training and workshop of groups on participatory approach and watershed concept, project orientation, role of institutions and community in planning and implementation of the project,
- Training on environmental issues and application of ESMF
- Training of SHGs and UGs on biogas and pine briquette on O&M
- Training of SHGs on book keeping, documentation and IGA
- Training SHGs on packaging, value addition, micro finance and market linkage
- Training of FIGs on protective cultivation and MAP
- Training of Groups on nursery management
- Training of community members on biodiversity conservation needs
- Training and workshop of groups on sustainability issues with respect to withdrawal strategy and future O&M
- Exposure visit to Jal Bhagirathi foundation Ogana Rajasthan, KVIK

Capacity building of Project staff

Training, workshop and exposure visits were conducted for project staff on following issues-

- Orientation of different project components
- Impact assessment of different SLEM intervention
- Technical trainings on MAP cultivation, O&M, withdrawal strategy
- Training and workshops on documentation of best practices
- Project operation, Cultivation of Medicinal and Aromatic Plants, and Marketing of NTFPs etc.
- Exposure visit to KVK Hawalbag and HARC center Naugaon

About 3038 project staff (no. repetitive) have benefitted from this training and workshop.

Linkages with the Institutions

The training programmes of various stakeholders including staff were conducted with the help of locally available resources in the state. Many premier institutions of the country are located in the state with which the project had a tie-up for training activities since long. Following are the institutions and NGOs with which the project linked the training activities for different stakeholders.

Table – 17 – Linkage with institution

Activity	Institutions
Medicinal and aromatic plants related issues	• Central Institute Medicinal Aromatic Plants (CIMAP) • Centre for Aromatic Plants (CAP), Selaqui, Dehradun
Watershed concept, participatory approach and soil conservation and water augmentation	• Central Soil and Water Conservation Research and Training Institute (CSWCRTI) Dehradun
Forestry and Van panchayat issues	• Uttarakhand forest academy Haldwani • G. B. Pant Institute of Himalayan Environment and Development, Kosi Katarmal
Revival of water mills (Gharat)	• Uttarakhand Renewable Energy Development Agency (UREDA)
Field demonstration related issues	• Krishi Vighyan Kendra (KVK)
Project implementation and forestry works	• Jal Bhagirathi Foundation, Ogna, Rajasthan
Exposure visits	• Himalayan Action Research Centre, Dehradun
Training on solar energy devices, operation and maintenance and IGA based on these.trainings were provided at village ,unit and division level	• Renewal Energy Corporation (a channel partner under GOI solar mission)
Protected cultivation of medicinal plants	• Dabur India Ltd.Dineshpur, US Nagar
Pine briquetting	• Green Foundation, Dehradun • ABAIN Tripuradevi, Barinag
Micro finance an d market linkages	• Distt. Cooperative Bank, Chinyalisaur • RECOR market consultancy
	• Ganpati Edu. Society, Haldwani
Training of GPs on book keeping ,financial management and audit	• GNA Mgt., Agastmuni
Non conventional energy use-SOLAR ENERGY	• IRE society-Chinyalisaur
Water and soil conservation and forestry at village level	• Mahila Samridhi Sansthan
Book keeping for GP, SHG, user groups	• Suchetana Bareilly

Farmer field school

Khajan Verma's farm in Gram Panchayat Majuli of Nainital Division has now become the most visited spot in the project area. He is a progressive farmer who has utilized to the fullest extent the technical and input support that was provided in the project. He took keen interest in the project meetings and actively participated in the technical trainings conducted by the project. Whatever he learned in those trainings were transferred by him to his land as he adopted practices of organic agriculture, IPM and IPNM, soil moisture conservation practices and irrigation tank. He also installed sprinkler, power tiller, diesel pump on his own expenditure to further maximize the gain. His interventions and efforts bore fruits when he started getting good returns from his land. Being a progressive farmer, Khajan Verma wanted to share his learnings with other farmers of the area. With project support, exposure visit for groups of farmers and FIGs from other Divisions of the project area or other units of Nainital division were organized to Verma's farms thus turning it into a farmer field school.At his school, visiting farmers get exposed to how he has utilized the improved techniques and his resources to improve his earnings and living status by proper planning and learning the tricks of the trade and through belief in the schemes that come to their village.

VISITORS TO THE PROJECT

The SLEM project was host to a number of visitors from different part of the country. Team from Karnataka Watershed department, IFS probationers from Indira Gandhi National Forest Academy Dehradun, Govt. of India representative, CAG performance audit team, and member from different line departments visited the project area from time to time.

chapter

6

Mid Term Course Correction During The Project

MID TERM COURSE CORRECTION DURING THE PROJECT

Mid Term review (April 04-12,2012)

A world Bank mission conducted a Midterm review (MTR) of the project from April 04-12, 2012 to assess the project achievement after the second year of implementation. The mission focus was on (i) assessment of project outcomes till date (ii) assess project activities and undertake adjustment to adjust ongoing activities (iii) assess overall results – actual and potential.

Course Correction

1. **Revision of result framework –** The RFD was updated during the mission based on the current experience and new available data. PDO associated outcome targets were re-assessed and modified to use more efficiently the data available and the instruments set up by the project.

Table – 18 Agreed modifications to the outcome indicators

Original PAD outcome indicator	Reviewed MTR outcome indicator	Justification / Details
20-30% of the area in selected MWS under improved SLEM techniques	20% of area in targeted MWS treated and/or impacted by improved SLEM techniques	**The change was made to make the indicator more easily quantifiable and to set a definite target.**
Increase in availability of water in the dry season by 5% in the treated MWS	Increase in flow of water in the dry season by 5% in the treated MWS (measured by enhanced access to water litter per minute)	
10% increase in tree and other vegetative cover in the 20 MWS	10% increase in vegetative and biomass index in the 20 MWS	
50% reduction in incidence of fire in treated MWS	20% reduction in incidence of fire in treated MWS	
At least 5 to 10 improved and innovative techniques and approaches documented, disseminated and up-scaled within the Uttarakhand state	At least 5 to 10 improved and innovative techniques and approaches documented, disseminated	

2. **Revision in project costing-** Based on MTR assessment, allocations under some activities were shifted to others where there is a need for more work, from those where activities have already been undertaken satisfactorily and would not need the remaining budget allocation. (Table- 19 next page)

Other Agreed Actions

- Complete a case study of impact of various interventions adopted by farmer Khajan Verma in Majuli GP
- Organize a training course on vegetable nursery production in poly-houses for all farmers who have set up poly houses.
- Use vegetable production, vermi-compost and water harvesting structure demonstrations in Majuli village as a Farmer Field School for disseminating these technologies and practices to large number of farmers in the area.
- Conduct Impact studies on water source protection in at least one site in each division for the degraded land sites, treated comprehensively under SLEM
- Conduct Impact of DLT/Diversion Drain treatments in at least 10 sites of the degraded land , covered under SLEM
- Conduct Impact on renewable energy use in at least 10% (as indicated in the main report) of the Pine/Water Mill/Bio-gas units set up in SLEM project areas

Table – 19 Revised Project Costing Re-allocation in Activity Categoriesa

S. No.	Activity Category	Total GEF Financing Value (In million US$)	Total GEF Financing Value (In INR in lakhs)	Expenditure proposed till March 2012 (In INR in lakhs)	GEF funds left as on April 2012 (In INR lakhs)	Approx. Reimbursement left as on April 2012 in US$ Million	Proposed Expenditure for the remaining period (In INR lakhs)	Proposed Additional Reallocation in costtab (In INR lakhs)	Proposed Additional Reallocation in costtab (In Million US$)	Proposed final Changed value in each category (In Million US$)
1	2	3	4	5	6	7	8	9	10	11
1	Watershed planning through community participation	0.07	32.90	4.00	28.90	0.06	198.00	169.10	0.35	0.42
2	Controlling land degradation through the SLEM approach at watershed level	2.94	1381.80	1031.75	350.05	0.71	434.00	83.95	0.17	3.12
3	Fostering markets for non-timber forestry products	2.10	987.00	455.62	531.38	1.08	165.00	-366.38	-0.75	1.35
4	Biodiversity conservation and management through watershed planning and community participation	1.05	493.50	476.39	17.11	0.03	255.00	237.89	0.49	1.54
5	Improve adaptation to climate change	0.14	65.80	0.00	65.80	0.14	70.00	4.20	0.01	0.15
6	Documentation and dissemination of project experiences and practices	0.18	82.25	63.31	18.94	0.04	44.00	25.06	0.05	0.23
7	IMME	0.28	131.60	62.84	68.76	0.14	119.00	50.24	0.10	0.38
8	Project management and Capacity building of PM staff	0.25	115.15	48.39	66.76	0.14	95.00	28.24	0.06	0.31
9	Contingencies	0.49	230.30	0.00	230.30	0.49	0.00	-230.30	-0.47	0.00
	Total	7.49	3520.30	2142.30	1378.00	2.83	1380.00	2.00	0.00	7.49

Note: 1- In Column 3- 1US$=47INR
2- From Activity Category 3 and 9 fund are proposed to be reallocated to Activity Category 1,2,4,5,6,7 and 8 .
3- In Column 7 and 10- 1US$=49INR

chapter

7

Withdrawal and Sustainability

Sustainability Arrangements

Project sustainability describes the ability of the project to maintain an acceptable level of benefit flows through it economic life. Under the SLEM project, the importance of sustainability of project interventions was duly recognized and the sustainability issues were addressed right from the project conceptualization and design stage to project implementation at field level. The following sustainability arrangements were finalized for O&M of project assets.

- Since SLEM project is an additional financing to the parent UDWDP-I project, therefore the withdrawal and sustainability arrangements made in the parent project were continued in this project. The state government order vide letter no. 251/XIII (II)/2011-31(05)/2011 dated 08 Dec. 2011 issued instructions/ orders regarding the utilization and maintenance of the various assets created during the project period will be followed (Annexure- 2)
- SLEM is a community led and community driven project with joint relationship among village communities (through revenue village committee (RVC), User groups and SHG), village level institutions (Gram Panchayats and Van Panchayats) and Watershed

Closure Workshop, Haldwani

Management Directorate. Roles and responsibility of each institution vis a vis operation and maintenance of project assets was clearly out lined in terms of time and money.

- Since decisions regarding all investment at the community level were decided by the beneficiary community through an intensive participatory process therefore the project ownership at the community level is expected to be high.
- Two kinds of assets viz individual assets and community assets were created in the project. In case of community assets, implementation responsibility was placed with GPs and Van Panchayats. These institutions are statutory bodies whose existence are enshrined in legislation and would therefore endure beyond the life of the project. In case of individual assets, the entire responsibility of maintenance of assets created will be on individual beneficiaries or concerned user groups (viz water user groups, SHG and FIG).
- Approximately 20 lakh rupees have been collected by water user groups for O&M of water conservation structures.
- Through various discussions and meeting with the community and project staff, withdrawal plans for each MWS outlining the O&M responsibility at the level of GPs have been prepared and provided to all the concerned groups and institutions in the project area.
- After the project completion, a Memorandum of Understanding (MoU) has been signed by both the parties (GP and Project MDT). The MoU has the complete information about the number of community assets created and developed by the project and the cost for future O&M of community assets.
- The following convergence arrangements have been finalized:

Closure Workshop, Haldwani

Convergence for O&M

Activity / Assets	Convergence (Department/ institutions/ organization)	Role
Forestry and DLT structures created in inter GP spaces	Concerned Forest Division, Van Panchayat and Gram Panchayat	• Concerned Forest Divi sion will be be responsible for interventions in Inter GP space in Reserve Forest Areas.
Plantations on community lands	Van panchayat , Gram panchayat and Bio-diversity group under Bio-diversity act 2012	• Concerned Van panchayat and Gram panchayat will be responsible for maintaining assets in Van Panchayat Areas. • Bio-diversity group • GP/VP can access funds through MNREGS for future O&M of plantation
Water Storage Tanks, Irrigation village ponds and other water conservation structures	Concerned RVC, UG and Gram Panchayat	• Responsible for O&M of assets • Responsible for utilization O&M fund
Medicinal plant cultivation / Kisan nursery-	Concerned FIG or SHG	• District/ Block level functionaries to provide extension and input support • HRDI, SMPB will provide technical support , planting material and training to farmers and project officials.
Individual Assets – (Bio-gas, poly house, poly tunnel, mangers, tools , equipments etc.	Individual beneficiary	• Individual beneficiary will be responsible
Pine briquette	Concerned SHG	• Master trainer will provide technical support • Concerned SHG will be responsible for O&M
Water mill (Gharat)	Concerned SHG and UREDA	• Concerned SHG will be responsible for O&M • UREDA will provide technical support in case of Gharats which have been electrified
Livelihood activities	Concerned Livelihood Group/ Individual beneficiary	• Concerned Livelihood Group/ Individual beneficiary • District, Block level functionaries for further extension and input support
Alternate energy equipments, machines and tools.	Concerned individual/ User Groups/ VGs	Individual beneficiary/ User Groups/ VGs will be responsible

Note: The project will provide contact address and phone no. to the respective beneficiary and institution.

