GRAMYA

IMPLEMENTATION COMPLETION REPORT

MARCH 2012

WATERSHED MANAGEMENT DIRECTORATE, D.DUN

Uttarakhand Decentralized Watershed Development Project

(IDA CREDIT NO. – 3907 IN & ADDITIONAL FINANCING CREDIT NO 4850- IN)

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ABBREVIATION

AI	Artificial Insemination
CAG	Comptroller and Auditor General
CBOs	Community Based Organizations
CIMAP	Central Institute of Medicinal and Aromatic Plant
CPD	Chief Project Director
DCA	Development Credit Agreement
DEA	Department of Economic Affairs
DPD	Deputy Project Director
DRDA	District Rural Development Agency
EDP	Entrepreneurship Development Programme
ESG	Environmental and Social Guideline
ESMF	Environmental and Social Management Framework
EMPRI	Environmental Management & Policy Research Institute
FIG	Farmer Interest Group
FNGO	Field/Facilitating Non Governmental Organization
FY	Financial Year
GOI	Government of India
GHG	Green House Gases
GP	Gram Panchayat
GPWDP	Gram Panchayat Watershed Development Plan
GPS	Geographical Positioning System
GIZ	German Technical Corporation
IGA	Income Generation Activity
INR	Indian National Rupee
IWDP	Integrated Watershed Development Project
LPG	Liquefied Petroleum Gas
MDT	Multi Disciplinary Team
MPR	Monthly Progress Report
M&E	Monitoring and Evaluation
MNREGS	Mahatama Gandhi National Rural Employment Guarantee Scheme
MUC	Multi Utility Centre
NABARD	National Bank for Agriculture and Rural Development
NBC	Natural Breeding Centre
NHB	National Horticulture Board
NRM	Natural Resource Management
NTFP	Non-Timber Forest Products
O&M	Operation & Maintenance
PAD	Project Appraisal Document
PD	Project Director
PDO	Project Development Objective
PME	Participatory Monitoring and Evaluation
PMU	Project Management Unit
PNGO	Partner Non-Governmental Organization
PRA	Participatory Rural Appraisal
PRI	Panchayati Raj Institution
RML	Reuters Market Light
RVC	Revenue Village Committees
SHG	Self Help Group
SOE	Statement of Expenditure
TOR	Terms of Reference
UG	User Group
UDWDP	Uttarakhand Decentralized Watershed Development Project
UREDA	Uttarakhand Renewable Energy Development Agency
ULDB Board	Uttarakhand Livestock Development
VG	Vulnerable Group
VPKS	Vivekanand Parvatiya Krishi Anusandhan Sansthan
WMD	Watershed Management Directorate
WWMC	Water and Watershed Management Committee
VP	Van Panchayat

EXECUTIVE SUMMARY

World Bank funded Uttarakhand Decentralized Watershed Development Project (UDWDP) (Project ID: P078550, Credit No. 3907-IN) was implemented by Watershed Management Directorate, Uttarakhand. The project became effective from September 24, 2004 and closed on 31st March 2012.

PROJECT DEVELOPMENT OBJECTIVE

The Project was conceived with the objective to improve the productive potential of natural resources and increase incomes of rural inhabitants in selected watersheds through socially inclusive, institutionally and environmentally sustainable approaches.

PROJECT COST

The total project cost was US$ 89.35 million of which the International Development Association (IDA) share was US$ 69.62 million (47.4 million SDR), State share was US$ 16.62 million and Beneficiary share of US$ 3.11 million. Additional Financing (Credit No 4850- IN) for a total IDA Credit of US$ 7.98 million (5.1 million SDR) and state share of US$1.22 Million amounting to a total of US$ 9.20 million was availed w.e.f. 17th June, 2011.

PROJECT AREA

The project was spread over an area of around 2348 sq Km. in 76 selected MWS in Middle Himalayas. 468 identified Gram Panchayats in 18 Development Blocks of 11 Districts participated in this project. An estimated 2,58,000 population of the project area was proposed to be benefited from the project outcomes.

PROJECT IMPLEMENTATION STRATEGY

- The project was community owned and demand driven and managed, planned and implemented by the community and the GPs. The village communities were the true owners of the project and the role of government and NGOs was as facilitators. The Gram Panchayat Watershed Development plans were need based and demand-driven keeping in view Environmental and Social safeguard Guidelines. Allocation of funds for watershed treatment to each GP was decided on the basis of area under GP's jurisdiction and population of the GP. Socio-economic equity was a cornerstone of this project. Women's participation in project interventions was sought to be enhanced by way of ensuring upto 50% representation of women in village level committees and inclusion of their concerns, needs and emerging issues in women Aam Sabhas into the GPWDPs. To provide functional autonomy to local government, withdrawal and disbursement of funds from the watershed account for the project was vested with Gram Pradhan and one of the elected women ward members of the GP.

PROJECT COMPONENTS

1. Participatory Watershed Development and Management.

- Promotion of social mobilization and Community driven decision- making: Social mobilization of the community was done with the help of field NGOs and village motivators placed at the village level. Through social mobilization the community was made aware of the project objectives, implementation and management.
- Watershed treatments and village development: In GPWDP activities such as soil and moisture conservation, afforestation, water harvesting, agriculture terrace repair, agriculture interventions like introduction of high value crops and value addition of farm produce, horticulture, livestock management and breeding activities, fodder production, repair of roads and culverts, non-conventional energy programs etc. were included. The Environmental and Social Guidelines (ESG) were made an integral part of the GPWDP and Sub- projects. Through these guidelines the objective was to minimize or mitigate the negative environmental and social impacts and to enhance the positive impacts.

2. Enhancing Livelihood Opportunities

- Farming systems improvement: It focused on enhancing incomes and livelihood options by ensuring equitable participation by all groups like farmers, users groups and especially the landless and women who rely disproportionately on common-pool resources for fodder, fuel and

other forest products. Farmer Interest Groups (FIGs) of progressive/ interested farmers keen on taking up innovative agribusiness activities were formed at GP level. Demonstrations of improved varieties of cultivated crops through FIGs were taken-up. Orchard development orchard rejuvenation, cultivation of off-season vegetables, use of poly house/ tunnels and bio/ vermi-compost demonstrations were carried out for better returns.

The objectives of livestock component were concerned with improvement of genetic potential of local indigenous livestock and to increase availability of feed and fodder. The thrust was on reducing the livestock pressure on farm land and forest for grazing and green fodder requirement. The improved livestock health care facilities were helpful in increasing the productivity of animals.

Under forestry component the farmers were motivated to establish forest nurseries (indigenous fuel wood, and small timber species) and fodder nurseries (Ginni, Hybrid Napier, Hybrid maize, Cenchrus) on community and private land to fulfil the requirement of seedlings in the project.

- Value addition and marketing support: Under agribusiness interventions sub-component, main thrust was given to (i) dissemination of technologies and provision of advisory services; (ii) production and distribution of quality seeds and seedlings; and (iii) establishment of linkages between FIGs and suppliers for processing and marketing of off-season vegetables and high value crops. Formation of FIGs was introduced to facilitate the production, processing and marketing of high value crops. Six specialized agencies (Divisional Support Agencies for Agribusiness) were hired under the Project to provide support for value addition, marketing and to develop forward and backward linkages. Till March 2012 about 41474 ton vegetables and value added products had been marketed from the project area. Total turnover through this activity was reported to the tune of about Rs. 48.69 crores. For the valu addition of the produce 19 processing centres' were established in the project area.

- Pine Briquetting: Pine forests are spread over throughout the Middle Himalayas. Pine needles are locally used for cattle's bedding. The project demonstrated pine briquetting as alternate fuel for the local community. About 85% of the rural households are engaged in the collection of fuel wood. In each household annual consumption of fuel wood is 2.7 MT collection which requires 183 women labour days. 260 Pine needle briquette making facilities (machines) have been installed. 8020 household of 337 revenue villages are benefitted by this programme. 3 to 3.5 kg needles are required for each kilogram of briquette and about 40 kg briquettes per hour can be produced. The response from womenfolk is quite encouraging, as the frequency to visit forest for firewood has reduced and they can now spend more time on other chores.

- *Income generating activities for vulnerable groups: The objective of vulnerable group fund was to enhance social equity in villages through the project and further assist those who either get left out or receive very little benefit from watershed development activities. Till March 2012, total 754 vulnerable groups and 3819 vulnerable individuals received the grant. A total of 8819 vulnerable members (4499 male and 4320 female members) were benefitted by this programme. The total fund disbursed for vulnerable activities is INR 8,53,83,228. This fund was allotted to 49% female and 51% male members.*

3. *Institutional Strengthening*

- *Capacity building of Gram Panchayats and local community institutions: Capacity building of all the community based institutions was carried out in different aspects regularly throughout the project. The project also formulated the withdrawal plans for each GP. A copy of each of the management plan was provided to the RVC chairperson, Gram Pradhan, Block Pramukh, Zila Panchayat President, Deputy Project Director, Project Director and Directorate This would aid in developing coordination and convergence with other programmes.*

- *Information, Education and Communication: IEC activities were undertaken for informing and shaping opinions within the community as regards participatory watershed development and their roles in decision making, planning and management of project activities, transparency and accountability, dissemination of technical know-how and documentation of best practices.*

  All forms of media from the verbal to the visual were used. Wall paintings, writings, flyers, boards, puppet shows, folk theatre and audio visual shows were undertaken at GP level. Video Gramya Darpan (six monthly Video newsletter)–'GRAMYA DARPAN', Gramya Darpan (quarterly news letter), Hamara Akhbar (Community newspaper), Thematic short Films were also produced on various interventions in the project.

- *Project Management and Information Management Monitoring and Evaluation (IMME):*

  Monitoring Arrangements: Internal Monitoring: The progress of annual works plan was monitored on monthly basis through monthly progress report (MPR) generated at the divisional level and consolidated at WMD level.

External Monitoring (Baseline, MTR and Final Impact Assessment consultancy): The Energy and Resources Institute (TERI) New Delhi was the External M&E Consultant for Baseline, MTR and Final Impact Assessment consultancy for UDWDP.

Participatory Monitoring and Evaluation (PME): PME was introduced in project not only to gauge the performance of the project but, more importantly to make timely improvement in the working of all stakeholders. PME exercise was done on six monthly basis on the basis of nine broad objectives i.e. Awareness, Inclusiveness and equity, Transparency and accountability, Financial management, Performance of committees and Group, Inputs by Multi disciplinary team, Grievance redressal and Execution of withdrawal Strategy. The PME performed as a progress measuring and community feedback assessment tool.