Box- 11 Convergence with Minor Irrigation Department- Multi Stage Pumping for Irrigation

A patch of nearly 10 hectares arable land, belonging to 16 vulnerable families, existed in Lamejar Hamlet of Selalekh, of which only 2.5 Ha. was irrigated by 3 Irrigation tanks (15000 Litres capacity each). These were built under UDWDP-I project and were being fed from the Ratora catchment for 8 months. Later on with convergence with the State Minor Irrigation Department, 2 more tanks (27000 litres capacity each) were constructed in the fields of Devendra Chandra and Puran Ram, respectively. These tanks were situated almost 450 m apart. A perennial dhara existed at the bottom of the hamlet. With a view to utilize the water of this dhara, a group of 10 members having land there, was funded Rs. 50,000.00 for purchase of pump, GI pipes and its installation. Their 6.5 Ha. land is now fully irrigated and rest 3.5 Ha. is getting life saving irrigation from it. Earlier they grew Potato and Wheat, with only Cabbage during rainy season, of which only potato and cabbage yielded some monetary gains, sufficing only for their subsistence, now they have shifted to cash crops like cauliflower, Pea, tomato, turmeric, ginger and are earning handsomely.

Box- 12 Convergence with Bio-diversity Groups

Dolgad MWS of Nainital division was selected as a model MWS (Only one in Uttarakhand) under the GIZ supported initiative on micro watershed interventions where visitors from outside state who are interested in watershed management can visit for exposure and cross learning. An SHG comprising 10 members who were active on conservation issues in the area was supported by the project. With with active support of the concerned forest department officials and project team, the members was mobilized to from a bio diversity group under the bio diversity act 2002. In this way, the bio diversity group – Dolgad Praywaran evam Jal Samwardhan Swayam Sahayta Samuh came into existence with the objective of:-

I. Conservation of Bio-diversity
II. Sustenance of NRM activities through active maintenance
III. Dove tailing with Van Panchayats for the same
IV. Create awareness regarding forest fire control, anti-poaching and afforestation activities
V. To act as a connecting link for the visitors for showcasing the working watershed model.

Each such group was funded a sum of Rs. 25000.00 from UDWDP-I to cater to the conservation and maintenance needs of the watershed, apart from the earnings which they will be receiving from the visitors/ tourists who wish to see the Watershed interventions. These groups continue to be supported under SLEM project and are fully functional. Presently this group act as the interface between the community in the members. They facilitate and coordinate the visit logistics and accounts. For the services rendered by the groups they are provided with services charges by the visiting groups.

Closure workshops

The SLEM Project completed on 31st August 2013. Prior to this a number of workshops were held with the community members to chalk out detailed future O&M arrangements for the various assets created in the project. On the basis of these discussions, detailed withdrawal plans for each GP has been prepared. Closure workshops were held in each project division. Representatives from all stakeholders from the concerning Gram panchayats participated in these workshops. The project team out lined and explained in great detail the sustainability arrangements. The Gram Pradhans were presented with withdrawal plans of their respective Gram panchayat.

Closure Workshop, Agustymuni

chapter

8

Physical and Financial Progress of the Project

1.CUMULATIVE PHYSICAL PROGRESS : The cumulative physical progress in various components is given below

Activities	Unit	Cumulative achievement since beginning	Remarks
1	2	3	4
1. Watershed planning through community participation			
1.1 Planning of micro plan	No.	20	Supported by parent project
2- Controlling land degradation through the SLEM approach at watershed level			
2.1 Forestry			
2.1.1 Afforestation			
a) Advance Soil Work	Ha	830	
b) Plantation	Ha	830	
2.1.2 Oak ANR	Ha	115	
2.1.3 Nursery demonstration (Forestry species)	No.	17	
2.1.4 Forest fire Management	Ha	186.90	
2.2 Drainage line treatment and SMC			
2.2.1 Construction of vegetative check dam	No.	536	
2.2.2 Construction of dry stone check dam	Cum	21569.66	
2.2.3 Construction of crate wire check dam	Cum	50875.5	
2.2.4 Construction of contour bunds and trenches	No.	91711	
2.2.5 Cross Barrier (Cement)	Cum	553.3	
2.2.6 Cross Barrier/ Retaining wall (Crate wire)	Cum	8077.94	
2.2.7 Diversion drain	Mtr	10755.05	
2.3 River Bank protection			
2.3.1 River Bank Protection (Crate wire)	Cum	17588.79	
2.3.2 River Bank protection (1:6 Mortar Work)	Cum	4079.74	

2.3.3 River Bank protection (1:6 Bonded wall)	Cum	944.84	
2.3.4 Crate wire Spur Construction	Cum	1994.5	
2.3.5 Land Slide Treatment	Cum	508.17	
2.4 Water Recharge and Harvesting			
2.4.1 Roof Water Harvesting Tank	No.	125	
2.4.2 Village Pond	No.	318	
2.4.3 Tal/ Naula/ Khaula Rejuvenation	No.	423	
2.4.4 Irrigation tank with Delivery system	No.	18	
2.4.5 Recharge pit	Cum	1305	
2.4.6 percolation / LDPE tank	No.	45	
2.5 Road Side Erosion Control	Cum	4682	
3- Fostering markets for NTFPs			
3-1 Pine Briquette model demonstration	No.	203	
3-2 Briquette stove demonstration	No.	4984	
3-3 Misc. innovative activities for promotion of non conventional energy use			
3.3.1 Solar lantern	No.	3378	
3.3.2 Bio gas	No.	66	
3.3.3 Others –street light-solar	No.	190	
3-4 Small infrastructure facilities for marketing support			
3.4.1 Collection center	No.	LS	FIG have been provided with weighing machine, packaging machine, crates, kilta, Jute bags etc
3.4.2 Other Marketing support activities	LS		
3-5 Consultancy support for market linkage	LS		
3-6 Capacity building of User groups	No.	12043	Numbers are repetitive
4- Bio-diversity conservation & management through watershed planning & community participation			
4-1 Demonstration of Medicinal & Aromatic Plants	Ha.	581.47	

4-2 Demonstration of poly house	No.	247	
4-3 Nursery demonstration (medicinal and aromatic species)	No.	19	
4-4 Procurement of tools & implements	No.	LS	
4-5 Livelihood support for SHGs	No.	LS	Financial assistance provided to SHGs for IGA
4-6 Capacity building of SHGs/ User Groups	No.	11867	Numbers are repetitive
4-7 Short studies for bio-diversity assessment		0	
4-8 Short studies for livelihood assessment		0	
4-9 Consultancy support for market linkage		0	
5- TA on adaptation to climate change			
5.1 Consultancy support for studies	No	0	
6- Documentation and dissemination of good practices			
6-1 Extension and publicity materials	LS	LS	
6-2 Documentation of best practices through short studies, publications, short films etc.	LS		
6-3 Consultancy support for IEC	LS		
6-4 Capacity building through training and workshop	No.	4261	Numbers are repetitive
7- Information Management , Monitoring & Evaluation (IMME)			
7-1 Financial review consultant	LS	LS	
7-2 External consultancy for M&E (Baseline and impact)	LS	LS	TERI is the external consultant
7-3 Consultancy support for short studies	LS	0	
7-4 Software procurements	LS	LS	
7-5 Procurement of survey and monitoring instruments like- GPS /Camera etc.	LS	LS	
7-6 Computers + Software + related accessories +Imageries	LS	LS	
8- Project management & Capacity building of Project Management staff			
8-1 Hiring of contractual staff for financial management , computer and other support	LS	25	

8-2 Expenditure related to stationary, books and other office related items.	LS	LS	
8-3 Capacity building of staff through training and workshop	LS	3038	Numbers are repetitive
8-4 Overseas exposure visit	LS	0	
8-5 State level/National level/ International workshops	LS	9	

2. CUMULATIVE FINANCIAL PROGRESS - 2009-to August 2013

(Rs. in Lakh)

Activities	Expenditure FY 2009- 10	Expenditure FY 2010-11	Expenditure FY 2011-12	Expenditure FY 2009- 10	Expenditure FY 2013-14	Cum. Progress
1. Watershed planning through community participation	4.00	0.00	0.00	141.98	62.116	208.10
2- Controlling land degradation through the SLEM approach at watershed level	38.79	518.47	474.28	530.43	3.92	1565.88
3- Fostering markets for NTFPs	49.93	196.29	209.63	177.69	46.93	680.46
4- Bio-diversity conservation & management through watershed planning & community participation	34.95	253.08	188.55	235.40	37.69	749.69
5- TA on adaptation to climate change	0.00	0.00	0.00	0.00	0.00	0.00
6- Documentation and dissemination of good practices	10.00	39.31	14.00	47.10	51.84	162.24

7- Information Management , Monitoring & Evaluation (IMME)	8.16	20.30	33.66	61.29	41.40	164.81
8- Project management & Capacity building of Project Management staff	3.50	30.39	13.92	74.27	107.05	229.58
TOTAL	149.33	1057.84	934.04	1268.16	350.94	3760.31

3. Status of reimbursement received till closure of project (August 2013)

Financial Year	2009-10	2010-11	2011-12	2012-13	2013-14 (till august 2013)
Reimbursement received	78.82	1027.84	893.57	1108.06	652.01
Cumulative Reimbursement position (in INR hundred thousand)	78.82	1106.66	2000.23	3108.30	3760.31
Cumulative Reimbursement position (USM$)	0.17	2.44	4.31	6.36	7.47

Till closure of project (August 2013) reimbursement received is 7.47 million US$.

chapter

9

Evaluation of the project by external consultants

Final Impact Assessment of the project by TERI

Final impact assessment was carried out by TERI on a sample of 487 households, 49 RVs and 26 GPs out of the 51 GPs covered in the baseline survey by TERI. The sample was selected from the baseline sample based on proportional representation to the four SLEM divisions covered, the topography of the sampled GPs (middle, valley, ridge) under the project and with due consideration to the need for covering all the project intervention. The same RVs and HH (within the set of GPs selected for the final assessment) were selected for the final survey as were covered in the baseline survey for the most effective comparison. The same baseline control group comprising 5 GPs, 10 RVs and approx 100 HH from MWS outside the project area was used in the final survey.

Highlights

- Community-based participatory approach to watershed planning is a key feature of the project. Participatory planning processes were already in vogue under UDWDP. Therefore the micro planning process at MWS level under SLEM benefitted significantly from the capacities built in the previous phase. The inclusion of inter GP areas has been an important feature of the project, and van panchayats were designated implementing bodies for activities in these areas. The use of a truly participatory approach from the planning to the implementation stage has been a hallmark of the project. Technological approaches for water and soil conservation have also been successful, and have been coupled with more conventional approaches in terms of forestry interventions.
- TERI study shows that about 21.24% of the total area under the selected MWS has been brought under SLEM techniques. SLEM techniques includes soil and water conservation activities, afforestation, contour trenches and bund and medicinal and aromatic plant cultivation. Using this approach, about 97 ha of land in the sampled GPs have been saved from degradation and about 14 ha of additional land have been brought under irrigation.
- There also has been a reduction in the time taken for fetching water for domestic uses. 82.34% of household (HH) now spend less than 1 hour to access water in dry season as compared to 68.37% of HH prior to project intervention in the area.
- A 7% increase in household incomes in real terms has been reported. There has been significant involvement of women in community-based organizations such as SHGs.
- Innovative technological interventions and introduction of alternative energy sources have impacted the project areas positively. The alternative energy sources such as pine briquettes, Bio gas and solar cookers are finding a high level of acceptance. Promotion of pine briquetting as a women dominant SHG activity is serving the additional purpose of women empowerment. Enhancement of market penetration of briquettes could further increase the economic returns, which are modest at this stage reduction of fuelwood dependence on forests has been a major impact, largely on account of promotion of alternative energy sources such as pine briquettes, biogas and solar cookers.. The revival of traditional gharats has also been a major success and has yielded high economic return. Upto 31.7% of HH engaged in pine briquette making have entered market.
- Significantly high diversity, species richness values for shrubs, herbs and overall species richness of project site compared to control sites and also between baseline and final assessment. Significantly higher number of naturally regenerating seedlings were observed in project than in control sites.
- MAP demonstration has yielded mixed results, and greater convergence with activities of the State Medicinal Plants Board would have been desirable.
- The SLEM project has actively addressed equity issues. Soil / water conservation works have benefitted all categories of land owners, and has also enhanced access to water. IGAs have been dominated by women in several cases, and group activities like pine briquetting, sewing/knitting/tailoring and food processing have typically been women's preserve. Gharat renovation has been a

men's activity; however the beneficiaries belonged to weaker sections of society, including many landless households.