The Final Impact Assessment (report of TERI study):

Improving the productive potential of natural of natural resources

- *The productivity and irrigated area under almost all key crops show an increase. The increase in area (21%) and value (27%) are significantly higher than the target values. The key reasons for such increase are the increased availability of water due to soil and water conservation activities.*
- *Poly houses and poly tunnels have been a major contributing factor to the growth of offseason vegetables.*
- *Wherever processing centres have been established, post harvesting operations have been successfully adopted in the grading and packing of vegetables, spices, pulses etc. Commercial packing with different trade names proved to be attractive for sale of these products in local markets, fairs and even in the outside market.*
- *Agribusiness ventures have been successful in several places and there exist several innovative cases. The agribusiness activity in Garsain deserves particular mention on account of its innovative arrangement of 'reverse profit'.*
- *The number of livestock belonging to improved breeds shows a notable increase. Members of Vulnerable Groups have been major beneficiaries. On the whole, there have been 19% and 191% increases in the holdings of improved breed cows and buffaloes respectively in the sampled GPs.*
- *There has been an overall 9.6 % increase in fodder availability over the baseline. The average fodder production ranged between 0.5 -5.67 q/ha/year across different land uses. The highest percentage change (24.18%) in availability of fodder was recorded for irrigated agriculture land suggesting*

that farmers in the project area have been motivated to grow fodder crops / trees on the bunds / risers of their agriculture resulting in increase in fodder availability.

- The percentage change in household dependency for fodder and grasses from private agricultural/barren land/other land is the highest (13%), while dependency on fodder from forests and feed purchased from market have declined by 8% and 5% respectively. On an average, there has been an 11% reduction in time spent on collecting fodder by a household.
- It was observed that the biomass of the treated areas has increased by 9.37% from 2004-05 to 2011-12 (across treated micro watersheds). These changes were on account of increase in vegetation cover due to new plantations under the project and natural regeneration of grasses, shrubs and tree seedlings because of the protection against grazing and over usage. The average survival percentage within the surveyed sites was around 45% in a range of 23% to 85%.
- The impact of soil and water conservation measures is seen in terms of increased amount of irrigated land (increase of 24.7%), an increase in crop yields and an increase in access to domestic water.
- The time spent in collecting water has significantly reduced with a sharp increase (48%) in the number of households taking < 1 hour to collect water and a similar decrease (39%) in the number of households taking between 1-2 hours.
- In terms of efficacy of impacts, it is seen that turbidity levels during monsoon months have reduced significantly in the case of successful catchment treatments.

Increase in incomes of rural inhabitants

- The total increase in income across all categories is 57%, but increase in farm income is overall higher (61.1%) than non-farm incomes (56.6%). The total increase in income of 57% translates to a real income increase of 17% when adjusted for inflation using the Consumer Price Index (CPI) for rural labourers, using agricultural year average values, and accounting for the impact of non-project interventions. There is almost a doubling in the ownership of consumer durables, indicating a general increase in living standards.
- The economic analysis of the project includes benefits from agriculture, livestock, horticulture, forestry, soil conservation, domestic water and employment. Following the approach used in the PAD, aggregate level economic analysis has been done. The Benefit Cost Ratio (r=8%, t=10 years) works out to 2.63 including the employment benefits. The Economic Rate of Return is estimated at 18.5%.

- Economic analysis has also been done for selected interventions as well as for selected IGAs. Irrigation channels and irrigation tanks return BCR values of 1.36 and 1.54 respectively over a 10 year horizon, indicating their economic viability even in the medium run.
- Participation in Gram Sabha and Gram Panchayat meetings show a sharp increase. For example, the attendance percentage in Gram Sabha meetings has doubled and the attendance percentage of women in Gram Sabha meetings has increased fivefold. The average number of GP meetings has increased from 5.28 in a year to 11.14 in a year.
- The assessment also points towards a high degree of transparency in various project processes. An average of 78.96% of total households in a Gram Panchayat has been involved in the preparation of GPWDP. An average of 48.7% of the community members was aware of GP budget and expenditure and 91% of households were aware of project objectives, activities and methodologies.
- Though the initial response to the process of FIG formation was low, as the produce of off-season vegetables and cash crops increased and farmers started selling the surplus, the response picked up and helped establish the necessary market linkages.
- The level of transparency in the project has been quite high largely on account of different levels of auditing (CA, internal and CAG) and regular Participatory Monitoring and Evaluation (PME).
- Most of the interventions undertaken under the agriculture and horticulture component have strong potential of sustainability. For instance, minikits have been effectively utilized by almost all the farmers and wherever the productivity has substantially increased, the farmers have retained the seeds to be used for the next agriculture season.
- The soil conservation structures that withstood the heavy rainfall in 2010 and 2011 have served their purpose to a large extent, and the formation of UGs for maintenance of these structures is a step towards ensuring post-project sustainability.
- In case of plantations, most of the activities have been taken up in Van Panchayats, managed by Van Panchayat committees with strict codes of conduct and usufruct sharing. It could be expected that these institutions would ensure adequate upkeep of the plantations.

LEARNING'S FROM THE PROJECT : The learning's from the project were as follows:

- Partnering with NGOs for social mobilization, project implementation and support for Agribusiness was a successful initiative in the project. The human resource development by the project would be useful for central sponsored Integrated Watershed Management Programme as well as for follow on projects. Such experience would also be replicated in other community based programmes.

- *Involvement of Women Social Mobilization Workers: In the project a number of facilitators for a cluster of Gram Panchayats and village motivators at the village level were engaged. These village motivators and facilitators visited villages, assisted in PRA and organised women along with other stake holders into groups. These village motivators would prove to be resource persons for other programmes.*

- *Women Aam Sabha: These Sabhas served as a platform for women to bring up issues of concern, identifying needs and redressing grievances. Women Aam Sabhas were held prior to finalization of Gram Panchayat plans to identify and prioritize issues impacting the women locally. It helped in addressing gender issues in a transparent way.*

- *Involvement of Women in Governance: Woman Ward member was made a co-signatory with the Gram Pradhan for the operation of the dedicated watershed account of the project.*

- *Livelihood Interventions: The project was designed to target all the rural inhabitants of the project area thus sharing the benefits of the project. The poorest and the most vulnerable sections of the community were addressed through the support of vulnerable group fund.*

- *Participatory Monitoring and Evaluation (PME) were carried out in the project as a social audit process. PME proved to be an important feedback and learning mechanism for the community in the project area.*

- *Pine briquetting : The project introduced pine briquetting as a pioneer venture to meet the objective of reducing drudgery of women and forest fires. The pine briquette was also an income generating activity where the user groups could sell the briquettes in the village and in the nearby market.*

- *Cost Sharing : To ensure sustainability of activities that enhance productivity and incomes of the rural population, the project laid emphasis on sharing of costs by the individual beneficiaries, for this the cost sharing norms were clearly defined.*

- *Enhancing the capacity of the GPs : To ensure proper, effective and efficient management of the project funds the project funded for the appointment of Account Assistant in each Gram Panchayat. This Account Assistant was generally a local of the village having knowledge in*

accounting procedures. This experience would benefit to other Govt. programmes such as MNEREGS, IWMP etc.

- Sustainability through User Groups: In the project for future sustenance and O&M of common assets user groups were formed. In the project user groups were especially for water based structures such as irrigation tanks, roof rain water harvesting tanks, irrigation channels/guls, naula and ponds. The members of user groups conducted regular meetings and generated fund for operation and maintenance of created common assets. The funds were collected on monthly basis or on crop basis depending on the rules and regulations of that particular user group.

BORROWER'S PERFORMANCE

1. Government of Uttarakhand- The performance of Govt. of Uttarakhand (GoUK) was highly satisfactory. GoUK extended full support to the project right through preparation, implementation to closure. The release of the counterpart funds was timely and adequate. The policy support as and when required was provided for. The continuity of staff both administrative and technical was maintained throughout the project with few exceptions towards the end. The GoUK allowed WMD substantial flexibility and authority for implementing the project activities.

2. Implementation Agency - The Watershed Management Directorate was the implementing agency for the project and the performance is rated as highly satisfactory. The project could be launched well in time due to timely preparedness and completion of pre-project activities. The financial targets for the original project were completely achieved and the utilization of additional financing was also highly satisfactory. The highly satisfactory implementation of the project resulted in obtaining co-financing under GEF. All the activities envisages under the three sub components of the project were initiated and successfully completed. The project design and implementation arrangements were widely accepted by all the stakeholders and no major conflict related to implementation was reported. The project largely achieved/ exceeded outcome result indicators under various components.

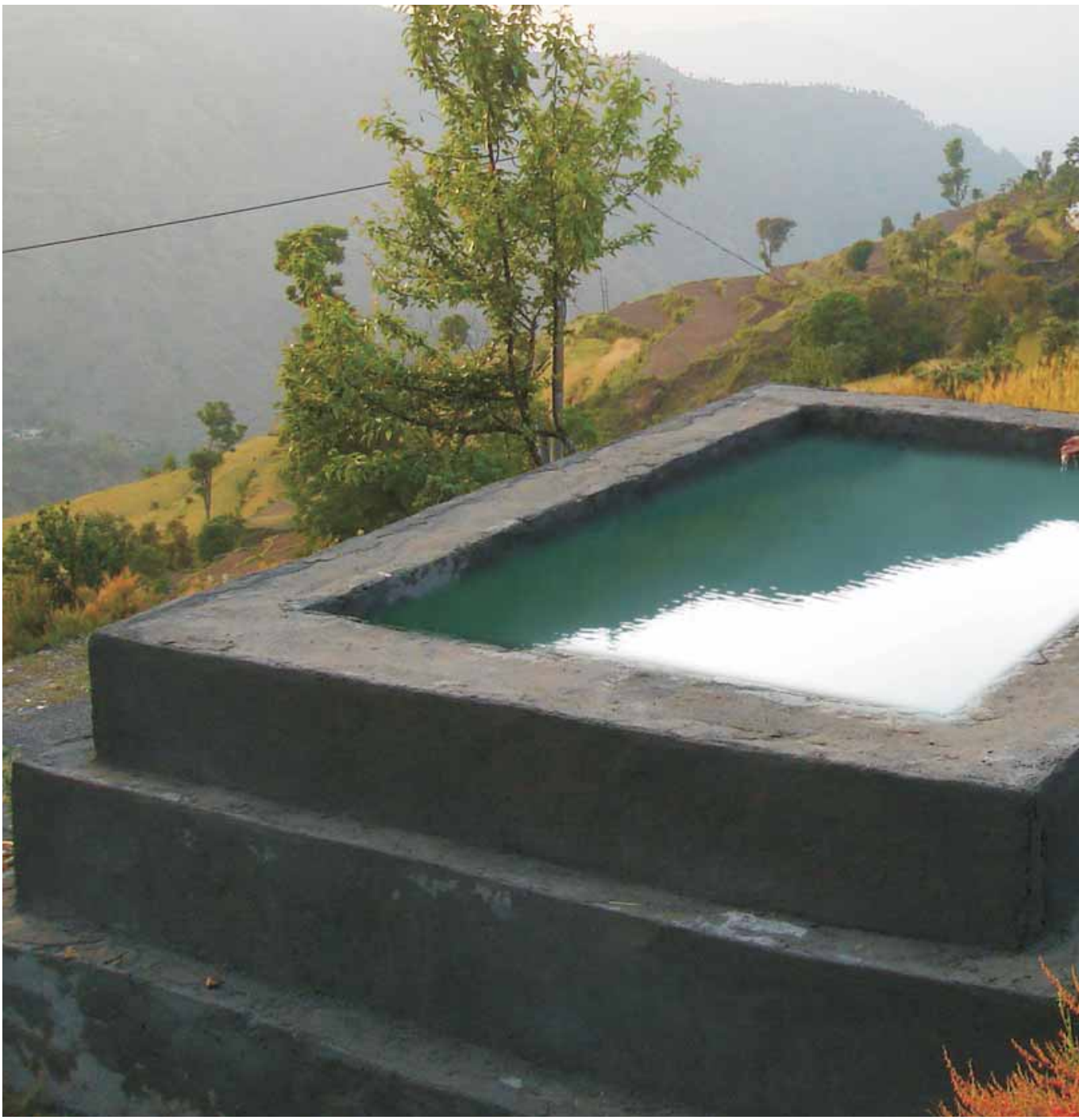
   The implementing agencies at all the levels reflected enormous commitment in achieving the project outputs and goals. Implementation of the project through the Gram Panchayat, the lowest administrative unit under the Panchayat Raj Institution and introduction of women ward member as a co signatory at WWMC level was a successful experience which is being mainstreamed in to the Integrated Watershed Management Programme (IWMP) a CSS of Govt. India. The NGOs as project implementation agencies, social mobilizers and as supporting agencies for various