- There has been significant employment generation at the local level, especially for implementation of activities on government land / common property land. This has benefitted socially backward groups, and the landless. The main poverty impact, indeed, has been through wage employment generation. It is estimated that approximately 2 lakh man-days of employment has been created in the sampled villages – with an engagement of 80 persons per month per village on an average at a wage rate of Rs 250/day.
- In the hills the common property resources play a paramount role in the subsistence of the households, productivity of agriculture/ livestock and provision of several ecosystems services. In SLEM, inter GP areas have been treated for soil conservation, and RF/VP land associated with GPs have also been included. Plantations and ANR have been implemented on Civil Soyam lands, Van Panchayat lands and Reserve Forests. The main activities implemented on private lands have been irrigation tanks, Roof Water Harvesting structures, demonstration of medicinal plant cultivation and poly houses. The activities which have been partly done on private lands are landslip treatment, roadside erosion control and river bank protection. The benefits of the activities have been diffuse due to the very nature of the activity, and the topographical location of land. In typical DLT and soil conservation work, the increased water is available for everyone who could access, but the benefit of enhanced soil moisture is restricted to the lands on the banks of the streams.
- The capacities of Gram Panchayats were strengthened during UDWDP by providing them financial autonomy, and the services of account assistants and motivators. At the same time various institutions were constituted such as WWC, RVC, FIG. SHG, User Group and Federations. These local institutions were broad based representing all the socio-economic strata and/or specific stakeholders. In SLEM all the institutional mechanisms formed during UDWDP were continued. Plans were prepared for each of the 20 MWS, utilizing the PRA exercise conducted during UDWDP, buttressed by further consultations, For RF areas, Forest Department was consulted for the respective activities. In addition all the successful SHGs were provided entrepreneurial support in the project along with formation of new SHGs and FIGs wherever required. The existing Van Panchayats were made implementing agencies for works in RF. In the absence of VP, the GP was authorized to implement work in RF areas. These mechanisms have collectively enhanced the quality of participatory processes.
- Adequate care was taken to ensure that natural systems were not disturbed due to project interventions. For soil conservation works, the use of earth moving equipment was avoided.
- Economic analysis at the aggregate level returns a Benefit-Cost ratio in the range of 2.38 to 3.29 (Low: r=8%; t=5yr, High: r=4%, t=10yr). As indirect methods are employed for estimation of several benefits, the values are to be taken as indicative, rather than conclusive.

Results Framework

S. No.	Project Development Objective	Result/Outcome Indicators	Final Value
1	To restore and sustain ecosystem functions and biodiversity while simultaneously enhancing income and livelihood functions	20 number of Micro watershed management plans completed and under implementation	All plans implemented effectively.
		10% increase in livelihood opportunities in treated areas (measured by increase in no. of person engaged in different livelihood opportunities)	Total number of people involved in local enterprises in 26 sampled GPs: 2371 in 18 activities
	Community participatory watershed planning expanded with an additional focus on local benefits of sustainable land and ecosystem management	Sustainable Watershed Management mainstreamed into 20 GP plans including parts of watersheds for which two or more GPs have shared governance responsibility	36562.85 ha of RF area identified for SLEM treatment in the project (out of which 6706.8 ha of RF falls within the sample)identified for shared governance
2	Controlling land degradation through the SLEM approach at watershed level	20% of the area in selected MWS under improved SLEM techniques	- 21.24% of total area brought under improved SLEM techniques - 103.92 ha area directly impacted in terms of soil and moisture retention in sample GPs
		Increase in availability of water in the dry season by 5% in the treated MWS	- 82.34% of hh spend < 1 hr to access water in dry season, 17.04% spend 1-2 hr to access water in dry season - Irrigated Land (Average per GP) (13.78 ha), Un-irrigated land (Average per GP) (63.95 ha) indicating increase of 4.1% of irrigated land

		10% increase in vegetative and biomass index in the 20 MWS.	5.5% (Weighted average) of biomass increase in micro watersheds, MWS areas are used as weights, Average value of biomass is 50.7 t/ha (Average of MWS)
		Implementation of 5 to 10 alternative technologies and approaches for enhancing water availability for agriculture and other domestic use	Technologies - 1) Roof Water harvesting structures, 2) Irrigation tanks with delivery system,34) Village ponds, percolation tank, contour trenches with bunds, 45) Rejuvenation of naula / khala 5) Controlling forest fire, 6) Plantations and ANR 7) River training works
3	Reduce pressure and dependence on the natural resource base through fostering Markets for NTFPs	Reduction in dependency of 2000 households on forest for fuel wood.	- 2000 households comprising of 13% of total households of project area as target for reducing fuel wood dependency - Fuel wood dependency reduced by 486 household directly (12%) in sampled GPs. In addition, 843households have also received pine briquette stoves in sampled GPs who are potential users of pine briquettes. 79.25% of fuel needs are met from fuel wood

		At least 20% of targeted households enter market with pine briquettes (produced from pine needles)	- 20% of 2000 households i.e. 400 households targeted to enter market. - 145 households (31.7%) out of 456 households engaged in pine briquette making have entered market.
4	Enhance biodiversity conservation and management through watershed planning and community participation	Increase in direct and indirect evidence of presence of key species of flora and fauna in 20 MWS	Shannon Weiner Index: Trees: 2.02, Shrubs 3.57, Herbs: 2.6, Species richness Trees: 32, Shrubs: 79, Herbs: 28*[1] Significantly higher diversity index and species richness values for shrubs, herbs and overall species richness of project site compared to control sites Significantly higher number of naturally regenerating seedlings in project than in control sites Significantly higher shrub and overall species richness between baseline and final assessment. Significantly higher number of naturally regenerating seedlings in project than in control sites.

[*1] The decrease in the richness and diversity of annual herbs was due to the timing of the assessments. The baseline survey was just after the monsoon while the final assessment was soon after the winter when many of the areas were covered by snow.

		20% reduction in incidence of fire in treated MWS	16 hectare affected in 51 GPs. 2 incidents in 26 GPs and 6 ha area affected that were sampled for the final assessment (26 GPs) so 75% reduction in # of incidents & 61.3% reduction in fire area Final assessment year is 2013
		Cultivation of at least 5 local MAPs (medicinal and aromatic plants) by communities in 20 microwatersheds.	*Zingiber officinale* (Ginger or adrak)*Curcuma longa*(Turmeric or haldi), *Aloevera (*Aloe, ghritkumari*)*, *Rauvolfia serpentina*, (snake root or sarpgandha), *Amomum subulatum* (Black cardamom or badi elaichi), *Asparagus racemosus (*Asparagus or Satavar), *Cinnamomum tamala* (Indian bay leaf or Tejpatta) and *Phyllanthus emblica* (Indian gooseberry or amla)
5	Improve adaptation to climate change in natural resource based production systems	Improved knowledge of the impact of climate change on mountain ecosystems documented and translated into coping strategy.	NA

6	Documentation of Best (Worst) practices to share within the state as well as nation-wide through the SLEM program	At least 5 to 10 new and innovative techniques and approaches documented, disseminated	No of new innovative techniques and approaches - 1) Pine briquetting 2) Solar lights and lanterns 3) Solar cookers 4) Bio gas plants 5) MAP cultivation and marketing 6) River bank protection structures, 7) Roof Water harvesting structures, 8) Irrigation tanks with delivery system, 9) Village ponds, percolation tank, contour trenches with bunds, 10) Rejuvenation of naula / khala 11) Controlling forest fire, plantations and ANR for enhanced moisture regime and water percolation. 12) Renovation of gharats

Independent studies conducted in the project area

1. Study on 'Water and Forest Resource Management Practices Followed by Hill Women: A Study in Nainital District of Uttarakhand' by Karuna Bhardwaj under the guidance of Dr. Neelam Bhardwaj . Unpublished Ph.D. Thesis submitted to G.B. Pant University of Agriculture and Technology, Pantnagar 263145, Uttaranchal. Karuna. 2013.

The study was conducted in 8 villages (four from each block) viz., Selalekh, Majyuli, Jalananeel pahari, Mahtoliyagaon, Thali, Harinagar, Katna and Suni from Dhari and Okhalkanda blocks of Nainital district in different micro-watersheds where Uttarakhand Decentralized Watershed Development Project (GRAMYA) and SLEM project were implemented.

The study was conducted with the following objectives:

1. To study the socio-personal and communication profile of hill women.
2. To find out the existing practices followed by hill women for water and forest management.
3. To measure the participation and sense of belongingness in CoPs of hill women engaged in water and forest management.
4. To document folk beliefs and traditional knowledge for conservation of water and forest resources.
5. To suggest a strategy for conservation of

water and forest resources.

The conclusion of the study is as follows:

The study empirically depicted a microcosmic view of prevalent practices of water and forest resource management at household level. The respondents were of middle to old age group, literate, general caste, medium family size and joint family type. Majority of them do not have membership in any organization and participated as peripheral member. The sense of belongingness in community was low but attitude towards participation in water and forest conservation programmes was highly favourable. It was also concluded that the traditional practices of water and forest management are still prevailing in the hills and the Government personnel (GRAMYA) are actively renovating the existing resources, making sustainable utilization of these resources. The women are becoming the center of focus in the natural resource management projects, from which it can be concluded that the role of women had been recognized for efficient and successful developmental work.

Recommendations for future research

- Social impact assessment of the watershed project in the study area need to be done.
- The watershed development of other area may also be evaluated to know the adoption of recommended technologies for water and forest management.
- Similar research study need to be done in watershed areas not covered in the UDWDP project.
- The studies addressing the training and skill development needs of hill women for natural resource management practices need to be undertaken.
- Since NGOs are also working in the study area, therefore the studies may be initiated to assess the impact of NGOs on watershed development activities.
- Any developmental programme cannot achieve the goal without people's participation hence a study need to be done to know the factors that can enhance people's participation and other associated factors in natural resource management. Government has empowered the villagers through Van panchayat system, therefore the study on participation of Van panchayats in maintaining the water and forest resources of the hills may also be studied. The study on participatory action research in hills regarding natural resource management to address the immediate problems is suggested to be done.
- The study on scientific validation of folk beliefs and traditional knowledge for water and forest management practices is suggested to be done.
- A study need to be done on developing indicators for the retention of traditional knowledge and methods and measures to address the underlying causes of the loss of such knowledge.
- As the forest and water management practices are effectively implemented by following group/community approach, therefore the study on group dynamics should be conducted to identify the indicators which enhances the group efficiency and performance

2. Research communication

- Women Preference of Communication Sources for Water and Forest Resource Management in Different Micro-watersheds of District Nainital in Kumaum Himalaya. Communicated to Journal of Communication Studies. Karuna, Bhardwaj, N. and Upadhyay, S.K. 2013.
- Traditional Remedies of Plant Resources in Different Micro-watersheds of Nainital District, Kumaon Himalaya. Communicated to Indian Journal of Traditional Knowledge. Karuna, Bhardwaj, N. and Upadhyay, S.K. 2013.

chapter

10

Project Learnings

The SLEM project generated the following learnings which can further be incorporated in future projects and mainstreamed into the functioning of the departments involved in rural, agriculture, irrigation and other development in the state.

- SLEM project focused on enhancing biodiversity conservation and management through watershed management and community participation. The project through its various interventions could qualitatively and quantitatively enhance biodiversity act watershed level. Direct interventions such as afforestation activities directly impacted biodiversity conservation by overall enhancing of species richness, higher diversity index and significantly higher number of natural regenerating seedlings in project sites as compared to control sites. Promotion of income generation activities for sustainable livelihood options, cultivation and marketing of MAP, DLT and SMC works, promotion of alternative energy options have also directly and indirectly contributed to biodiversity conservation in project area. Bio-diversity conservation is a continuation process and the project interventions are a small step in that direction.

- Watershed development planning with community participation was done at the MWS level. Interventions were proposed by the community for both inter GP areas (RF) and GP areas. This integrated approach has resulted in comprehensive watershed treatment at the MWS level. The MWS plans also provide for convergence with other departments. The MWS plans can also be used by the other line department for devising their departmental planning of works.
- Involvement of community institutions such as Van panchayat and Biodiversity groups constituted under Biodiversity act 2002 in natural resources management activities at the local level is a progressive step resulting in greater ownership at the community level. The state Govt. initiative in authorizing the Van panchayat as work agency in reserve forest areas through a govt. order has further institutionalized the involvement of community institutions in natural resource management at local level. After initial reluctance on the part of the forest department staff, the watershed treatment activities could be successfully completed in RF areas of concerning divisions. This needs to be carried forward in all future projects of integrated watershed development.
- Project focused on improving water source sustainability in MWS areas where the discharge in the traditional water sources such as Naula, Dhara had been reduced or dried up. About 423 such sources were treated. The efforts of the community members and the project team of Gram Panchayat Selalekh were recognized at the national level by the Govt. of India with the national ground water augmentation award 2010. Drying up of the water sources is a major area of concern in the state of Uttarakhand with some of the areas facing drought like situation in summer months. The sustainability of the hill mountain eco-systems can only be achieved by addressing water security issues. Therefore interventions for waters source sustainability should be an important component related to land development in the hill state. This learning has been incorporated in the proposed UDWDP-II project.
- Local institutions of self governance such as the Gram Panchayat, Van Panchayat in other project level committees viz RVC, SHG, FIG were the defacto planners and implementers of the project. This decentralized approach has resulted in greater ownership of project at local level.
- The capacities of all local level institutions (GP, VP, WWMC, RVC, FIG, SHG) were strengthened during parent project UDWDP by providing them with financial autonomy, services of account assistant, motivators. This institutional mechanism was continued in SLEM project and further strengthened through repeated capacity building efforts. Capacity development of Gram panchayat and other local institutions (viz RVC, User Groups, SHGs, Van panchayat) has resulted in strengthening of these institutions vis a vis administrative capacity, financial working and skill development. This has resulted in improvement in governance.
- Women are the lynchpin of the rural hill economy. Therefore their participation and support to project activities is very important for success of any project. The project had a definite focus on women related issues. SLEM project provided mandatory 50% representation of women in project committees, separate Mahila Aam sabha for integrating women concerns in MWS plans, women ward member as cosignatory for operating project account, drudgery reducing interventions, local level employment

generation and financial assistance for taking up income generating activity. All these interventions has led to capacity building of women in the project area.

- The project promoted the use of alternative energy fuels like pine briquettes, biogas and solar cookers successfully. This has resulted in reducing dependence on forest based fuel wood to some extent. Due to high adoption rate, these activities can be scaled up in future projects.
- Pine briquetting can become a major livelihood activity with an efficient marketing system. The marketing system should be strengthened to attract enough people to scale up pine briquette production as a viable IGA.
- Project has resulted in the revival of traditional water mills (Gharat) which has been a major success and has also yielded high economic return. Convergence with the state agency for renewable energy development (UREDA) was successful in conversion of traditional Gharats for hydro electricity production at the village level which has helped in rural electrification.
- Under the animal husbandry programme of UDWDP, activities for breed improvement, stall feeding and fodder development were carried out. In SLEM project for promotion of alternative energy use, biogas programme using gobar gas technology was successfully implemented and adopted by the villagers. The project learning is that the biogas technology should be made part of the animal husbandry component in future projects. This learning has been incorporated in the proposed UDWDP-II project.
- Uttarakhand has tremendous potential for cultivation of medicinal and aromatic plants. Cultivation and marketing of medicinal and aromatic plants (MAP) was promoted in the project through package of practices, marketing support and linkage with State Medicinal Plant Board (SMPB). All these interventions will go a long way in enabling the MAP growers and FIGs to get technical support, extension facilities, quality planting material and viable market linkages.
- Under SLEM, the village communities through Gram Panchayat, Van Panchayat and Bio-diversity groups were motivated to involve themselves in controlling forest fires in their respective areas. This arrangement at the local level was found to be successful in controlling forest fires in the project area.
- Under the SLEM project, the importance of post project sustainability of project interventions was duly recognized and the sustainability issues were addressed right from the project conceptualization and design stage to project implementation at field level. The state government order vide letter no. 251/XIII (II)/2011-31(05)/2011 dated 08 Dec. 2011 regarding the utilization and maintenance of the various assets created during the project period has resulted in convergence with line departments for Operation and maintenance of assets.

Annexure -1

संख्या–3468 / X-2–2009–12(9)/2006 टी0सी0

प्रेषक,

नृप सिंह नपलच्याल
अपर मुख्य सचिव
उत्तराखण्ड शासन.

सेवा में,

1. प्रमुख वन संरक्षक,
उत्तराखण्ड. देहरादून.

2. प्रमुख वन संरक्षक,
ग्राम वन पंचायत एवं संयुक्त प्रबन्धन
उत्तराखण्ड. नैनीताल.

वन एवं पर्यावरण अनुभाग–2 देहरादूनः दिनांक 02 दिसम्बर, 2009

विषयः–वन पंचायतों द्वारा जल संरक्षण, संवर्द्धन एवं मृदा संरक्षण हेतु क्षेत्र उपचार का कार्य समीपस्थ आरक्षित वन क्षेत्रों में किये जाने के सम्बन्ध मे.

महोदय,

कृपया उपरोक्त विषयक अवगत कराया जाना है कि उत्तराखण्ड एक वन बाहुल्य, जैवीय विविधतायुक्त तथा पारिस्थितिकीय दृष्टि से अत्यंत संवेदनशील राज्य है, जिसका अधिकांश भाग पर्वतीय है। यहां की मिट्टी पथरीली एवं भूमि कटाव से प्रभावित है। अधिकांश नैसर्गिक जल स्रोत प्राकृतिक वनों में उपलब्ध हैं, जिनका उपयोग स्थानीय समुदाय द्वारा किया जाता है। मनुष्य तथा पशुओं के बढ़ते जैविक दबाव, प्राकृतिक संसाधनों यथा मृदा, जल एवं वनस्पति के अवैज्ञानिक दोहन एवं त्रुटिपूर्ण भू–उपयोग गतिविधियों को अपनाने के कारण परिस्थितिकीय तन्त्र पर प्रतिकूल प्रभाव पड़ा है, जिसके फलस्वरूप हमारी जीवनदायिनी नदियों के उच्च जलग्रहण क्षेत्रों एवं आरक्षित वनों में स्थित पेयजल स्रोतों का ह्रास हुआ है। यह सर्वविदित है कि प्रदेश में वन प्रबन्धन में वन पंचायतों के माध्यम से परम्परागत तौर पर सामुदायिक भागीदारी रही है। वन पंचायतों के प्रबन्धन हेतु प्रदेश में शासन द्वारा उत्तरांचल पंचायती वन नियमावली 2005 विज्ञप्त की गई है। इसके अनुसार वन पंचायतों का मुख्य उद्देश्य वन तथा पर्यावरण की सुरक्षा, संरक्षण एवं विकास में महत्वपूर्ण योगदान दिया जाना है। इस कार्यो के लिए वन पंचायतों को पृथक रूप से किसी भी कार्यदायी संस्था से धनराशि प्राप्त करने का अधिकार प्राविधानित किया गया है। वर्तमान

क्रमशः 2

में मृदा एवं जल संरक्षण तथा संवर्द्धन की आवश्यकता को देखते हुए प्रदेश में विभिन्न विभागों यथा जलागम, कृषि, पेयजल, बैम्बू बोर्ड, बॉयोपयूल बोर्ड, ग्राम्य विकास एवं वन विभाग द्वारा क्षेत्र उपचार के विभिन्न कार्यक्रमों का कियान्वयन किया जा रहा है। भविष्य में भी प्रदेश की पेयजल एवं भू–क्षरण से जुड़ी समस्याओं के समाधान हेतु भावी परियोजनायें यथा मनरेगा, जलागम विकास (समान मार्गदर्शी सिद्धान्त–2008 के अन्तर्गत), बाह्य सहायतित परियोजनाओं, केम्पा द्वारा वित्त पोषित वानिकी परियोजनायें इत्यादि में भी इन गतिविधियों को स्थानीय ग्राम समुदाय के साथ सहभागिता के आधार पर कियान्वित किया जाना है। आरक्षित वनों के समीप निवास कर रहे ग्रामीण पारम्परिक रुप से चरान, चुगान अथवा जलौनी हेतु इन वनों पर आश्रित हैं। इन वनों में स्थित जल स्रोतों के संरक्षण एवं संवर्द्धन तथा मृदा संरक्षण सम्बन्धित कार्यो में स्थानीय समुदाय की वन पंचायतों के माध्यम से भागीदारी सुनिश्चित की जानी चाहिए।

2– अतः उपरोक्त परिप्रेक्ष्य में मुझे यह कहने का निदेश हुआ है कि निम्नलिखित शर्तों/प्रतिबन्धों के साथ वन पंचायतों द्वारा जल संरक्षण, संवर्द्धन एवं मृदा संरक्षण हेतु क्षेत्र उपचार का कार्य समीपस्थ आरक्षित वन क्षेत्रों में किया जा सकेगाः–

1. स्थानीय वन पंचायत सम्बन्धित ग्रामों से सटे हुए आरक्षित वन क्षेत्र में क्षेत्र उपचार का कार्य वन विभाग के प्रशासनिक नियंत्रण में करेगी। इस हेतु वन पंचायत का चयन संबंधित प्रभागीय वनाधिकारी द्वारा किया जायेगा।
2. वन पंचायत द्वारा उत्तरांचल पंचायती वन नियमावली 2005 के प्राविधानों के अनुरूप किसी भी परियोजना/कार्यदायी संस्था/विभाग से जल स्रोतों के संवर्द्धन, संरक्षण एवं क्षेत्र उपचार हेतु धनराशि प्राप्त की जा सकेगी।
3. वन पंचायत द्वारा क्षेत्र उपचार हेतु स्थलीय विकास योजना सम्बन्धित प्रभागीय वनाधिकारी एवं परियोजना अधिकारी के तकनीकी एवं वित्तीय मार्ग निर्देशन में तैयार की जायेगी।
4. स्थलीय विकास योजना सम्बन्धित प्रभाग/विभाग/कार्यदायी संस्था/प्रोजेक्ट के कार्ययोजना में दिये गये निर्देशों के अनुरूप होगी एवं सम्बन्धित प्रभाग के प्रभागीय वनाधिकारी वन संरक्षण अधिनियम, 1980 के प्राविधानों को ध्यान में रखते हुए स्थलीय विकास योजना अनुमोदित करेंगे।
5. स्थलीय विकास योजना में ऐसा कोई कार्य वन पंचायत अथवा सम्बन्धित परियोजना द्वारा विधानित नहीं करेंगे, जिससे वन संरक्षण अधिनियम, 1980 के किसी भी प्राविधान का उल्लंघन हो।

क्रमशः 3

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6. आरक्षित वन क्षेत्रों के लिए अनुमोदित "स्थलीय विकास योजना" में चिन्हित कार्यों के सम्बन्ध में सम्बन्धित प्रभागीय वनाधिकारी द्वारा यथा–आवश्यकता विचलन विवरण तैयार कर प्रभाग की कार्य/प्रबन्ध योजना से होने वाले विचलन के सम्बन्ध में सक्षम स्तर से स्वीकृति/अनुमोदन प्राप्त कर लिया जायेगा।

7. क्षेत्र उपचार योजना का क्रियान्वयन स्थानीय वन पंचायत एवं सम्बन्धित प्रभागीय वनाधिकारी तथा सम्बन्धित परियोजना अधिकारी के मध्य एक अनुबन्ध के तहत संयुक्त वन प्रबन्धन के माध्यम से किया जायेगा। अनुबन्ध की शर्तों का अनुपालन उभय पक्षों द्वारा किया जायेगा। किसी एक पक्ष द्वारा अनुबन्ध की शर्तों का अनुपालन न किये जाने पर अनुबन्ध निरस्त कर दिया जायेगा तथा सम्बन्धित वन पंचायत एवं परियोजना/कार्यदायी संस्था/विभाग का कोई दावा/क्लैम नही होगा।

8. क्षेत्र उपचार हेतु अंतिम भुगतान सम्बन्धित (परियोजना/कार्यदायी संस्था/विभाग) के द्वारा वन विभाग/सम्बन्धित विभाग के अधिकृत अधिकारी के सत्यापन के बाद ही सम्बन्धित वन पंचायत को किया जायेगा। वन पंचायतों द्वारा किये गये व्यय का लेखा–जोखा नियमानुसार रखा जायेगा तथा इनके खातों का वार्षिक सम्परीक्षण (आडिट), भारत सरकार के महालेखा नियन्त्रक के द्वारा अधिकृत चार्टेड एकाउन्टेंट फर्म द्वारा किया जायेगा।

9. (क) कार्य सत्यापन तथा कार्य संचालन एवं क्रियान्वयन सम्बन्धित विभाग/परियोजना की निर्धारित गाईड लाईन्स के अनुसार ही Forest (Conservations) Act, 1980 एवं संगत अधिनियमों/नियमावली के प्राविधानों को ध्यान में रखते हुए किये जायेंगे। अधिनियम/नियमावली के किसी प्राविधान का उल्लंघन होने पर सक्षम स्तर से कार्यवाही की जायेगी।

(ख) कार्यदायी संस्था/परियोजना/सम्बन्धित विभाग द्वारा समय–समय पर वन पंचायतों द्वारा आरक्षित वन में करवाये जा रहे क्षेत्र उपचार का स्थलीय सत्यापन एवं अनुश्रवण वन विभाग को पूर्व में सूचित करने के उपरान्त किया जा सकेगा।

10. आरक्षित वन क्षेत्रों में वन पंचायतों द्वारा किये गये वृक्षारोपण की सुरक्षा का दायित्व परियोजना अवधि के अंतर्गत वन पंचायतों द्वारा वन विभाग के मार्ग निर्देशन में एन0ओ0यू0 के अनुसार किया जायेगा एवं इस उपचार क्षेत्र का ब्यौरा सम्बन्धित प्रभागीय वनाधिकारी द्वारा रखा जायेगा।

क्रमश : 4

My Co... /D Painsari/ G.O. Letter 2009

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11. सम्बन्धित आरक्षित वनों के उपचार क्षेत्रों में परियोजना अवधि के दौरान अवैध कटान, अवैध शिकार, वन अपराधों एवं अग्नि से सुरक्षा की पूर्ण जिम्मेदारी सम्बन्धित वन पंचायत की होगी।

12. आरक्षित वन क्षेत्रों में उपचार के अन्तर्गत किये गये कार्यों के सापेक्ष वन पंचायतों को भविष्य में उपचार क्षेत्र से वन उपज अथवा अन्य कोई लाभ अनुमन्य नहीं होगा।

13. राज्य स्तर पर प्रमुख वन संरक्षक, (वन पंचायत) एवं वन विभाग की ओर से अन्य सभी विभागों, परियोजनाओं इत्यादि से समन्वय का कार्य करेंगे।