interventions played key role in project implementation. The Financial management systems put in place at the community level were also satisfactory, as the annual Gram Panchayat audit reports were satisfactory. The concept of implementing the project through the Environment and Social guidelines helped mitigate any negative impacts of the project. The Project introduced the concept of women Aam Sabha and participatory monitoring and evaluation (PME) which ensured social equity, transparency and accountability at the village level. To ensure sustainability user groups and withdrawal plans were put in place. Through this project farmers were organized into farmer interest groups and farmer federations so that strong and sustainable forward and backward linkages could be developed and they started viewing agriculture as a viable business option.

BANK'S PERFORMANCE

1. Lending – Bank's performance is rated as satisfactory. The project preparation ensured adequate consultations with borrowers and other stakeholders. The preparation mission gave a lot of support in finalizing the projects objective, components and implementation arrangements. The subsequent missions were also of great help in prioritizing the activities, finalizing the various operations manuals and the institutions arrangements for implementation. The project design provided for a lot of flexibility, which allowed location specific interventions and some very good results were achieved. The PDO indicator and log frame were inadequately formulated and hence could not completely capture the project impact and outcomes.

2. Supervision-The Bank's performance is rated as satisfactory. Though in the initial phase there was a change in the team leaders but the task team more or less remained the same. There was a continued focus on social, equity, participatory, environmental, agriculture, financial and procurement issues by the Bank team. Any issues raised by the project regarding implementation, management and sustainability were effectively and efficiently addressed by the Bank team. The Bank fielded 11 missions, one MTR mission and supportive missions. The six monthly supervision mission's field visits and Aide-memoires provided guidance and suggestions to the implementing agency towards achieving the project objectives and outputs. The MTR mission was very supportive and appreciative of the project team's view point and agreed to the changes sought in the result framework and allocation. Bank also highlighted the critical issues in meetings with the Chief Secretary, Forest and Rural Development Commissioner and Secretary Watershed, Govt. of Uttarakhand as well as in the Annual Portfolio Reviews with the Department of Economic Affairs, Govt. of India and Govt. of Uttarakhand.



CHAPTER -1

INTRODUCTION

Uttarakhand, formerly Uttaranchal state of India, is located in the northwestern part of the country. It is bordered to the northwest by the Indian state of Himachal Pradesh, to the northeast by the Tibet Autonomous Region of China, to the southeast by Nepal, to the south and southwest by the Indian state of Uttar Pradesh, and to the west by a tiny segment of the Indian state of Haryana.

On Nov. 9, 2000, the state of Uttaranchal—the 27th state of India—was carved out of the erstwhile State of Uttar Pradesh. In January 2007 the name of the state was changed to Uttarakhand.

Uttarakhand has a total geographic area of 53,483 Sq.km., of which 93% is mountainous and 64% is covered by forest. Most of the northern parts of the state are part of Greater Himalaya ranges, covered by the high Himalayan peaks and glaciers, while the lower foothills were densely forested till denuded by the British log merchants and later, after independence, by forest contractors. Recent efforts in reforestation, however, have restored the situation to some extent. The Himalayan ecosystem plays host to a large number of animals (including bharal, snow leopards, leopards and tigers), plants and rare herbs. Two of India's largest rivers, the Ganges and the Yamuna originate in the glaciers of Uttarakhand, and are fed by a number of lakes, glacial melts and streams in the region.

Uttarakhand lies on the southern slope of the Himalaya range, and the climate and vegetation vary greatly with elevation, from glaciers at the highest elevations to subtropical forests at the lower elevations. The highest elevations are covered by ice and bare rocks. Below them, between 3,000 and 5,000 metres (9,800 and 16,000 ft) are montane grasslands and shrublands, the western Himalayan alpine shrub and meadows. Temperate coniferous forests, the western Himalayan subalpine conifer forests, grow just below the tree line. At 3,000 to 2,600 metres (9,800 to 8,500 ft) elevation they transit to the temperate western Himalayan broadleaf forests, which lie in a belt from 2,600 to 1,500 metres (8,500 to 4,900 ft) elevation. Below 1,500 metres (4,900 ft) elevation lie the Himalayan subtropical pine forests. The Upper Gangetic Plains moist deciduous forests and the drier Terai-Bhabhar and grasslands cover the lowlands along the Uttar Pradesh border. This belt is locally known

as Bhabhar. These lowland forests have mostly been cleared for agriculture, but a few pockets remain.

According to Census of India 2011, Uttarakhand has a population of 10,116,752. There are 13 districts in Uttarakhand which are grouped into two divisions, Kumaon and Garhwal. The size of Uttarakhand's Economy as measured by its Gross State Domestic Product (GSDP) for 2011 (Financial year ending March 2011) is estimated at INR 775.8 billion in current prices. Agriculture is the main source of livelihood for nearly 70% of population. The agricultural economy in the hills is essentially subsistence level as there are small and scattered land holdings, lack of modern pre and post harvest practices, rainfed agriculture, land prone to severe land erosion and inadequate rural basic amenities.

Enhancing productivity and providing food security to the drought prone rainfed areas in the State poses many hurdles. Backwardness and chronic poverty characterises these drought prone areas, and due to the fragile base of natural resources, especially land and water, agriculture growth remains sluggish. The solution to problem of these rainfed areas is a comprehensive watershed development program to conserve soils and water resources and improve the dry land crops across the board. Organic Agriculture in the context of the mountain region, meets most of the objectives of sustainable agriculture development and hence must be pushed much more intensely. Land being the most valuable and non renewable resource, in the mountain region needs maximum attention and its ecologically appropriate management. Multidisciplinary watershed programs with focus on enhancing productivity in agriculture, horticulture, animal husbandry, water harvesting and better soil and vegetation management can provide increased livelihood opportunities to the rural poor in hill areas.

Participatory Integrated Watershed Management contributes significantly towards enhancing productivity and incomes, and therefore reduces poverty. Independent impact evaluation studies conducted in Doon Valley Project (1993-1999) have shown that the impact level has gone up by 38%, productivity increase in agriculture was 20%. In the World Bank funded IWDP Hills-II (1999-2004) it was shown that assets had gone to the poorer families in a substantive manner (for eg. 48% of minor irrigation works, about 52% of bio-gas plants, 45% of livestock mangers, 45% of water harvesting tanks).

THE UTTARAKHAND DECENTRALIZED WATERSHED DEVELOPMENT PROJECT

The Uttarakhand Decentralized Watershed Development Project (UDWDP) (Sept. 2004- March 2012) is built on the lessons of past experiences in these projects. The UDWDP focused on further strengthening the emphasis on decentralization, convergence, linkages among local organizations, strengthening of Panchayats, and on disadvantaged sector (women, SC/STs in particular) and poorest of the poor.

The primary objective of UDWDP is reduction of poverty by improving the productive potential in the hill regions of the State utilizing decentralized watershed management techniques and participatory approaches. To achieve this the project was based on following principles:

1) A Decentralized Institutional Setup using Panchayati Raj Institutions.
2) Special focus on Women, gender issues.
3) Pro-poor Interventions.
4) Cost Sharing in project activities.
5) Flexibility and site specificity in deciding project interventions.
6) Reorientation and changed role of project team from controllers and regulators to facilitators.
7) Convergence and Coordination.
8) Equitable distribution of project benefits.
9) Capacity building of all stakeholders.

Keeping in view these strategic principles the Uttarakhand Decentralized Watershed Development Project (Project ID: P078550, Credit No. 3907-IN) was designed and it became effective from September 24, 2004.

PROJECT COST

The total project cost was US$ 89.35 million of which the International Development Association (IDA) share was US$ 69.62 million (47.4 million SDR), State share was US$ 16.62 million and Beneficiary share of US$ 3.11 million. Additional Financing (Credit No 4850- IN) for a total IDA Credit of US$ 7.98 million (5.1 million SDR) and state share of US$1.22 Million amounting to a total of US$ 9.20 million was availed w.e.f. 17th June, 2011.

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PROJECT COMPONENTS

1. **Participatory Watershed Development and Management.**
   - Promotion of social mobilization and Community driven decision- making.
   - Watershed treatments and village development.
2. **Enhancing Livelihood Opportunities.**
   - Farming systems improvement.
   - Value addition and marketing support.
   - Income generating activities for vulnerable groups
3. **Institutional Strengthening.**
   - Capacity building of Gram Panchayats and local community institutions.
   - Information, Education and Communication.
   - Project Management and Information Management Monitoring and Evaluation (IMME)

PROJECT AREA

The project was spread over an area of around 2348 sq Km. in 76 selected MWS in Middle Himalayas. 468 identified Gram Panchayats in 18 Development Blocks of 11 Districts participated in this project. An estimated 2,58,000 population of the project area was proposed to be benefited from the project outcomes.

Name of Districts	Name/ No. of Development Block	No. of MWS	No. of GPs	Area of GPs(Ha.)	Population of GPs	Area of MWS (Ha.)
Dehradun	Kalsi (1)	7	52	21925.43	27666	19192
Tehri Garhwal	Jaunpur, Thauldhar (2)	8	31	6882.54	14278	12127
Uttarkahsi	Chinyalisaur (1)	5	33	5131.27	16800	16835
Pauri Garhwal	Dwarikhal, Jaiharikhal (2)	6	30	10014.73	11107	12995
Rudraprayag	Augustmuni (1)	5	52	9968.67	38111	20349
Chamoli	Gairsain (1)	7	27	4979.47	179731	32075
Almora	Chaukhutia, Dwarahat (2)	3	46	8190.32	24034	12669
Bageshwar	Bageshwar, Garur, Kapkot (3)	13	47	8925.23	27788	35743
Champawat	Lohaghat, Barakot (2)	8	66	22763.95	37358	28510
Pithoragarh	Gangolihat (1)	9	44	11946.66	25004	17242
Nainital	Okhalkhanda, Dhari (2)	5	40	8163.93	17935	27050
Total	**18**	**76**	**468**	**118892.26**	**258054**	**234787**

CRITERIA FOR PROJECT AREA SELECTION

The project area selection was done using spatial data base using the following parameters:

1- Erosion Intensity (on the basis of data available at MWS level) E1, E2,E3 and E4 with land use as forest, agriculture and blank areas were demarcated. 50% weight-age was given to this parameter.

To factor-in the prevalence (area) of the problem in absolute terms along with intensity of erosion, relative weights were assigned to each category within a micro-watershed.

Category of Erosion Intensity	Relative weight
E1 – Slight	2
E2 – Moderate	4
E3 – Severe	8
E4 – Destroyed	10

To arrive at the total erosion intensity value, the formula used is:

$$\frac{(E1 \times 2) + (E2 \times 4) + (E3 \times 8) + (E4 \times 10)}{\text{Total Area of Micro-watershed}} = \text{Erosion intensity score.}$$

2- Socio-economic Status of communities (at the sub- watershed level) SC/ST,BPL population poverty, prevalence of daily wage workers etc. were taken as the parameter and given 25% weight-age.

Four indicators were combined to rank the socio-economic status of a block – (i) percentage of families below poverty line (BPL); (ii) Percentage of families from Scheduled Castes and Scheduled Tribes (government classification of population vulnerable to social and economic marginalization); (iii) percentage of families reliant on all forms of wage earning opportunities and, (iv) percentage of families from category (iii) that are reliant on agriculture labour opportunities. For computing the over-all socio-economic status of the block, equal weightage was given to all the four indicators.

3- Status of available services and general facilities (at block level) given the hilly terrain and poor network of access roads in Uttarakhand, remote villages have had limited opportunities to benefit from earlier development programs. To ensure that these villages were not ignored yet again, priority was given to those blocks that have more proportion of villages located at a distance greater than 5 kms from the nearest hospital/veterinary services, agriculture produce market, post office, fair price shops, commercial banks, block headquarters, agriculture input suppliers, etc. a 25% weight-age was assigned to these areas.

4- Sub-Watershed already treated or under treatment through Externally Aided Projects (EAPs) and Government of India funded projects were excluded.

5- The areas falling in National Parks, Sanctuaries and watersheds in the command area (upstream and downstream of the Tehri dam) were also excluded.

EXPECTED PROJECT OUTCOMES

DO-1: 10% increase in house hold real income due to project intervention in targeted villages.

DO-2: 10% increase in vegetative and biomass index of treated Gram Panchayat area.

DO-3: 10% increase in percentage of household accessing water for domestic use and 15% increase in Irrigated area in treated areas (ha.)

DO-4: 20% improvement in administrative capacity of Gram Panchayats.

IMPLEMENTATION STRATEGY

Community Driven Approach: Based upon past learnings from Doon Valley Project and IWDP-Hills-II it was realised that the project objectives are best achieved when the community takes most decisions and is the primary driver of the project. The Panchayati Raj Institution of Gram Panchayat (GP) assumed the important role of planning and implementation of the project. Thus, UDWDP is a community owned and driven project: managed, planned and implemented by the community and the GPs.

The village communities are the true owners of the project and the government and NGOs are facilitators. All need and demand for better information, planning and implementation comes from the communities. The community displays its strong sense of ownership by agreeing to share project costs by contributing time and money for project activities. All individuals, RVCs, User Groups, SHGs, and the Water and Watershed Management Committee (WWMC) of the GP report to and implement decisions taken by the Gram Sabha.

The project was based on joint relationship among three entities: (i) village communities and GPs; (ii) WMD; and (iii) NGOs and other service providers. All these three stakeholders fulfilled their respective roles and responsibilities for the project to be successful.

Role of PRIs in Implementation and Financial Management: GPs have central role in planning, implementation & management ensuring community participation at grass root level. The Gram Panchayat Watershed Development plans were need based and demand-driven keeping in view Environmental and Social Guidelines. The plans were approved in the open meeting of Gram Sabha.

Allocation of funds for watershed treatment to each GP was decided upon select objective criteria. These were the area under GP's jurisdiction and population of the GP. This allocation was given to the GP to carry out watershed management activities as per the Gram Panchayat Watershed Development Plan (GPWDP) as developed in consultation with the community. This plan covered treatment of areas within and outside GP that were relevant for integrated watershed management.

Socio-economic Equity: Socio- economic equity is a cornerstone of this project and a must for overall development of the village. Care was taken that the disadvantaged groups profit equally from this project. Though Vulnerable Group Fund had been set aside for this purpose, the GPWDP incorporated provisions to benefit women, the poor, landless labourers, marginal farmers, members of the Scheduled Castes and Tribes, and transhumant populations.

Women's Participation: Women's participation in project interventions was sought to be enhanced by way of ensuring upto 50% representation of women in village level committees and inclusion of their concerns, needs and emerging issues in women Aam Sabhas into the Gram Panchayat Watershed Development Plans. To provide functional autonomy to local government, withdrawal and disbursement of funds from the watershed account for the project was vested with Gram Pradhan and one of the elected women members of the GP, fulfilling the dreams of Suraaj and Swaraj.

Key Stakeholders

The responsibility for overall project implementation, coordination and monitoring was with the WMD under the CPD. The WMD was responsible for establishing Project Directors (PDs) in each of the regions and DPDs and Multi Disciplinary Teams (MDTs) in the target districts and blocks, recruiting Partner NGOs (PNGOs) and Facilitating NGOs (FNGOS); implementing a communications strategy; ensuring quality of project processes; organizing the capacity building and training of stake holders; providing adequate staffing; organizing timely monitoring and learning activities; and contracting third party baseline and impact evaluations.

The DPDs, each with a number of MDTs were the key facilitators and supervisors for the planning and implementation of GPWDPs. The DPDs were responsible for technical appraisal of the watershed plans prepared by the GPs. The MDTs provided project related information of the GPs and the communities facilitated planning within the framework of the project and provided technical guidance during implementation. The DPDs ensured that inter-GP areas that required treatment were also included in GP plans.

Partnering with NGOs

FNGO: This project was oriented around the community, its wisdom, participation and harmonious use of existing natural resources. The community living in the micro watershed were encouraged, enabled and augmented with the technical inputs to fulfil the various objectives of the project. The motivational inputs were environmental awareness, introducing latest technologies for improving productive potential without deteriorating the prevailing eco-system. The project aimed at enhancing the capability and capacity of communities by providing them technical assistance in an integrated coordinated way. Communities played a central role, right from planning to the management of programmes. Keeping this in mind social mobilization through two Field NGOs was envisaged one each for Garhwal and Kumaon region. These NGOs placed Facilitators at the GP level, Coordinators for each Division and a Convener was placed at the regional level.

PNGO: The Partner NGO (PNGO) was used in the project in two divisions (in place of the WMD) to establish a small scale alternative approach to the mainstream project implementation. The two PNGOs were assigned Dwarahat division in Kumaon and Kotdwar division in Garhwal. These PNGOs performed the combined function of the DPD office and MDT. The PNGOs implemented the project in accordance with the rules and procedures laid down in the Operation Manual (OM) and Project Appraisal Document (PAD). Their roles and responsibility were similar to the DPD and MDT; except that they were not responsible for transferring funds to GP account. That responsibility remained with the WMD under PMU.

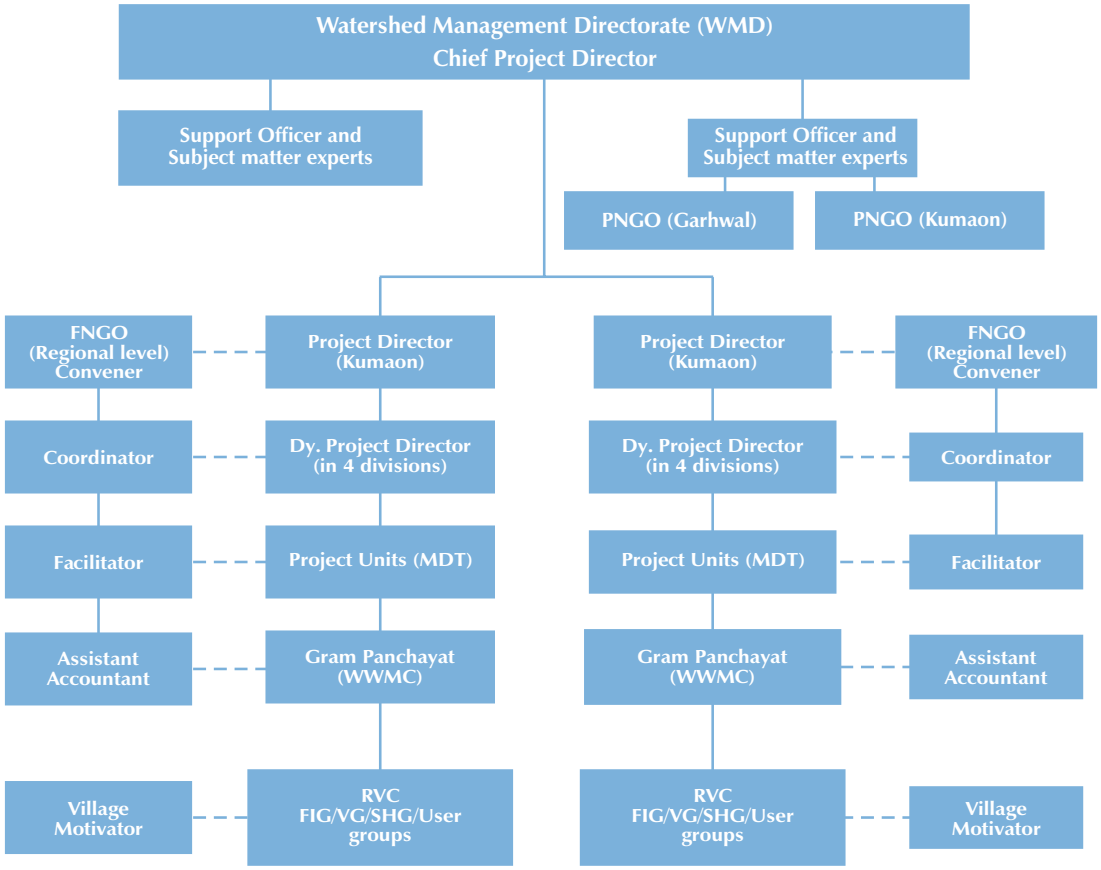
Project Manuals

To facilitate implementation of the project the following documents/manuals were prepared for the project team, staff and the community. These documents were:

1) Project Operational Manual
2) Community Procurement Manual
3) Financial Systems Manual for Gram Panchayat
4) Compendium of Safeguards & Strategies
5) Environmental and Social Management Framework
6) Integrated Crop Management Strategy
7) Communication Strategy
8) Income Generation Activity- Strategy for Vulnerable Groups
9) Integrated Livestock Pest Management
10) Integrated Pest Management
11) Strategy for Social Mobilization and Community Driven Decision Making
12) Tribal Issues in UDWDP
13) Study of Accounting & Accountability Arrangement in PRIs in Uttarakhand
14) Concept of Watershed Development and Role of Gram Panchayats.

The institutional structure in the UDWDP is given in the flow chart below:-

UTTARAKHAND DECENTRALIZED WATERSHED DEVELOPMENT PROJECT (GRAMYA) INSTITUTIONAL STRUCTURE



PMU	:	Project Management Unit	RVC	:	Revenue Village Committee
PNGO	:	Partner Non Government Organization	FIG	:	Farmers Interest Group
FNGO	:	Field Non Government Organization	VG	:	Vulnerable Group
MDT	:	Multi Disciplinary Team	SHG	:	Self Help Group
WWMC	:	Water and Watershed Committee			

CHAPTER -2

PARTICIPATORY WATERSHED DEVELOPMENT AND MANAGEMENT

The main objective of this component was to facilitate a participatory process at the Gram Panchayat and Revenue village level and development of RVC proposals within a budget envelop provided to each GP and then to implement these plans through the GPs. This participatory decision making process included all the stakeholders at the village level. This component had the following Sub- Components:

a. **Promotion of social mobilization and community driven decision making:** This sub-component financed participatory watershed planning at the village level using a budget envelop as the basis; established Revenue Village Committees (RVCs) as representative bodies of resource users; identified treatments on arable and nonarable lands; and integrated RVC proposals into Gram Panchayat Watershed Development Plans (GPWDPs). Non Government Organizations (NGOs) in the form of Field NGOs were contracted to assist in participatory watershed planning.

b. **Watershed treatments and village development:** This comprised a budget envelop provided to each GP (and Revenue Village/hamlet within that) based on a formula incorporating the total area and total population. Within this budget envelop, communities prioritized [with the help of the Environmental Social Management Framework (ESMF)] implemented, operated and maintained village development and watershed investments as articulated in GPWDPs.

PROMOTION OF SOCIAL MOBILIZATION & COMMUNITY DRIVEN DECISION MAKING

The project was a community owned and driven project: managed, planned and implemented by the community and the GPs. Its success depended on the levels of the interest, involvement and commitment of all the stakeholders to improve the lives and to ensure equitable benefits to the rural community. The participation was based on the following fundamentals:

Ownership: The village communities are the true owners of the project and the government and NGOs are facilitators. All needs and demand for better information, planning and implementation will come from the communities. The community displays its strong sense of ownership by agreeing to share project costs by contributing time and money for project activities.

Accountability: All individuals, RVCs, User Groups, Vulnerable Groups, SHGs and the Water and Watershed Management Committee (WWMC) of the GP to report to and implement decisions taken by the Gram Sabha. The responsibility of the GP and RVCs was to keep everyone well informed of all developments and decisions and consult the community regularly on all issues.

Transparency: All proceedings and records of the project to be accessible to all. The accounting shall be the joint responsibility of the Gram Pradhan, WWMC and the Accounts Assistant. Writings of the physical and financial aspects of the annual GPWDP to be painted on a publicly accessible wall and monthly progress displayed on a board maintained by the WWMC. The GP presents the accounts of the project to the Gram Sabha at least on a quarterly basis.

Cost-effectiveness: Best quality has to be achieved through least expenditure. Any savings that come from project funds remain with the community members to be used for their benefit in other interventions.

Participation of disadvantaged groups: The Vulnerable group fund to benefit women, the poor, landless laborers, marginal farmers and members of the Scheduled Castes and Tribes. Transhumant plan was put in place to address the transhumants in the project area. Social equity was a cornerstone of this project and a must for overall development of the village.

Implementation Arrangements: The project was implemented in eight divisions through the project team while in two divisions the project was implemented by the Partner NGOs with Deputy Project Director (PMU) placed at the head office to coordinate and monitor the working of the PNGO run divisions. Thus, the project was implemented in 10 divisions covering 468 Gram Panchayat in 11 districts of State. Two Project Directors one each for Garhwal and Kumaon were placed to coordinate the functioning of the two regions.

S. No	Division	Head Quarter	Year of Setting up
Garhwal region			
1	Kalsi	Vikasnagar	Sept. 2004
2	Chinyalisaur	Chinyalisaur	July 2005
3	Rudraprayag	Augustmuni	July 2005
4	Gairsain	Gairsain	2006
5	PNGO Pauri- ASEED, New Delhi	Kotdwar	April 2007
Kumaon region			
6	Champawat	Lohaghat	Sept. 2004
7	Nainital	Haldwani	July 2005
8	Bageshwar	Bageshwar	July 2005
9	Pithoragarh	Gangolihat	2006
10	PNGO Almora- INHERE, Masi Almora	Dwarahat	Nov. 2006

At the unit level the Multidisciplinary Team (MDT) comprising of technical staff and female social mobilizers and the village motivator at village level were engaged in community mobilization, awareness generation and technical facilitation in planning and implementation of project activities.

Social Mobilization:

For community mobilization staff viz. facilitator and coordinators were appointed by two Field NGOs (FNGO) viz. Manava Bharati in Garhwal and Himalayan Study Circle (HSC) in Kumaon region, they became functional from March 2006. In addition to FNGO, 1032 village motivators, one each at revenue village level were appointed by the GP.

During the social mobilization phase, formation of various project level committees was carried out. RVC, FIGs, UG, SHGs, VG were formed. The project placed special emphasis on the inclusion and socio-economic upliftment of the poorest and vulnerable groups (viz. women, schedule caste, schedule tribes, landless, marginal farmers) and transhumant population in the project area.

Identification and selection of beneficiary was undertaken during the PRA exercise carried out for the preparation of Gram Panchayat watershed development plans. Wealth ranking exercises were carried out to group and classify the population into following three categories:

1- **High Income Group –** Class A were those in possession of sufficient agriculture land, At least one family member in government service or engaged in business activity, Pucca House , Larger number of livestock and were socio-economically well placed.

2- **Middle Income Group –** Class B were Marginal farmers, dependent on labour for livelihood having a small house, few livestock and socio-economically in middle range.

3- **Low Income Group –** Class C were landless having a Kuchha house, dependent on labour for livelihood, few or no livestock holding, living under debt and socio-economically vulnerable.

Since PRA process was based on participatory involvement of local community, the criteria for classifying beneficiaries into above mentioned groups varied from GP to GP. Identification of the vulnerable groups was done using wealth ranking exercises during PRA. The 'C' category households of the wealth ranking exercises constituted the vulnerable groups in the project.

PRA and Allocation of Funds for the GPWDP

The GPWDP plans were developed by the community with the technical support provided by the MDTs of the project. The GP was intimated about the budget envelop in advance and accordingly the plan was formulated which was approved by the Gram Sabha. RVC and other village level User groups formed during social mobilization played a lead role in formulation of village level proposals.

Allocation of funds for watershed treatment to each GP was decided upon select objective criteria. Of the total amount allocated under the project for watershed treatment, two criteria were used for allocation of specific amount to each GP. A weightage of 65% was given to the total geographical area falling under the particular GP and 35% weightage was awarded to the population of the GP. To carry out watershed treatment in areas that were outside the boundary of the Gram Panchayat but falling within the concerned MWS, additional funds were available with the Watershed Management Directorate. The funds for the administrative expenses of a GP and vulnerable groups fund were passed on separately to the GPs.

WATERSHED TREATMENTS AND VILLAGE DEVELOPMENT

The GPWDP planning was completed in a phased manner in 468 GPs. The implementation of these plans was done in a phased manner as follows:

Financial Year 2005-06	43
Financial Year 2006-07	208
Financial Year 2007-08	126
Financial Year 2008-09	89
Financial Year 2009-10	2
Total	468

Activities in Gram Panchayat Watershed Development Plans

Since the primary purpose of the project was to enhance the productivity of natural resources and improve the income levels and quality of life of the village communities, attempts were made to spend project funds on such activities. The project activities included soil conservation, afforestation, water harvesting, agriculture terrace repair, agriculture, horticulture, high value crops, value addition of farm produce, livestock management and breeding activities, fodder production, income-generating enterprises, repair of roads and culverts, non-conventional energy programs etc.

ENVIRONMENTAL AND SOCIAL GUIDELINES

The Environmental and Social Guidelines (ESG) were made an integral part of the GPWDP and Sub- projects. Through these guidelines the objective was to minimize or mitigate the negative environmental and social impacts and to enhance the positive impacts. The environmental and social aspects were considered, implemented and monitored by all the project partners during GPWDP and Transhumant action plan preparation. This was a five stage process in which initially the capacity of the village community and project staff was build to apply environmental and social guidelines during the preparation of RVC proposals and Transhumant plans. As a result RVC proposals and action plans for transhumant followed the Environmental and Social Management Framework (ESMF) and conformed to the ESG. These ESG were applied to the draft GPWDPs and action plans for transhumant GPWDPs finalized in compliance with these ESG. In the final stage the project objectives were attained in conformity with ESMF and ESG.