कृपया तद्नुसार यथावश्यक कार्यवाही सुनिश्चित करने का कष्ट करें।

भवदीय,

(नृप सिंह नपलच्याल)
अपर मुख्य सचिव

संख्या–3108 (1)/X–2–2009, तद्दिनांकित।

प्रतिलिपिः–निम्नलिखित को सूचनार्थ एवं यथावश्यक कार्यवाही हेतु प्रेषितः–

1. समस्त प्रमुख सचिव/सचिव, उत्तराखण्ड शासन।
2. मण्डलायुक्त, कुमाऊं मण्डल, नैनीताल/गढ़वाल मण्डल, पौड़ी।
3. समस्त जिलाधिकारी, उत्तराखण्ड।
4. निजी सचिव–मुख्य सचिव, उत्तराखण्ड शासन।

आज्ञा से,

02/12/09

(आर0के0मिश्र)
अपर सचिव

My Computer/D Painsari/ G.O. Letter 2009

02.11.09

Annexure -2

महत्वपूर्ण

संख्या : 25 /XIII(II)/2011–31(05)/2011

प्रेषक,

सुवर्द्धन,
सचिव,
उत्तराखण्ड शासन।

सेवा में,

मुख्य परियोजना निदेशक,
जलागम प्रबन्ध निदेशालय,
उत्तराखण्ड, देहरादून।

कृषि एवं विपणन अनुभाग–2 देहरादून : दिनांक : 08 दिसम्बर, 2011

विषयः विश्व बैंक पोषित उत्तराखण्ड विकेन्द्रीकृत जलागम विकास परियोजना (ग्राम्या) की समाप्ति के उपरान्त सृजित परिसम्पत्तियों के उपयोग एवं रखरखाव के संबंध में।

महोदय,

उपरोक्त विषय की ओर ध्यान आकृष्ट करते हुए अवगत कराना है कि वर्तमान में प्रदेश के विभिन्न क्षेत्रों में संचालित विश्व बैंक पोषित वाह्य सहायतित परियोजना "उत्तराखण्ड विकेन्द्रीकृत जलागम विकास परियोजना (ग्राम्या) की परियोजना अवधि दिनांक 31.3.2012 को समाप्त हो रही है।

2– तत्क्रम में सम्यक् विचारोपरान्त मुझे यह कहने का निदेश हुआ है कि परियोजना समाप्ति के उपरान्त परियोजनान्तर्गत सृजित परिसम्पत्तियों के रखरखाव तथा उनके भावी उपयोग एवं प्रबन्धन के संबंध में निम्नानुसार समयबद्ध कार्यवाही सुनिश्चित कराई जाए : –

1. 'ग्राम्या' परियोजना के अंतर्गत सृजित परिसम्पतियों का विवरण एक पृथक पंजिका में ग्राम पंचायत स्तर पर रखा जायगा।

2. 'ग्राम्या' परियोजना द्वारा ग्राम पंचायत स्तर पर स्थापित बहुउपयोगी केन्द्र (Multi Utility Centre) का संबंधित ग्राम पंचायत द्वारा उपयोग किया जायेगा तथा उसी के द्वारा रखरखाव की व्यवस्था भी की जायेगी। बहुउपयोगी केन्द्र का स्वामित्व भी ग्राम पंचायत का होगा। यदि बहुउपयोगी केन्द्र ग्राम पंचायत के अतिरिक्त किसी अन्य के भू–स्वामित्व में निर्मित किये गये हों तो ऐसी स्थिति में बहुउपयोगी केन्द्रों की भूमि का स्वामित्व ग्राम पंचायत को हस्तान्तरित करने की प्रक्रिया अपनायी जायगी। उप परियोजना निदेशक द्वारा संबंधित ग्राम पंचायत से सहमति पत्र प्राप्त कर परिसम्पत्तियों का हस्तान्तरण कराया जायेगा तथा सूचना संबंधित जिला पंचायती राज अधिकारी को भी उपलब्ध करायी जायगी।

3. 'ग्राम्या' परियोजना द्वारा ग्राम पंचायत स्तर पर स्थापित खाद्य प्रसंस्करण केन्द्रों (Processing Centre) का उपयोग एवं रखरखाव पंजीकृत कृषक संघ (Farmers Federation) द्वारा किया जायेगा तथा इन केन्द्रों में स्थापित संयत्र व उपकरण एवं उपयोग की जा रही सामग्री का स्वामित्व कृषक संघ का होगा। इन केन्द्रों की भूमि सामुदायिक भूमि होने की दशा में उस भूमि एवं भवन का स्वामित्व ग्राम पंचायत का होगा। इस हेतु उप परियोजना निदेशक द्वारा संबंधित कृषक संघ एवं ग्राम पंचायत से सहमति पत्र तैयार कर परिसम्पत्तियों का हस्तान्तरण किया जायेगा तथा इन केन्द्रों के हस्तान्तरण के सम्बन्ध में सूचना संबंधित जनपद के जिला उद्यान अधिकारी को उपलब्ध करायी जायगी।

4. 'ग्राम्या' परियोजना द्वारा स्थापित वर्षा एवं भू–क्षरण मापन हेतु स्थापित केन्द्र (Weather Station) प्रायः विद्यालयों, विकास खण्ड कार्यालयों, तहसील कार्यालयों तथा किसान विकास केन्द्रों में स्थापित किये गये हैं। अतः इनका उपयोग एवं रख–रखाव उन संस्थाओं/विभागों द्वारा ही किया जायेगा, जहां यह केन्द्र स्थापित किये गये हैं। इस हेतु संबंधित उप परियोजना निदेशक द्वारा संबंधित संस्था से सहमति पत्र तैयार कर परिसम्पत्तियों का हस्तान्तरण किया जायेगा तथा इसकी सूचना संबंधित संस्थाओं/ विभागों के जिला स्तरीय अधिकारी को उपलब्ध करायी जायगी। क्रमशः....

5. परियोजना क्षेत्रों में कृषि व्यवसाय (Agri Business) के तकनीकी मार्गदर्शन तथा विपणन व्यवस्था को विकसित करने के उद्देश्य से डिविजनल सपोर्ट एजेन्सियों (Divisional Support Agency-D.S.A.) की सेवाएं प्राप्त की गयी हैं। परियोजना द्वारा D.S.A. के साथ हुए अनुबन्ध के अनुसार जो भी उपकरण आदि प्रतिपूर्ति योग्य सामग्री उपलब्ध कराई गई है, उन्हें संबंधित उप परियोजना निदेशक को हस्तान्तरित किया जाएगा तथा इनका पृथक से स्पष्ट रिकार्ड रखा जायगा। तदोपरान्त इन सभी सामग्रियों को रिकॉर्ड सहित संबंधित परियोजना निदेशक को हस्तान्तरित किया जायगा।

6. परियोजना में कार्यरत पार्टनर एन.जी.ओ. (PNGO) तथा फील्ड एन.जी.ओ. (FNGO) की सेवाएं कार्यदायी संस्था एवं जागरूकता व सामुदायिक विकास हेतु ली गयी है। PNGO साथ हुए अनुबन्ध के अनुसार जो भी उपकरण एवं एसैट्स आदि प्रतिपूर्ति योग्य सामग्री उपलब्ध करायी गई है, उनका पृथक रिकॉर्ड तैयार कर उप परियोजना निदेशक (पी.एम.यू.) के माध्यम से जलागम प्रबन्ध निदेशालय को हस्तान्तरित किया जाय। इसी प्रकार FNGO के प्रकरणों में उक्त प्रतिपूर्ति योग्य सामग्री का पृथक रिकॉर्ड तैयार कर संबंधित परियोजना निदेशक को हस्तान्तरित किया जायगा।

3– कृपया उपरोक्त निर्देशों का कड़ाई से समयबद्ध अनुपालन सुनिश्चित कराने का कष्ट करें।

भवदीय,

(सुवर्द्धन)
सचिव।

संख्या : 25 (1)/XIII(1)/2011 तद्दिनांक।

प्रतिलिपि : निम्नांकित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित : –

1. निजी सचिव, मा. मुख्यमंत्री, उत्तराखण्ड।
2. निजी सचिव, मुख्य सचिव, उत्तराखण्ड शासन।
3. निजी सचिव, प्रमुख सचिव एवं आयुक्त, वन एवं ग्राम्य विकास, उत्तराखण्ड शासन।
4. समस्त प्रमुख सचिव/सचिव, वन एवं ग्राम्य विकास आयुक्त शाखा, उत्तराखण्ड शासन।
5. आयुक्त, गढ़वाल मण्डल, पौड़ी/कुमायूँ मण्डल, नैनीताल।
6. समस्त विभागाध्यक्ष, वन एवं ग्राम्य विकास आयुक्त शाखा, उत्तराखण्ड।
7. समस्त जिलाधिकारी, उत्तराखण्ड।
8. समस्त मुख्य विकास अधिकारी, उत्तराखण्ड।
9. परियोजना निदेशक, कुमाऊं/गढवाल क्षेत्र, जलागम प्रबन्ध, हल्द्वानी (नैनीताल)/मुनि की रेती (टिहरी)।
10. समस्त उपपरियोजना निदेशक, जलागम प्रबन्ध, उत्तराखण्ड।
11. गार्ड फाईल।

आज्ञा से,

(अरविन्द कुमार गुप्ता)
अनुसचिव।

Abstract of Physical and Financial Progress in MWS, under SLEM

Annexure -3

S.No.	Activities in MWS	Forestry						Soil Conservation &. DLT Works								Soil Conservation &. DLT Works												Water Harvesting							Fostering markets for NTFPs							Biodiversity Conservation				Financial achievement Aug, 2013 (INR Lakhs)
	Name of Division	Plantation in (ha)		Oak ANR(Ha.)		Forest Fire Management (Ha.)		Vegetative Cheekdem (No.)		Dry Stone Check dams (cum.)		Cratewire Check dams (cum.)		Crate wair Spurs (cum.)		Contour Bunds and Trenches (No.)		River Bank Protection(Cum.)		Retaining Wall/Cross Barrier (Cum.)		Diversion drain (Mtr)		Landslide Treatment (cum)		Roadside erosion control (Cum.)		Recharge Pit (No.)		Roof water Harvesting (No.)	Irrigation Tanl with dclivery system (No.)	Village Pond (No.)	Tal/Naula/ Khala Rejuvenation (No.)	L.D.P Tank / / Perculation Tank (No.)	Pine Briquette moulding machine Demo. (N0.)	Briquete stove Demo (No.)	Solar lantern (No.)	Bio Gas (No.)	Solar street light (nos.)	Solar cooker	Small infrastructure facilities for marketing support (No.)	Medicinal & Aromatic Plants Demo. (Ha)	Medicinal &Aromatic Plants Nurseries (No)	Poly House Demo.(no)	Livelihood support for SHGs (No.)	
		GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	GP	
1	Agastayamuni	183	48	27	33	0	0	130	0	7001.7	1500	11432.98	1246	1500	0	18776	0	2466.65	121	2963.12	0	1460	0	0		4682.44	0	1085	220	122	18	49	113	38	53	1115	718	33	77	30	1	174.818	7	78	63	**781.53**
2	Bageshwar	160	47	0	0	0	0	48		966.41	0	1300.21	0	51.91		8987	0	9158.811	0	1224.81	0	458		118.869	0	0	0	0	0	3		3	102		38	987	380	23	27	19	4	41.43	3	61	29	**191.38**
3	Chinyaliaur	175	0	0	0	0	0	0	0	4492	2304	4055	4404	0	0	0	0	2208	0	903.33	0	0	0	389.1	0	0	0	0	0	0	0	31	28	7	64	1441	900	10	37		1	138.93	8	52	58	**219.20**
4	Nainital	109	108	0	55	0	186.9	136	222	2442.91	2862.36	20017.26	8420.07	442.62	0	35197	28751	8030.56	628.03	6334.47	1393.47	7437.05	1400	0	0	0	0	0	0	0	0	235	180		48	1441	1380	0	49	20	9	226.339	1	56	172	**676.74**
	Total	**627**	**203**	**27**	**88**	**0**	**186.9**	**314**	**222**	**14903.02**	**6666.36**	**36805.45**	**14070.07**	**1994.53**	**0**	**62960**	**28751**	**21864.021**	**749.03**	**11425.73**	**1393.47**	**9355.05**	**1400**	**507.969**	**0**	**4682.44**	**0**	**1085**	**220**	**125**	**18**	**318**	**423**	**45**	**203**	**4984**	**3378**	**66**	**190**	**69**	**15**	**581.517**	**19**	**247**	**322**	**1868.853**