Status of Safeguard Polices Applicable in the Project

In all the project activities following safe guard policies were complied with -

1- **Environmental Assessment (OP/ BP/GP 4.01)-** The Gram Panchayat Watershed Development Plans were finalized after application of ESMF guidelines of the project. Format 1A, 1B, format 2 (Prioritisation) & Table 3 (Mitigation Measures) were applied in all the finalized GPWDPs. Only indigenous and native species on different sectors were proposed for plantations recommended as per working plans of the forest department.

2- **Natural habitats (OP/ BP 4.04)-** No activity that would adversely affect the biodiversity as well as the environmental services was undertaken.

3- **Pest Management (OP 4.09)-** The Integrated Pest Management (IPM) and Integrated Livestock Pest Management guidelines were followed. The pesticide in the banned list of WHO and listed in the Environment and Social Management Framework (ESMF) of the project were not used. Only the organic fertilizers and pesticides were used in various demonstration and GPWDP activities.

4- **Indigenous people (4.10)-** A transhumant action plan for the indigenous people viz. Bhotia and Gujjars was prepared and it was implemented after the approval from the Bank.

5- **Forest: (OP/BP 4.36)-** Forestry activities as selected in the GPWDPs were carried out. A Sectoral analysis of 468 GPWDPs indicates 7.06% of total expenditure under the watershed treatment and village development component (50% of project cost) was proposed on the forestry sector mostly within the Gram Panchayat. Further up to 70% of the total expenditure in GPWDPs was on activities addressing soil conservation measures, water resource management, forest, fuel wood and fodder management identified during PRA exercise. This is also commensurate with the result framework.

ACHIEVEMENTS

- The GPWDPs were prepared and implemented by the community keeping in view the Environment and Social Safeguard Guidelines.
- Soil and moisture conservation measures have improved the moisture regime of these MWS, this is reflected in increase of agricultural productivity in irrigated and rainfed areas.
- Agriculture terrace repair of 4, 17,437 cumt. was carried out both through GPWDPs and Farming System Improvement component. The impact analysis of this interventions is as follows:

Total Terrace Repair	= 417437 cumt.
The total Length of Terrace Repaired	= 417437cumt. /0.75sqmt.=556582.66 mt.

Hence, total Nalis repaired = 556582.66/65 = 8562.80 Nali

(Considering one terrace to be = 65 m X 3.00 m 200 sqmt 1 Nali, 50 Nali = 1.00 ha.)

So, 8562.80 Nali = 8562.80 / 50 = 171.25 Ha.

(Considering 10% terraces were damaged and required to be repaired)

Therefore the total treated agriculture area = 1712.50 Ha.

- The intervention of diversion drain helped in checking the loss due to excessive runoff into habitations and agriculture lands. The diversion drains were constructed in Nainital and Gangolihat divisions only approx. of length 4.2 Km. The command area saved through this is approx. 5 ha. per 100 mt. of diversion drain constructed, thus about 220 ha. of agriculture land was saved from excessive runoff during the monsoons.
- Water harvesting structures like rain water harvesting tanks, irrigation tanks, irrigation channels, village ponds and LDPE tanks were constructed in the project area to improve the irrigation facilities. A net area of approximately 5641 ha. has been brought under irrigation through the project interventions. This accounts for about 9.7% increase in the irrigated areas in the project.

Impact of Water Harvesting Structures on creation of Irrigation facilities in the Project

01-04-2012

S. No.	Activity	Unit	Creation of additional structure	Unit Cost of the structure in Rs.	Beneficiary Contribution	Created Irrigation Potential per structure (Ha.)	Extra Net Area brought under irrigation (Ha.)	Cropping intensity	Gross area brought under irrigation (Ha.)
			1	2	3	4	5	6	7
1	Water Harvesting Tank	No.	19113	15300	25%	0.05	956	1.8	1720
2	Irrigation Tank	No.	2233	67200	15%	0.75	1675	1.7	2847
3	Irrigation Channel	Km.	578.6	507000	15%	4.01	2320	1.8	4176
4	Village Pond*	No.	554	96000	15%	0.83	459.82	1.7	782
5	LDPE tank	No.	68	15000	15%	0.75	51	1.7	87
			22546.6				5461		9612

* The village ponds are also helping in recharge and in improving the moisture regime.

The above calculation have been done on the basis of Water Storage Capacity of the following structures

S. No.	Activity	Water holding capacity	Irrigation potential (Ha.)
1	Water Harvesting tank	2-3 cu m	0.01-0.05
2	Irrigation tank	18-51 cu m	0.6-0.9
3	Irrigation channel	20-30 lt/sec	4.01
4	Village Pond	100-120 cu m	0.83
5	LDP Tank	18-51 cu m	0.6-0.9

- Due to improved irrigation facilities the farmers could grow off season vegetables like tomato, cabbage, capsicum, peas etc. giving high returns to the farmers. The farmers were motivated to change the traditional cropping practices through demonstration of modern agriculture practices/ techniques. Through distribution of minikits the farmers were initiated to grow high yielding varieties of traditional crops like wheat, paddy, finger millets, maize and pulses etc.
- The increase irrigation facilities also benefited to the farmers to adopt cultivation of cash crops and vegetables under protected conditions through polyhouses and polytunnels. The community orchards/ homestead gardens were rejuvenated through improved horticultural practices like grafting, top working, mulching, pruning etc. of citrus fruit spp., apple, pear, peach and wild apricot etc.
- Livestock Improvement Component: The project was successful in improving the livestock breed in the project areas through interventions like NBCs, paravets and A.Is. The main emphasis was on upgradation of breed cattle, buffaloes and goat through Jersey Cross, Murra Bull and Sirohi Bucks respectively. Similarly frozen semen of Jersey Cross and Murra Bull were used for A.I. The covering and Progeny Report of N.B.C. and A.I. area as follows:

Covering And Progeny Report of N.B.C.

S. No.	Sp. and Breed of Bull	No. of Covering	No. of Progeny Born		
			Male	Female	Total
1	Buffalo Bull, Murrah	21360	6123	6671	12794
2	Cow Bull, Jersey X	2202	584	677	1261
3	Buck, Berbari/ Sirohi	6595	2249	2293	4542

Covering and Progeny Report Of A.I. Center

S.No.	Sp. of Animal	Total Covering by A. I.	No. of Progeny Born		
			Male	Female	Total
1	Cow	1817	522	494	1016
2	Buffalo	1716	467	447	914

Impact on the basis of expected benefits: The improve breed of calves particularly the females when they achieve the age of conception and start lactating, the beneficiary will then start getting benefits by selling of milk, milk products and improved heifer etc. The details of female progeny born in different years are following:-

Female Progeny born in the Project:

Sl. No.	Year	No. of Female Progeny Born					
		In Buffalo			In Cows		
		N.B.C.	A.I.	Total	N.B.C.	A.I.	Total
1	2006-07	118	0	118	26	0	26
2	2007-08	590	0	590	63	0	63
3	2008-09	946	38	984	149	45	194
4	2009-10	1460	84	1544	107	94	201
5	2010-11	1875	114	1989	175	127	302
6	2011-12	1682	211	1893	157	228	385

Calculation of Expected Benefits: The expected benefits were calculated by considering following points-

- Firstly the numbers of heifers expected to conceive and start lactating from 7th yr. onwards (2012-13) were calculated. (By assuming that out of total female progeny born about 20% will not conceive and lactate due to mortality or various gynaecological problems).
- It was expected that the cross bred will conceive and lactate for at least four generations.
- The upgradation of local breed will ultimately result in increased milk yield. The increased milk yield were calculated about 400 lit./lactation period in buffalo and 300 lit./lactation period in cows.

- The total gross benefit has been estimated by calculating total additional milk yield during and after the project period and multiplying it with sale price (Rs. 25/lit. in Buffalo & Rs. 22/lit. in Cows)

Outcome of Analysis: The outcome of the analysis is as following:

- The success rate of natural breeding on the bases of live progeny is 70% in buffalo, 67% in cow and 77% in goats; similarly the success rate of A.I. is 63% in Buffalo and 66% in cows. So this success rate reflects impact of breeding programme.
- The total expected gross income in Buffalo from Yr. 2012-13 to 2017-18 ranges between Rs. 0.94 million to Rs. 1.25 million. Similarly the gross income in Cow from Yr. 2012-13 to 2017-18 ranges between Rs. 0.13 million to Rs. 5.70 million.
- Through various fodder production programmes like distribution of fodder minikits, pasture development plantation and Napier grass border plantation there was an increase in fodder availability in the project villages. On the basis of impact analysis in 20 sample villages the average production of improved quality of farm fodder crops was 6.7 MT/ha and the average production of grasses from pasture areas was 2.6 MT/ha.
- Through various stall feeding initiatives like mangers, chaff cutters and animal charis there was a decrease in fodder wastage. On the basis of sample study conducted in 30 villages the average fodder saving was 15% and increase in practice of stall feeding animals was 25%.
- 16645.5ha. of plantations fuel, fodder, fruit and timber spp. was carried out in the project area. In the future this would be a good source of fuel and fodder for the community and other intangible benefits.

CHAPTER -3

ENHANCING LIVELIHOOD OPPORTUNITIES

This component of the project focused on enhancing incomes and livelihood options by ensuring equitable participation to all groups like farmers, users groups and especially the landless and women who rely disproportionately on common-pool resources for fodder, fuel and other forest products. In these components there were three sub-components viz.

1) **Farming systems improvement:** This sub-component sought to draw lessons from the IWDP and the Diversified Agricultural Support Project (DASP) by increasing the role of the private sector, input supply and support services, and also increasing the participation of farmers in choice of technologies. It financed the introduction of improved technologies and practices for agriculture, horticulture, silvi-pastoral treatments and animal husbandry through co-financing of demonstration sub-projects with Farmer Interest Groups (FIGs).

2) **Value addition and marketing support:** Under this sub-component, the project established an agribusiness pilot that was used to: (i) identify potential niche market opportunities; (ii) establish links with private sector entrepreneurs who could help in exploiting the market potential; (iii) disseminated appropriate information and technology to farmers to facilitate their entry into production; (iv) co-finance sub-projects with FIGs (on a one time subsidy basis); (v) co-finance sub-projects with private sector entrepreneurs (on a one time subsidy basis) for storage, processing and or marketing infrastructure to exploit the market potential. The private sector (NGOs and private firms) was encouraged to play a major role in supporting agribusiness development.

3) **Income generating activities for vulnerable groups:** This was designed to finance small income generating microenterprises for vulnerable groups (women and landless). Trainings

were provided to vulnerable groups to encourage their entrepreneurial development. The VG funds were disbursed through the GPs to the VG's. Criterions to prioritize income generating proposals for the VG funding were developed.

FARMING SYSTEMS IMPROVEMENT

AGRICULTURE: Farmer Interest Groups (FIGs) of progressive/ interested farmers; keen on taking up innovative agribusiness activities were formed at GP level. Periodic visits of scientists of KVKs and other support staff were organized to the project area to provide technical support to FIGs. Package of practices for use of improved technologies were developed through technical support from G.B Pant Agriculture University, VPKAS, Almora and ULDB, Dehradun. Awareness generation among farmers were undertaken through village level workshops, trainings and exposure visits. Linkages between project stakeholders, government and non-governmental institutions were established.

Demonstrations of improved varieties of cultivated crops through FIGs were taken up. Mainly Compact Area Demonstration of Gahat- VL Gahat 1, Maize Him-128, Soyabean VL-47, Maduva VL-148, Wheat (VL-616, 732, 373, 738); Pea (VL-704), Toria (PT-303) and Masur Dal etc. were carried out.

HORTICULTURE: Orchard development demonstration, orchard rejuvenation, cultivation of off-season vegetables, use of poly house/ tunnels and bio/ vermi-compost demonstration to promote organic farming were carried out. As per the recommendations from the technical institutions cultivation of following off-season vegetables for demonstration were taken up by the FIGs:- Pea Pisum sativum (Arkil, Azad, VL-7), Cauliflower Brassica oleracea var. botrytis (Varun, Mrinalini, Krishna), Lady Finger (Perbhani Kranti), Cabbage Brassica oleracea (Varun, Nobel -1), Ginger Zingiber officinale, (Rio de Janeiro), Tomato Lycopersicon esculentum (Manisha, Naveen, Naveen Plus, Naveen 2000, Tolstoy), Potato Solamum tuberosum (Kufri Giriraj, Kufri Joyti), Capsicum Capsicum spp. (Tanvi, California wonder), Chilli Capsicum spp. (Pusa Jawala, Pant C-1), French Beans Phaseolus vulgaris (Contender,VL-1, Pant Anupama, Ratna), Brinjal Solanum melongenes (Pant Samrat, Vijay), Radish Rahanus Sativus (Japanese long white), Summer squash (Pusa Alankar) etc. In high value crop, mainly Tejpat Cinnamomum tamala, Bari Elaichi Cynara cardunculus, Almond Prunus dulcis (IXL, California paper seal) demonstrations were carried out.

In Orchard Development demonstration following species of fruits were taken up- Mango Mangifera indica (Dashhari, Langra, Chausa), Litchi Litchi Chinensis, Guava Psidicum guajava (L-49), Katahal Artocarpus heterophyllus, Citrus species, Pear Pyrus communis (Jargnal, Thampier, Victoria), Walnut Juglanus spp. (Kagzi), Peach Prunus persica (Alexander, Red June), Plum Prunus domestica (New

Plum, first plum, Santarosa), Apple Malus sylvestris (Red Delicious, Royal Delicious, Polynizer red gold, Delicious spur), Almond Prunus dulcis (Kagazi, California, paper seal, IXL), etc.

Following table shows the various components of farming system improvement:

S. No.	Activities	Unit	Achievement upto March 2012
1.	Compact area demonstration	Ha.	2929
2.	Orchard development demonstration	Ha.	2121
3.	Orchard rejuvenation	Ha.	656
4.	Mehal top work	Ha.	240
5.	Off-Seasonal vegetables demonstration	Ha.	3081
6.	Poly-house demonstration	No.	834
7.	Poly-tunnel demonstration	No.	1247
8.	Bio/Vermi compost demonstration	No.	4805
9.	Community Fruit plantation Demo.	Ha.	453
10.	High Value Crops / Aromatic Plant Demo	Ha.	3105

ANIMAL HUSBANDRY: The broad objectives of livestock component were concerned with improvement of genetic potential of local indigenous livestock and to increase availability of feed and fodder. The thrust was on reducing the livestock pressure on farm land and forest for grazing and green fodder requirement. The objectives of livestock component were as follows:

- To reduce the livestock pressure on the fragile land by reducing the extent of open grazing and encouraging stall feeding of cattle.
- To improve the productivity of livestock by upgrading of local animals and better feeding and management practices including health care.
- To improve the contribution of livestock sector to natural resource management in the project.
- To finally improve the livelihood of the people of the project area.

Livestock rearing is a major occupation in rural areas. The local animals are non-descript and less productive. Livestock productivity can be improved by cross breeding with Jersey cross and Murrah bulls and by improving feeding and management practices. The improved livestock health care facilities were helpful in increasing the productivity of animals.

The disease control and surveillance facilities are comparatively cheap and can prevent livestock from severe economic damages and mortalities. The vaccinations for various contagious diseases were

done. The livestock owners are mainly dependent upon local forest for fodder supply this dependency was reduced through fodder, napier grass plantations and encouraging stall feeding practices.

To achieve the project objectives under livestock component, following activities were taken up.

Livestock Breeding Programs: In the project area most of the livestock are indigenous and of non-descript category. Breeding programs are major thrust area to increase the production and productivity of livestock. The main emphasis was on upgradation of cattle and buffaloes through Jersey cross Bull and Murrah Bull respectively. The breeding programmes in project area were taken up by establishment of N.B.C. & A.I. through paravets. The castration of scrub bulls was also essential to stop proliferation of local and low yielding males. The success of breeding programs was closely related to the controlled breeding through castration of scrub and unwanted local non-descript bulls.

Livestock Health Care Programs: Cattle Show/Veterinary Health Camps and Mass drenching programs were organized to protect the livestock from various diseases. Emphasis was given to genetically improved cattle as they were more susceptible to diseases. In milch animals, severe drop in milk production leads to economic losses, so the livestock owners were persuaded and motivated by the technical staff for vaccination as preventive measure of disease control.

Stall Feeding Programs: To inculcate the practice of stall feeding, it was essential to have improved production of fodder from on and off-farm lands. On- farm fodder production, pasture development and napier grass border plantations were carried out. Demonstration of high yielding varieties of fodder crop like- Jai, Berseem, Hybrid Napier, Hybrid Maize, Ginni and Cenchrus were taken up.

Fodder Saving Programme: The livestock owners were motivated to construct mangers and cattle sheds provided they contributed the labour component. Chaff Cutters were also distributed to the livestock owners.

S. No.	Activities	Unit	Achievement upto March 2012
1	Creation of NBC	No.	265
2	Paravet Centres	No.	71
3	Live stock camp/show	No.	743
4	Vaccination	No.	225979
3	Animal Shelter	No.	5066
4	Mangers	No.	3925
5	Chaff cutters	No.	1105
6	Fodder crop demonstration	Ha.	969
7	Forage / pasture development programme (Plantation)	Ha.	1277
8	Napier grass plantation	000' Rm	1745

FORESTRY

Nursery Demonstration: The farmers were motivated to establish of forest nurseries (indigenous fuel wood, and small timber species) and fodder nurseries (Ginni, Hybrid Napier, Hybrid maize, Cenchrus on community and private lands to fulfil the requirement of seedlings in the project.

S. No.	Activities	Unit	Achievement. upto March 2012
1	Establishment of forest nurseries	No.	36
2	Establishment of fodder nurseries	No.	42

MISCELLANEOUS INNOVATIVE ACTIVITIES

Agribusiness Input Support

Promotion of Community Based Organizations: Farmer Interest Groups (FIGs): To address the existing constraints and to leverage their access to production and marketing services, the project supported farmers to organise into Farmers Interest Groups (FIGs) and these groups were again linked to form Farmer Federations.

List of Farmer Interest Groups (FIGs) formed March 2012

S. No	Name of Division	No. of GP	No. of RV	Total No of FIGs	FIGs Involved in Agribusiness	Farmers Involved in Agribusiness	Saving of FIGs (000' INR)	Farmers Federation formed (No)
1	Vikasnagar	28	39	69	47	528	495.87	3
2	Chinyalisaur	43	61	84	84	1098	256.93	5
3	Agastyamuni	34	60	102	87	1143	378.84	4
4	Gairsain	27	66	74	74	1341	322.32	2
5	Kotdwar	28	47	50	50	678	350.00	1
6	Champawat	34	49	67	34	512	85.63	3
7	Nainital	19	33	43	43	643	266.61	1
8	Bageshwar	24	39	46	34	397	158.08	2
9	Gangolihat	44	118	51	32	595	235.00	3
10	Dwarahat	46	84	104	104	1473	302.60	3
	Total	327	596	690	589	8408	2851.88	27

Farmers Federations: With the objective of forming sustainable CBOs, the farmers Interest Groups were linked together in a number of GPs to form Farmers Federations. These federations in many instances have registered under the Self Reliant Cooperative Act, 2003.

List of Farmer Federations Registered under the Self Reliant Cooperative Act, 2003 March 2012

Name of Division	Federation formed (No)	No of Farmers/ FIGs linked	Revolving Fund Generated (000' INR)
Vikasnagar	3	283 (24 FIG)	69.15
Chinyalisaur	5	1414 (84 FIG)	9,82.60
Agastyamuni	4	1190 (83 FIG)	5,88.86
Gairsain	2	1341 (74 FIG)	3,25.00
Kotdwar	1	128 (9 FIG)	35.00
Champawat	3	463 (11 FIG)	32.50
Nainital	1	271 (16 FIG)	82.20
Bageshwar	2	228 (20 FIG)	81.10
Gangolihat	3	595 (34 FIG)	77.31
Dwarahat	3	830(55 FIG)	1,00.00
Total	27	6743 (410 FIG)	23,73.73

Training and Strengthening of FIGs: Training programs on FIG formation, management, leadership development for the FIGs & farmers federations, off season vegetable production technology and development of crop calendar were organized. FIGs were linked with banks for financial support.

Technology Dissemination and Advisory Services: Season and area specific production plans on cluster basis were developed for each division. Focus was on harnessing the opportunity for off-season vegetable production. For this, specific varieties depending on altitude, soil type and other climatic factors were introduced. A total of 327 GPs and 596 RVs were selected for agribusiness activities. About 7464 ha area has been covered under high value crops and off season vegetables cultivation in the project.

Farmers were selected to adopt agribusiness promotion activities in cluster of two or three villages. One or two crops were selected per cluster for bulk production so that effective models could be developed for dissemination of technology and collective marketing of produce. Agribusiness input support to the tune of INR 13,000/- per ha. was provided. 50% of the area under agriculture in irrigated region was covered by the demonstrations. The inputs provided included quality seeds, bio-pesticides, bio-fertilizers, bio-compost, poly-house, poly tunnel, plant protection equipments, packaging material, plastic crates for packaging and transportation, weighing machines etc.