S. No.	Name of Micro Watershed	Activities in MWS	Forertry				Soil Conservation & DLT Works																						Water Harvesting					Fostering Markets for NTFPs							Biodiversity Conservation					
		Name of GP	Plantation in (ha.)		Oak ANR (ha.)		Vegetative Checkdem (No.)		Dry Stone Check Dem (Cum.)		Cratewire Check Dem (Cum.)		Cratewire Spurs (Cum.)		Contour Bunds and Trenches (No.)		River Bank Protection Crate wire (Cum.)		River Bank Protection 1:6 mortar wrok (Cum.)		Dry Retaining Wall/ (Cum.)		Diversion Drain (Cum.)		Roadside Erosion control (Cum.)		Recharge Pit (No.)		Roof Water Harvesting tank (No.)	Irrigation Tank with Delivery system/Water Storage Tanks (No.)	Village Pond (No.)	Tal/Naula/Khaula Rejuvenation (No.)	L.D.P Tank / / Perculation Tank (No.)	Pine Briquette moulding machine Demo. (No.)	Briquette stove Demo. (No.)	Solar lantern (No.)	Bio Gas (No.)	Other innovative activities (Solar Cooker) (No.)	Solar Street Light(No.)	SmallInfrastructure Facilities for Marketing Support (No.)	Medicinal & Aromatic Plants Demo. (Ha)	Medicinal & Aromatic Plants Nuseries. (No.)	Poly House Demo. (No.)	Livelihood suport for SHGs (No.)	Financial Achievement August 2013 (INR Lakhs)
			GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
SLEM Division- Agustymuni																																													
District-Rudraprayag																																													
1	Pogta Gad	Agar	10	0	0	0	0	0	219.0	0	325.0	0	0	0	352	0	100	0	0	0	200.0	0	110	0	100.5	0	72	0	0	0	1	1	0	1	25	10	0	0	3	0	0.0	0	3	1	18.22
2		Kokhandi	0	0	0	0	0	0	100.0	0	100.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	20	0	0	0	1	0	0	2	30	9	0	0	0	0	1.9	0	0	2	6.11
3		Sari	5	0	0	0	20	0	301.6	0	537.5	0	100	0	0	0	0	0	0	0	101.8	0	0	0	0.0	0	30	0	10	1	2	2	5	2	34	11	4	0	1	0	8.8	0	4	0	26.68
4		Thapalgaon	0	0	0	0	0	0	100.0	150	120.0	0	100	0	0	0	50	0	0	0	100.0	0	0	0	0.0	0	0	0	0	0	0	2	0	0	0	7	0	0	0	0	0.5	0	0	1	4.56
5		Jaggi Kandai	10	0	0	0	0	0	0.0	0	275.0	0	0	0	490	0	0	0	0	0	0.0	0	100	0	0.0	0	18	0	0	0	0	0	4	1	23	13	0	0	0	0	0.0	0	2	1	10.42
6		Benji Kandai	10	0	0	0	0	0	0.0	0	312.5	0	0	0	598	0	0	0	0	0	0.0	0	100	0	160.0	0	10	0	0	0	0	4	3	1	26	12	0	0	0	0	1.0	0	0	0	11.22
7		Vijarakot	0	0	0	0	50	0	345.0	100	200.0	350	100	0	200	0	0	0	0	0	100.0	0	50	0	0.0	0	10	60	10	0	3	2	2	1	24	13	0	2	0	0	0.5	0	0	2	16.86
8		Jarmwad	0	0	0	0	0	0	136.5	0	100.0	0	0	0	100	0	100	0	0	0	100.0	0	20	0	0.0	0	10	0	10	1	1	3	4	2	32	13	0	0	0	0	2.1	0	1	1	11.48
9		Mahad	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	20	0	0.0	0	10	0	0	0	0	2	0	0	0	8	0	0	0	0	0.0	0	0		0.92
10	Chinka Gad	Nagkakora khal	10	0	0	0	30	0	202.9	150	500.0	250	200	0	0	0	100	0	0	0	154.8	0	0	0	102.0	0	50	30	8	0	4	3	1	1	19	10	0	0	0	0	0.0	0	0	0	22.77
11		Kotagi	5	0	0	0	0	0	50.0	100	407.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	20	20	10	0	2	0	2	1	26	13	2	2	3	0	8.2	0	1	1	18.56
12		Chinka	3	0	0	0	0	0	126.0	0	100.0	300	100	0	326	0	100	0	0	0	100.0	0	0	0	0.0	0	50	40	5	0	1	0	0	1	31	12	1	2	1	0	2.8	0	0	3	14.86
13		Madola	0	0	0	0	0	0	100.0	0	100.0	0	0	0	10	0	0	0	0	0	0.0	0	0	0	0.0	0	10	0	0	0	0	2	2	2	38	10	0	0	0	0	5.7	0	0	0	7.27
14		Kurjhan	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	10	0	0	1	0	0	3	1	25	9	0	0	0	0	0.0	0	0	1	3.33
15		Ishala	0	0	0	0	0	0	50.0	0	161.0	0	100	0	0	0	100	0	0	0	50.0	0	0	0	0.0	0	0	0	5	1	1	2	0	0	0	10	0	2	2	0	0.0	0	0	1	7.55
		Fedration Alakanada Gholtir	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	3.16
16	Baniyarigad	Dhartondla	5	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	4	0	1	22	17	0	0	1	0	3.0	0	0	1	4.56
17		Malkhi	0	0	0	0	10	0	257.6	0	304.6	0	0	0	0	0	0	0	0	0	0.0	0	500	0	0.0	0	10	0	0	0	2	7	0	0	0	13	0	1	2	0	3.0	0	1		13.54
18		Rumsi	5	0	0	0	10	0	200.0	0	208.3	0	0	0	500	0	0	0	0	0	0.0	0	0	0	0.0	0	30	0	7	0	1	5	0	1	20	13	0	2	1	0	7.3	0	2	1	15.04
19		Kamsal	0	0	0	0	0	0	100.0	0	106.8	0	0	0	0	0	0	0	0	0	0.0	0	0	0	350.0	0	10	0	0	0	1	5	0	2	41	13	0	0	1	0	4.7	0	0		12.98
20		Manigouh	0	0	0	0	0	0	100.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	50.0	0	0	0	0	1	1	1	0	0	0	12	0	0	1	0	4.2	0	1		5.99
21		Baniyari	0	0	0	0	0	0	200.0	0	473.1	0	0	0	500	0	100	0	200	0	0.0	0	0	0	0.0	0	40	0	10	0	2	4	2	1	35	14	0	1	1	0	6.3	0	1	2	16.84

22	Baniyarigad	Sauri	0	0	0	0	0	0	100.0	0	290.9	0	0	0	0	0	0	0	0	0	0.0	0	0	0	50.7	0	10	0	5	0	2	3	0	2	57	22	4	0	1	0	8.4	0	2	2	20.03
23		Nakot	0	0	0	0	0	0	0.0	0	173.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	5	0	2	2	0	1	34	31	4	1	3	0	1.8	0	3		13.27
24		Ginwala	5	0	0	0	0	0	100.0	0	280.3	0	0	0	0	0	0	0	0	0	0.0	0	50	0	101.2	0	0	0	3	1	2	6	0	1	37	17	1	1	1	0	3.4	0	5	2	18.34
25		Jagoth	5	0	0	0	10	0	370.2	0	100.0	0	0	0	500	0	0	0	0	0	0.0	0	0	0	100.0	0	10	0	0	0	4	5	0	0	0	18	0	1	1	0	13.2	0	0		16.87
26		Bhatwari	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	3	0	0	0	13	0	0	1	0	0.8	0	0	2	2.13
		Mandakini Ghati Swayatt Federation Augustyamuni	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	3.23
27	Surgad	Ghimtoli	25	4	7	5	0	0	100.0	400	404.0	346	0	0	5000	0	200	0	100	0	200.0	0	100	0	797.0	0	60	0	8	1	2	0	0	0	0	23	0	0	7	0	3.4	1	6	3	49.18
28		Kyudi	15	4	0	0	0	0	100.0	400	800.0	0	0	0	4000	0	329	121	0	0	100.0	0	0	0	667.0	0	70	0	0	2	6	2	0	0	0	21	0	0	7	0	6.6	0	0	2	44.19
29		Kolubhannu	0	0	0	0	0	0	0.0	0	300.0	0	0	0	0	0	0	0	100	0	100.0	0	0	0	300.0	0	40	0	7	1	0	2	0	0	0	13	0	0	2	0	3.8	0	0	1	14.15
30		Falasi	0	0	0	0	0	0	100.0	0	100.0	0	50	0	0	0	0	0	0	0	100.0	0	0	0	68.0	0	10	0	0	0	0	2	0	1	30	7	0	0	1	0	2.2	0	0		6.30
31		Vora	0	0	0	0	0	0	0.0	0	0.0	0	0	0	2000	0	0	0	0	0	100.0	0	50	0	345.0	0	30	0	0	0	1	0	0	2	47	14	0	0	3	1	5.7	0	1	2	26.48
32		Kundadankot	0	0	0	0	0	0	100.0	0	100.0	0	0	0	0	0	50	0	0	0	100.0	0	0	0	68.0	0	10	0	0	0	0	0	0	1	30	17	0	2	1	0	2.4	0	0		6.60
33		Vachni	0	0	0	0	0	0	100.0	0	100.0	0	0	0	0	0	0	0	0	0	100.0	0	0	0	103.0	0	15	0	0	1	1	0	0	2	55	14	0	3	0	0	3.1	0	0		8.81
34		Bavai	0	0	0	0	0	0	0.0	0	0.0	0	50	0	0	0	0	0	0	0	200.0	0	0	0	0.0	0	10	0	0	0	0	0	0	3	77	14	0	2	1	0	6.5	0	10		16.59
35		Bhosal	0	0	0	0	0	0	300.0	0	0.0	0	0	0	0	0	0	0	0	0	256.5	0	0	0	0.0	0	0	0	0	0	0	0	0	1	11	14	0	0	1	0	1.6	0	1	2	6.15
36		Sour Bhatgaon	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	1	27	8	0	0	0	0	2.2	0	0		2.64
37		Tarag	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	100	0	0	0	100.0	0	0	0	50.0	0	0	0	0	1	1	5	0	0	0	5	0	0	0	0	1.6	0	0	1	5.66
		Fedration Shiv Shakti Chopta	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	3.57
38	Kyunjagad	Kansili	0	0	0	0	0	0	100.0	0	100.0	0	50	0	0	0	0	0	212.65	0	0.0	0	0	0	50.0	0	30	0	0	1	0	2	0	1	20	14	3	0	1	0	1.2	0	3	2	13.04
39		Kandhi	0	7	0	0	0	0	250.0	0	440.0	0	50	0	0	0	0	0	100	0	100.0	0	0	0	50.0	0	17	0	0	1	0	0	0	1	20	15	0	0	2	0	0.1	0	0		12.73
40		Kinjari	5	7	0	0	0	0	238.0	0	640.0	0	50	0	500	0	0	0	0	0	100.0	0	50	0	350.0	0	35	0	8	0	2	3	1	2	30	22	0	0	3	0	0.0	1	2	3	25.88
41		Keda	0	0	0	4	0	0	238.0	0	488.0	0	50	0	0	0	0	0	50	0	0.0	0	0	0	160.3	0	25	0	0	0	0	2	0	3	54	18	0	1	5	0	2.3	0	2	1	17.32
42		Kyunja	18	13	0	5	0	0	250.0	200	190.0	0	50	0	500	0	0	0	50	0	0.0	0	0	0	50.0	0	35	20	0	1	0	3	0	1	19	14	2	1	1	0	6.2	2	1	2	25.90
43		Tevadi Sem	9	0	5	4	0	0	491.0	0	740.0	0	100	0	600	0	0	0	50	0	150.0	0	50	0	300.0	0	55	0	3	0	1	4	2	1	22	20	1	1	4	0	8.6	2	4	2	37.53
44		Badav	0	0	5	5	0	0	250.0	0	188.0	0	50	0	300	0	0	0	50	0	100.0	0	50	0	0.0	0	35	0	0	1	0	2	3	0	0	12	0	1	1	0	0.0	0	1	3	10.15
45		Jai Kandi	6	4	5	0	0	0	250.0	0	190.0	0	50	0	300	0	0	0	50	0	0.0	0	50	0	50.0	0	35	25	0	0	0	2	2	2	19	16	1	1	1	0	8.7	0	1	3	18.29
46		Pillu	4	0	0	0	0	0	238.0	0	190.0	0	50	0	300	0	25	0	0	0	0.0	0	0	0	25.0	0	35	0	0	1	0	2	0	1	19	13	0	1	1	0	1.0	0	0		8.11
47		Kakola	0	0	0	0	0	0	100.0	0	100.0	0	0	0	0	0	0	0	50	0	0.0	0	30	0	34.8	0	20	0	4	0	0	2	0	1	10	13	7	0	1	0	3.2	0	4	4	15.61
48		Jahangi	10	2	5	10	0	0	288.0	0	838.0	0	50	0	600	0	0	0	0	0	0.0	0	0	0	150.0	0	35	0	4	0	2	2	0	1	15	19	0	1	4	0	5.0	0	4	3	29.24
49		Moli	0	0	0	0	0	0	100.0	0	100.0	0	50	0	200	0	50	0	0	0	100.0	0	30	0	0.0	0	10	0	0	1	0	2	0	0	0	8	0	1	2	0	1.0	0	3	2	8.00
50		Googli	0	0	0	0	0	0	100.0	0	100.0	0	0	0	400	0	50	0	0	0	0.0	0	100	0	0.0	0	20	0	0	0	0	3	0	0	0	17	0	0	2	0	1.5	0	1	2	6.93
51		Daula	18	7	0	0	0	0	100.0	0	100.0	0	50	0	500	0	0	0	0	0	100.0	0	0	0	50.0	0	20	25	0	0	0	2	2	1	15	12	0	0	1	0	5.2	1	2	0	17.91
52		Bhatwari Sunar	0	0	0	0	0	0	50.0	0	50.0	0	50	0	0	0	0	0	0	0	50.0	0	0	0	0.0	0	3	0	0	0	0	3	0	2	16	12	3	0	1	0	4.1	0	6	1	12.99
		Mandakini Ghati Swayatt Federation Kyunjagad	0	0	0	0	0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	4.80
Total			183	48	27	33	130	0	7001.7	1500	11433.0	1246	1500	0	18776	0	1454	121	1012.7	0	2963.1	0	1460	0	4682.4	0	1085	220	122	18	49	113	38	53	1115	718	33	30	77	1	174.8	7	78	63	781.53

Physical and Financial Progress in MWS, under SLEM (GP wise)

S. N.	Name of micro Watershed	Activities in MWS	Forestry						Soil Conservation & DLT Works																						Water Harveting				Fostering markets for NTFPs							Biodiversity Conservation				Financial achievement March 2012 (INR Lakhs)
		Name of GP	Plantation in (ha)		Oak ANR(Ha.)		Forest Fire Management (Ha.)		Vegetative Cheekdem (No.)		Dry Stone Check dams (cum.)		Cratewire Check dams (cum.)		Crate wair Spurs (cum.)		Contour Bunds and Trenches (No.)		River Bank Protection(Cum.)		Retaining Wall/Cross Barrier (Cum.)		Diversion rain (Mt)		Landslide Treatment / 1;6 c.c Mortar (Cum.)		Landslide Treatment / 1;6c.c Banded		Roadside erosion control (Cum.)		Roof water Harvesting (No.)	Irrigation Tanl with dclivery system (No.)	Village Pond (No.)	Tal/Naula/ Khala Rejuvenation (No.)	Pine Briquette mouldingmachine Demo. (NO.)	Briquete stove Demo (No.)	Solar lantern (No.)	Bio Gas (No.)	Other innovative activities Solar street light	Other innovative activities Solar cooker	Small infrastructure facilities for marketing support (No.)	Medicinal & Aromatic Plants Demo. (Ha)	Medicinal &Aromatic Plants Nurseries (No)	Poly House Demo.(no)	Livelihood support for SHGs (No.)	
			GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
SLEM Division- Bageshwar																																													
District- Bageshwar																																													
1	Kumgar	Harsila	20	5	0	0	0	0	0	0	0	0	325	0	0	0	1050	0	583.8	0	94.5	0	80	0	0	0	79.5	0	0	0	0	0	0	10	3	30	0	0	4	0	1	5.54	1	7	6	19.05
2		Chachai	10	6	0	0	0	0	0	0	0	0	323	0	0	0	0	0	801.8	0	280.0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	56	20	0	0	0	0	3.036	0	2	1	15.49
3		Purkuni	10	10	0	0	0	0	18	0	188.5	0	70	0	0	0	1050	0	773.2	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	10	3	90	75	0	2	0	1	2.1	0	1	3	17.93
4	Jargar	Chalkana	20	3	0	0	0	0	14	0	354.7	0	253	0	0	0	0	0	540.5	0	178.4	0	0	0	0	0	0	0	0	0	0	0	1	4	3	90	20	2	2	0	0	3.43	0	1	1	17.00
5		Poling	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	665.2	0	99.9	0	378	0	0	0	0	0	0	0	0	0	0	2	1	80	10	0	0	0	0	2.19	0	0	0	15.43
6		Gairkhet	30	0	0	0	0	0	0	0	0	0	167	0	51.9	0	0	0	354.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	160	0	0	1	0	0	2.03	0	6	0	13.67
7	Gainargar	Lily	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	481.7	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	126	0	0		0	0	1.514	0	0	0	8.11
8		Gainar	10	0	0	0	0	0	0	0	71.6	0	0	0	0	0	0	0	636.4	0	105.3	0	0	0	0	0	0	0	0	0	0	0	0	6	2	60	30	0	3	0	0	1.77	0	4	3	10.17
9		Uttraura	0	0	0	0	0	0	0	0	0	0	51	0	0	0	0	0	1002.3	0	178.6	0	0	0	0	0	39.4	0	0	0	0	0	0	11	4	130	0	17	3	0	1	7.12	0	11	2	12.53
10		Sumti Baisani	30	15	0	0	0	0	16	0	224.2	0	111	0	0	0	5423	0	2385.6	0	153.1	0	0	0	0	0	0	0	0	0	0	0	2	47	6	93	225	2	9	19	0	4.09	1	10	12	42.33
11	Kanalgar	Nan Kanyalikot	10	8	0	0	0	0	0	0	127.5	0	0	0	0	0	1464	0	933.5	0	35.0	0	0	0	0	0	0	0	0	0	0	0		9	3	72	0	2	3	0	1	8.61	1	19	1	19.67
Total-			**160**	**47**	0	0	0	0	**48**	0	**966.4**	0	**1300**	0	**51.9**	0	**8987**	0	**9158.8**	0	**1224.8**	0	**458**	0	0	0	**118.9**	0	0	0	**3**	0	**3**	**102**	**38**	**987**	**380**	**23**	**27**	**19**	**4**	**41.43**	**3**	**61**	**29**	**191.38**

S. No.	Name of Micro Watershed	Activities in MWS	Forestry						Soil Conservation &. DLT Works																				Water Harvesting				Fostering markets for NTFPs							Biodiversity Conservation				Financial achievement July 2013 (INR Lakh)
		Name of GP	Plantation in (ha.)		Oak ANR (Ha.)		Forest Fire Management (Ha.)		Vegetative Checkdem (No.)		Dry stone check dam (cum.)		Cratewire check dam (cum.)		Cratewire Spurs (cum.)		Contour Bunds and Trenches (No.)		River Bank Protection* (cum.)		Retaining Wall /Cross Barrier** (cum.)		Diversion drain (cum.)		Landslide Treatment (cum.)		Roadside erosion control (cum)		Irrigation Tanl with delivery system (No.)	Village Pond (No.)	Tal/ Naula/ Khaula Rejuvenation (No)	L.D.P.E Tank	Pine Briquette moulding machine Demo. (No.)	Briquette stove Demo. (No.)	Solar lantern (No.)	Solar Street Light	Bio Gas (No.)	Other innovative activities (No.)	Small infrastructure facilities for marketing support (No.)	Medicinal & Aromatic Plants Demo. (Ha.)	Medicinal & Aromatic Plant Nurseries. (No.)	Poly House Demo. (No.)	Livelihood support for SHGs (No.)	
			GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
SLEM Division- Chinyalisaur																																											
District- Tehri Garhwal (Block- Thauldhar)																																											
1	Malogigad	Nawagaon	10	0	0	0	0	0	0	0	375	0	200	269	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	1	0	0	3	73	40	2	0	0	0	6.8	0	0	4	**10.50**
2		Kaushal	5.0	0	0	0	0	0	0	0	0	0	0	168	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	1	2	0	2	49	40	1	0	0	0	2.9	0	2	3	**4.86**
3		Vansul	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	2	2	3	2	51	39	2	2	0	0	4.6	0	2	2	**3.65**
4		Lawani	0.0	0	0	0	0	0	0	0	0	0	82	336	0	0	0	0	268	0	40	0	0	0	0	0	0	0	0	2	1	0	2	46	30	2	0	0	0	2.6	0	0	1	**9.34**
5		Kasthal	0.0	0	0	0	0	0	0	0	0	0	0	168	0	0	0	0	206	0	56	0	0	0	0	0	0	0	0	0	0	0	3	72	31	2	0	0	0	4.5	0	2	1	**3.82**
6		Bhandarki	5.0	0	0	0	0	0	0	0	100	0	0	168	0	0	0	0	0	0	56	0	0	0	0	0	0	0	0	0	0	0	2	42	30	1	0	0	0	4.0	0	0	2	**4.07**
7		Idiyan	10	0	0	0	0	0	0	0	475	0	0	334	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0	1	0	0	4	105	30	2	2	0	0	5.4	0	1	3	**8.84**
8		Khand	0.0	0	0	0	0	0	0	0	0	0	50	560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	72	47	2	1	0	0	4.0	1	2	4	**7.34**
9	Gairgad	Gair Nagun	5.0	0	0	0	0	0	0	0	255	0	440	168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	85	36	2	0	0	0	5.3	0	0	3	**8.99**
10		Pokhri	5.0	0	0	0	0	0	0	0	300	0	450	336	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	35	25	1	0	0	0	5.1	0	1	1	**9.62**
11		Jamini	0.0	0	0	0	0	0	0	0	130	0	303	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	77	24	1	0	0	0	2.0	0	2	4	**4.37**
12		Bhainti	0.0	0	0	0	0	0	0	0	77	0	299	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	0	3	1	0	3	61	49	2	0	0	0	8.5	0	1	2	**7.34**
13		Kyarda	0.0	0	0	0	0	0	0	0	0	0	260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	59	32	2	0	0	0	7.3	0	1	1	**3.22**
14	Gairgad	Sarot	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	56	40	2	0	0	0	0.1	1	2	3	**1.55**
15		Kandargaon	0.0	0	0	0	0	0	0	0	0	0	300	0	0	0	0	0	0	0	33.3	0	0	0	79.1	0	0	0	0	0	0	4	4	73	35	3	0	0	1	10.2	1	3	2	**5.28**
16		Vikol	5.0	0	0	0	0	0	0	0	250	0	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4	87	49	2	1	0	0	10.3	1	4	3	**7.23**
17	Kyari gad	Andyari	20	0	0	0	0	0	0	0	415	368	500	450	0	0	0	0	137	0	450	0	0	0	150	0	0	0	0	5	4	0	3	43	44	1	2	0	0	5.2	1	8	2	**29.01**
18	Chamadgad	Ghiyakoti	20	0	0	0	0	0	0	0	685	0	538	337	0	0	0	0	364	0	100	0	0	0	0	0	0	0	0	3	8	0	4	85	65	2	0	0	0	6.7	0	2	3	**24.32**
19		Ghone	20	0	0	0	0	0	0	0	360	434	333	200	0	0	0	0	265	0	0.0	0	0	0	0	0	0	0	0	2	0	0	3	75	51	1	1	0	0	6.5	0	2	3	**16.47**
20	Gattu Gad	Kotimaruki	5.0	0	0	0	0	0	0	0	200	0	0	337	0	0	0	0	189	0	50.0	0	0	0	0	0	0	0	0	0	1	0	2	45	42	1	0	0	0	6.0	0	2	3	**7.77**
21		Kyari Nagun	25	0	0	0	0	0	0	0	470	0	0	573	0	0	0	0	368	0	0.0	0	0	0	0	0	0	0	0	2	1	0	3	70	55	2	1	0	0	15.7	2	10	3	**18.87**
22		Manjhket	40	0	0	0	0	0	0	0	400	1502	0	0	0	0	0	0	411	0	0.0	0	0	0	0	0	0	0	0	3	1	0	4	80	66	1	0	0	0	15.4	1	5	5	**22.75**
Total			**175**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4492**	**2304**	**4055**	**4404**	**0**	**0**	**0**	**0**	**2208**	**0**	**903**	**0**	**0**	**0**	**389**	**0**	**0**	**0**	**0**	**31**	**28**	**7**	**64**	**1441**	**900**	**37**	**10**	**0**	**1**	**139**	**8**	**52**	**58**	**219.20**

S. No.	Name of Micro Watershed	Activities in MWS	Forestry						Soil Conservation &. DLT Works								Soil Conservation &. DLT Works												Water Harvesting				Fostering markets for NTFPs							Biodiversity Conservation				Financial achievement Aug, 2013 (INR Lakhs)
		Name of GP	Plantation in (ha.)		Oak ANR (Ha.)		Forest Fire Management (Ha.)		Vegetative Checkdem (No.)		Dry stone check dam (cum.)		Cratewire check dam (cum.)		Cratewire Spurs (cum.)		Contour Bunds and Trenches (No.)		River Bank Protection* (cum.)		Retaining Wall /Cross Barrier** (cum.)		Diversion drain (mtr)		Landslide Treatment (cum.)		Roadside erosion control (cum)		Roof Water Harvesting tank (No.)	Irrigation Tanl with delivery system (No.)	Village Pond (No.)	Tal/ Naula/ Khaula Rejuvenation (No.)	Pine Briquette moulding machine Demo. (No.)	Briquette stove Demo. (No.)	Solar lantern (No.)	Bio Gas (No.)	Solar street light. (No.)	Solar cooker. (No.)	Other innovative activities (No.)	Small infrastructure facilities for marketing support (No.)	Medicinal & Aromatic Plants Demo. (Ha.)	Medicinal & Aromatic Plant Nurseries. (No.)	Poly House Demo. (No.)	Livelihood support for SHGs (No.)	
			GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF	GP	RF																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
SLEM Division- Nainital																																												
District- Nainital (Block- Dhari, Okhalkanda)																																												
1	Dolgad	Jalnaneel pahari	2.0	0	0	10	0	20	0	8	86.9	45.5	100.0	0	0	0	500	449	0	0	0	0	200	300	0	0	0	0	0	0	12	8	2	51	28	0	1	0	0	0	12.1	0	6	4	**10.20**
2		Mahtoliagaon	0	0	0	0	0	0	0	15	200.0	108.0	227.0	200.0	0	0	300	500	0	0	0	0	350	100	0	0	0	0	0	0	5	21	2	30	36	0	2	1	0	0	6.7	0	2	4	**12.89**
3		Majuli	0	0	0	10	0	0	0	0	116.0	0	1365.7	0	0	0	0	0	0	0	0	0	600	0	0	0	0	0	0	0	2	24	5	120	46	0	1	1	0	1	8.8	0	6	12	**21.40**
4		Selalekh	0	0	0	10	0	0	15	18	202.1	62.3	593.2	0	0	0	0	1000	0	0	174.5	0	1289	0	0	0	0	0	0	0	5	2	6	112	42	0	1	3	0	0	12.0	0	2	6	**17.62**
5		Dinimalli	3.0	0	0	0	0	0	10	0	200.0	0	408.6	0	0	0	1628	2500	0	0	419.5	0	710	0	0	0	0	0	0	0	12	14	3	75	54	0	2	1	0	1	10.0	0	1	8	**18.89**
6		Dinitalli	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	473	0	0	0	0	0	335	0	0	0	0	0	0	0	2	4	4	92	41	0	1	1	0	0	8.9	0	2	1	**3.86**
7	Khujetigad	Sooni	0	5.0	0	0	0	0	0	0	0	50.1	318.1	199.4	0	0	280	515	76.3	0	203.3	0	0	0	0	0	0	0	0	0	11	5	2	80	31	0	1	1	0	0	11.5	0	2	3	**13.69**
8		Josura	5.0	0	0	0	0	0	0	0	0	0	413.3	100.0	0	0	1363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	23	0	1	0	0	0	0.0	0	2	1	**7.14**
9		Walna	3.0	0	0	0	0	0	0	0	0	0	153.5	0	150.0	0	1000	1304	222.8	102.1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	26	0	1	0	0	0	0.0	0	1	2	**8.54**
10	Sunkot	Chakdalad	0	0	0	0	0	0	9	0	0	0	546.0	0	0	0	1169	0	0	0	312.0	0	500	0	0	0	0	0	0	0	1	3	0	24	32	0	1	0	0	1	0.5	0	0	5	**12.84**
11		Keragaon		7.0	0	0	0	0	0	0	0	100.0	100.0	0	0	0	0	207	433.5	0	0	67.5	0	0	0	0	0	0	0	0	8	0	0	0	30	0	1	0	0	0	1.0	0	0	2	**10.06**
12		Kukna	4.0	4.0	0	0	0	0	10	0	101.3	0	1278.8	222.9	0	0	963	327	739.7	0	55.9	0	20.0	0	0	0	0	0	0	0	3	0	0	0	34	0	1	0	0	0	3.0	0	3	5	**25.89**
13		Bhonra	5.0	0	0	0	0	0	0	0	0	0	0	168.0	0	0	593	250	189.4	0	484.0	0	0	0	0	0	0	0	0	0	3	2	0	0	24	0	1	0	0	0	0	0	3	7	**12.47**
14		Sunkot	5.0	0	0	0	0	0	0	25	0	100.0	100.0	100.0	0	0	2459	200	275.0	0	0	0	0	0	0	0	0	0	0	0	21	0	1	32	27	0	1	0	0	0	2.0	0	1	1	**13.17**

15	Dantagad	Katna		5.0	0	0	0	0	22	0	142.8	100.0	1087.7	356.0	0	0	0	294	198.0	0	70.0	0	0	0	0	0	0	0	0	0	10	3	5	130	33	0	2	3	0	1	14.0	0	6	7	**22.12**
16		Kulone	5.0	0	0	0	0	51	0	0	0	100.0	179.2	101.6	0	0	2000	661	0	0	0	0	0	0	0	0	0	0	0	0	2	8	1	32	24	0	1	0	0	1	5.1	0	0	1	**8.06**
17		Daloj	3.0	0	0	0	0	0	0	0	0	0	513.9	409.4	0	0	0	0	308.6	0	0	0	0	0	0	0	0	0	0	0	4	0	1	35	22	0	1	0	0	0	6.1	0	0	1	**13.84**
18		Dhaina	0	0	0	0	0	0	0	3	0	103.3	180.0	344.6	292.6	0	3000	1706	468.6	250.0	71.5	49.3	0	0	0	0	0	0	0	0	5	1	0	0	35	0	1	0	0	0	0	0	1	3	**19.49**
19		Dholigaon	5.0	5.0	0	0	0	0	25	10	198.0	184.4	488.0	204.1	0	0	1000	2000	271.0	203.2	150.0	0	0	0	0	0	0	0	0	0	11	0	2	58	38	0	1	0	0	1	12.8	0	1	3	**21.68**
20		Digauli	10.0	5.0	0	0	0	8	4	0	100.0	110.6	780.3	152.2	0	0	2000	517	0	0	0	0	0	0	0	0	0	0	0	0	20	0	3	49	27	0	1	0	0	0	6.4	0	0	7	**19.11**
21		Kachlakot	5.0	0	0	0	0	0	0	0	0	0	135.4	0	0	0	3000	0	124.0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	26	0	1	0	0	0	0.0	0	0	1	**5.67**
22		Pajaina	5.0	8.0	0	0	0	0	9	0	136.3	200.0	505.3	136.6	0	0	604	246	0	0	0	0	0	0	0	0	0	0	0	0	11	2	1	50	30	0	1	0	0	0	6.7	0	0	4	**14.34**
23		Simalkanya	2.0	0	0	0	0	0	0	0	0	0	685.1	218.5	0	0	240	247	200.0	0	0	0	0	0	0	0	0	0	0	0	12	2	0	0	29	0	1	0	0	0	6.1	0	1	8	**14.52**
24		Tallakanda	10.0	10.0	0	0	0	108	6	0	25.8	702.0	1344.7	424.8	0	0	1500	3231	0	0	302.4	0	0	0	0	0	0	0	0	0	5	19	2	85	32	0	1	2	0	1	16.0	0	4	6	**36.62**
25	Pashyagad	Brahmdhar	5.0	8.0	0	0	0	0	0	0	0	0	634.0	238.2	0	0	1578	0	217.8	0	0	0	0	200	0	0	0	0	0	0	4	2	1	30	37	0	1		0	0	0	0	0	1	**15.45**
26		Harinagar	0	0	0	0	0	0	0	0	329.6	20.0	611.0	0	0	0	2239	1182	0	0	0	0	750	0	0	0	0	0	0	0	6	13	0	0	50	0	2		0	0	7.8	0	2	2	**14.14**
27		Mahtoli	0	0	0	0	0	0	0	0	0	0	253.5	0	0	0	0	0	0	0	0	0	250	0	0	0	0	0	0	0	0	0	0	25	37	0	1		0	0	0	0	0	0	**3.64**
28		Nai	1.0	0	0	0	0	0	6	0	0	0	1253.4	0	0	0	500	0	0	0	325.0	0	0	0	0	0	0	0	0	0	1	4	0	14	39	0	1	2	0	1	0.5	0	1	2	**15.78**
29		Thalari	0	0		15	0	0	15	10	198.7	105.9	1138.9	249.8	0	0	666	1231	0	0	325.8	127.5	983	400	0	0	0	0	0	0	4	2	2	60	51	0	2	1	0	0	7.7	0	6	6	**29.04**
30		Thali	2.0	0		5	0	0	5	0	200.0	109.1	2110.1	400.0	0	0	1000	500	0	0	0	0	500	400	0	0	0	0	0	0	7	19	0	30	42	0	3	1	0	0	6.7	0	1	6	**35.69**
31		Malli Pokhari	0	0	0	0	0	0	0	12	0	76.2	781.0	246.1	0	0	0	361	248.6	0	0	312.8	0	0	0	0	0	0	0	0	3	0	0	25	37	0	1		0	0	0.5	0	0	6	**17.02**
32		Bhadrakot	0	0	0	0	0	0	0	10	0	74.3		387.9	0	0	0	0	1947.7	72.8	0	0	0	0	0	0	0	0	0	0	3	0	0	27	31	0	1	1	0	0	7.4	1	1	6	**23.69**
33		Bhanpokhara	4.0	5.0	0	0	0	0	0	10	0	63.2	339.2	102.0	0	0	0	0	0	0	112.0	0	500	0	0	0	0	0	0	0	4	2	0	10	15	0	1		0	0	1.5	0	0	2	**11.40**
34		Devali	5.0	8.0	0	0	0	0	0	16	0	100.6	164.7	508.1	0	0	2058	1940	0	0	462.5	290.0	0	0	0	0	0	0	0	0	6	0	0	10	48	0	1	1	0	0	1.8	0	0	5	**19.83**
35		Hairakhan	3.0		0	0	0	0	0	15	0	96.3	0	303.4	0	0	146	1187	1269.6	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	12	0	1		0	1	10.6	0	0	3	**16.77**
36		Paithna (Kotali)	3.0	4.0	0	5	0	0	0	0	0	0	241.4	264.0	0	0	513	1077	0	0	473.0	217.2	0	0	0	0	0	0	0	0	4	0	1	25	31	0	1		0	0	0.0	0	0	1	**15.99**
37		Pashya	8.0	22	0	0	0	0	0	29	0	152.2	0	1408.7	0	0	698	4212	0	0	1621.2	0	0	0	0	0	0	0	0	0	9	13	1	60	90	0	2		0	0	21.3	0	1	18	**44.06**
38		Putpuri	4.0	5.0	0	0	0	0	0	16	205.4	31.3	452.4	226.0	0	0	60	0	0	0	119.3	0	450	0	0	0	0	0	0	0	6	0	1	25	29	0	2		0	0	2.0	0	0	2	**14.30**
39		Takura (Karyal)	0	4.0	0	0	0	0	0	10	0	67.1	250.0	502.9	0	0	667	907	0	0	443.4	329.1	0	0	0	0	0	0	0	0	3	1	1	15	31	0	1	1	0	0	7.5	0	0	2	**17.16**
40		Tusrad	0	3.0	0	0	0	0	0	15	0	0	284.2	245.0	0	0	1000	0	840.1	0	209.0	0	0	0	0	0	0	0	0	0	2	4	1	30	30	0	1		0	0	1.3	0	0	8	**18.67**
			109	**108**	**0**	**55**	**0**	**187**	**136**	**222**	**2443**	**2862**	**20017**	**8420**	**443**	**0**	**35197**	**28751**	**8031**	**628**	**6334**	**1393**	**7437**	**1400**	**0**	**0**	**0**	**0**	**0**	**0**	**235**	**180**	**48**	**1441**	**1380**	**0**	**49**	**20**	**0**	**9**	**226**	**1**	**56**	**172**	**676.74**

Annexure-4

LIST OF GRAM PANCHAYATS [GP] IN SLEM

District : Tehri Garhwal Block – Thauldhar,No. of GPs -23

Name of Gram Panchayats- Ghiyakoti, Ghon, Bhenti, Kyarda, Gair nagun, Bikol, Kandar gaon, Jamni, Lawani, Pokhri ,Gojmer, Majhkhet, Koti mahruki, Kyari nagun, Andhiyari, Nava gaon, Kasthal, Bansule, Koshal, Bhandarki, Indian, Sarot Nagun, Khand/Virkot

Rudraparyag Block- Augustmuni, No. of GPs 52

Name of Gram Panchayats- Kotagi, Madola, Chinka, Agar, Nag KakoraKhal, Kokhandi, Isala, Sari, Thapal Gaon, Kandai Jaggi, Kandai Vengi ,Bijrakot , Jargwad, Kurjhan, Mahad, Ghimtoli, Kyudi, Kolu Bhannu, Falasi, Vora, Kundadankot, Vachni, Babai, Bhausal, Saur Bhatgaon, Tarag, Saudi, Malkhi, Banyari, Bhatwari, ManiGreha, Nakot, Rumsi, Gingwala, Jagoth, Dhartundla, Kamsal, Kansila, Kandhi, Kinjani, Keda, Kyunja, Tewari Sem, Vadav, Jaikandi, Pillu, Kakola, Jaihengi, Moli, Bhatwarisunar, Gugali, Daula.

Bageshwar Block- Kapkot, No. of GPs 11

Name of Gram Panchayats- Sumati Baisani, Gainar, Poling, Lily, Uttraura, Gairkhet, Chalkana, Nankanyali kot, Chachai, Harsila, Pudkuni.

Nainital Block- Dhari, No. of GPs 06

Name of Gram Panchayats- Jalna neelpahari , Silalekh, Majyuli, Mehtoliyagaon, Dini Malli, Dini Talli,

Nainital Block- Okhalkanda, No. of GPs 34

Name of Gram Panchayats- Simalkanya, Daloj, Kachlakot, Dholigaon, Katna, Sooni, Balna, Bhonara, Josyura, Thali, Mahtoli, Harinagar, Thaladi, Putpuri, Tusrad, Bhadrakot, Hairakhan, Devali, Pashya, Bhanpokhara, Pokhari malli, Paithana, Baramdhar, Nai, Chakdalor, Tukara, Sunkot, Dhona, Keragaon, Pajana, Digauli, Tallakanda, Kulone, Kukoona