Various Agribusiness Interventions: To fulfil the objective of improving the productive potential of natural resources and increasing the incomes of the rural folk various activities were initiated like- Cultivation of off-season vegetables, Cultivation of medicinal and aromatic plants, Floriculture, Setting up of Agri-clinics and Convergence with other departments.

Cultivation Of Off-Season Vegetables: Uttarakhand being a hilly State, it can be developed into a hub for cultivation of off-season vegetables. The farmers have shown keen interest in cultivation of off season vegetables with crops like Tomato, Cabbage, Pea, Chilly, Capsicum, French bean and Potato.

Status of cultivation and sale of off season vegetables **March 2012**

Name of crop	Area (Ha.)	Produce marketed (Tons)	Sale price of marketed produce (Lakh INR)
Brinjal	131.04	394.63	48.89
Broccoli	15.40	15.25	3.04
Cabbage	650.24	3436.18	246.07
Capsicum	497.13	1992.09	339.42
Cauliflower	242.54	1025.34	121.21
Chilly	604.11	3057.08	390.22

Coriander	284.42	135.97	60.78
Cucurbits	201.93	276.13	50.86
French bean	576.27	1451.98	254.65
Garlic	97.98	509.44	133.77
Ginger	178.00	380.00	105.90
Okra	240.27	221.85	31.29
Onion	250.24	1165.81	86.31
Pea	883.30	2257.49	340.50
Potato	674.43	4507.07	452.21
Tomato	945.99	13418.69	1022.65
Other Vegetable crops	343.07	2109.58	335.45
Total	6816.36	36354.58	4023.22

Cultivation of Medicinal and Aromatic Plants: In view of the diverse agro climatic conditions of the state, there is a tremendous potential for cultivation of medicinal and aromatic plants. In spite of the best efforts made by Gramya, this endeavour could not get desired popularity in the community. However, some attempts were made in this direction in Dwarahat, Gairsain and Agastyamuni Divisions.

Status in cultivation of medicinal and aromatic plants **March 2012**

S. No.	Name of Division	Name of Species	Area planted/ proposed (ha.)	Remark/Progress
1	Dwarahat	Harad, Bahera, Aonla and Tejpatta (Cinnamonus tamola)	6.72	Area planted
2	Dwarahat	Aswagandha (Withania somnifera), Asparagus (Asparagus racemosus), Kalmegh (Andrographis paniculata) and Tulsi	3.60	Area planted
3	Gairsain	Mint,Tulsi	2.64 ,2.26	Production-20.22 Qt Income Rs-92,540.00
4	Agastyamuni	Stevia	0.40	Income Rs- 3000.00
5	Gangolihat	Lemon Grass	3.0	Production-240.00Qt Income Rs-1.09 lakh
		Total	15.62	Income Rs- 2.05 lakh

Floriculture: Floriculture as an agribusiness activity holds a lot of potential in hilly Uttarakhand State. A few initiatives in this regard have been taken up in this project. Carnation, Gladioli, Marigold, Lilium cultivation have been taken up in Vikasnagar, Nainital and Champawat Divisions. In Champawat Division Gladioli & Lilium cultivation has been taken up by 30 farmers in 4.00 ha. area. The project is in collaboration with National Horticulture Board. In Nainital Division Marigold cultivation has been taken in 5.00 ha. area.

Agri-Clinics: A need was felt that agri-clinics need to be set up in the project area to provide better technical knowledge, equipments and medicines to the farmers at their door step. With this in mind two Agri-clinics have been established in Gairsain Division and Chinyalisaur Division by Divisional Support Agency (HARC). Soil testing facility and agricultural equipments are also available in these Agri-clinics. Rural information centre has also been established at Ganai gangoli at Pithoragarh with the support of NABARD.

Convergence: The project aimed on building on strengths of various line departments and NGOs working with the similar objectives. The project team was successful in attaining convergence with various departments. Some of the convergence initiatives in agribusiness are as follows:-

- GIZ - For developing viable business plans and capacity building on marketing of FIGs/ farmer federations and for facilitating forward linkages and technical services towards post harvesting.
- NABARD - For initiating outlets at Bhimtal ,Gangolihat & Ganai Gangoli and establishment of Rural information centre at Ganai Gangoli (Pithoragarh)
- UREDA- For providing solar dryers on subsidized rates
- District Administration/ DRDA- For initiating rural haats and also to ensure land settlement and creation of collection centres/ value addition centres.
- NHB - For floriculture at Champawat and Nainital.
- Agricultural Department- For establishment of Farmer Field Schools under ATMA Project at Ganai Unit in Gangolihat division
- Horticulture Department- For establishment of poly-house & floriculture in project area.
- Himalayan Gramin Vikas Samiti - Initiation of Dairy outlets at Gangolihat Unit of Gangolihat division.
- VPKAS, Almora - Establishment of Agro Processing Centre at Ganai Unit of Gangolihat division.
- SGK Pvt. Ltd., New Delhi and Geo Fresh - Organic Farming at Gangolihat and Vikasnagar respectively.
- Uttarakhand Organic Commodity Board- Organic certification of 74 Ha. land of 122 farmers in Agastayamuni Division.

Pine Briquette Making: An Initiative towards Alternative Fuel

Pine forests are spread over throughout the Middle Himalayas. The Pine forests are prone to fire, not only because of its resin content but also the fallen pine needles are a major fire hazard. These pine needles, are locally used for cattle's bedding, but through the project its use as alternate fuel was successfully implemented.

About 85% of the rural households are engaged in the collection of fuel wood. In each household fuel wood annual consumption is 2.7 MT, collection of which takes 183 women labour days. The pressure on forest resources, health problems due to smoke pollution, drudgery in fuel wood collection and transportation can be offset through use of pine briquetting as an alternative fuel.

In pine briquetting 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. This activity also saves 110 women days per annum. The opportunity cost of saved women labour is high as the women can engage in other household/income generating activities, at the current wage rate, of INR 100 per day its value works out to INR 8,250 per annum per household. Reduced drudgery and pollution are additional gains for the households.

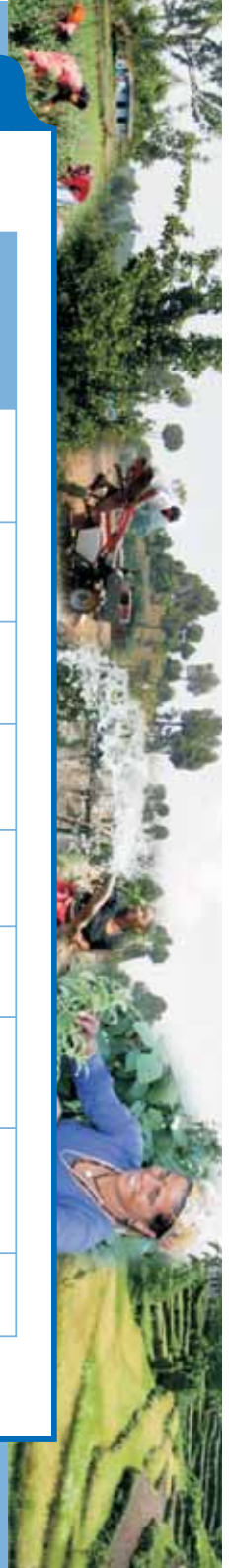
One unit of pine needle briquette making plant costs around INR 36,500 which includes the pine briquette module making equipment. Operating cost per kg of pine briquette is INR 5 for labour, INR 0.5 for power, dung and other maintenance costs. Annual fixed cost for the unit is INR 10,500 to liquidate the principal and interest (14%) in five years. The average sale price of pine briquette is INR 8.50 per kg. The unit can break-even with the production of 3,500 kg of pine briquettes. Currently, the beneficiary groups are breaking even by producing about 3120 kg of pine briquettes.

260 Pine needle briquette making facility (machines) were installed in 337 revenue villages and 8020 households were provided smokeless stoves for domestic purposes. 3 to 3.5 kg needles are required for each kilogram of briquette and about 40 kg briquettes per hour can be produced. The response from womenfolk is quite encouraging, as the frequency to visit forest for firewood has reduced and they can now spend more time on other chores.

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 content and there is no sulphur emanated when burnt. It can be easily transported and the demand for its market is high due to rising fossil prices.

COMPILED GROUPWISE INFORMATION REGARDING PINE BRIQUETTING

S. No	UDWDP Division	No of Machines	No. of Members	Production year wise in Qtl						Marketing yearwise in Qtl						Amount in INR '000'
				2007-08	2008-09	2009-10	2010-11	2011-12	Total	2007-08	2008-09	2009-10	2010-11	2011-12	Total	
1	Bageshwar	30	426	207	286	451	599	737	2280	24	67	123	178	239	631	615
2	Champawat	39	613		53.75	93.5	136.75	167	451			4.5	21	48.95	74.45	74.45
3	Chinyalisaur	32	436			60	129.3	256.5	445.8			41.5	104.5	207	353	432.4
4	Gairsain	10	122			19.5	64.45	75.67	159.62			4.6	1	0	5.6	5.6
5	Gangolihat	37	499	0	116	170	233	306	825	0	0	23.5	51	68	142.5	131.2
6	Nainital	37	782		127.37	213.01	300.73	364.91	1006.02		24.91	37.48	63.83	89.33	215.55	228.9
7	Kotdwar (PNGO Garhwal)	40	486		0	112.25	239	462.5	813.75	0	0	0	0	0	0	0
8	Dwarahat (PNGO Kumaun)	35	445			53.5	149	342.5	545			5	13	73.5	91.5	109.8
	Total	**260**	**3809**	**207**	**583.12**	**1172.8**	**1851.2**	**2712.1**	**6526.2**	**24**	**91.91**	**239.58**	**432.33**	**725.78**	**1513.6**	**1597.35**



VALUE ADDITION AND MARKETING SUPPORT

The successful demonstration of high value crops in the farming system improvement sub-component reflected an increase in production. Therefore, it was realized that a plan for surplus marketable produce needed to be developed for sustainability. A decision was taken to involve private sector/ NGO's in agribusiness to provide technical support for agribusiness development involving all aspects of supply chain in the project area.

It was envisaged that established NGO's should be involved in developing market linkages and providing technical support during the project period and would collaborate after the project withdrawal also.

Divisional Support Agencies

Six specialized agencies were hired under the Project to provide support for value addition and marketing to develop forward and backward linkages in the project divisions. In addition two Partner NGOs who are working in the two Project divisions were to help in developing market linkages in their respective divisions. In the remaining two divisions of Vikasnagar and Champawat Agribusiness consultants were hired by the Watershed Management Directorate on contractual basis. The following DSAs worked in the respective divisions.

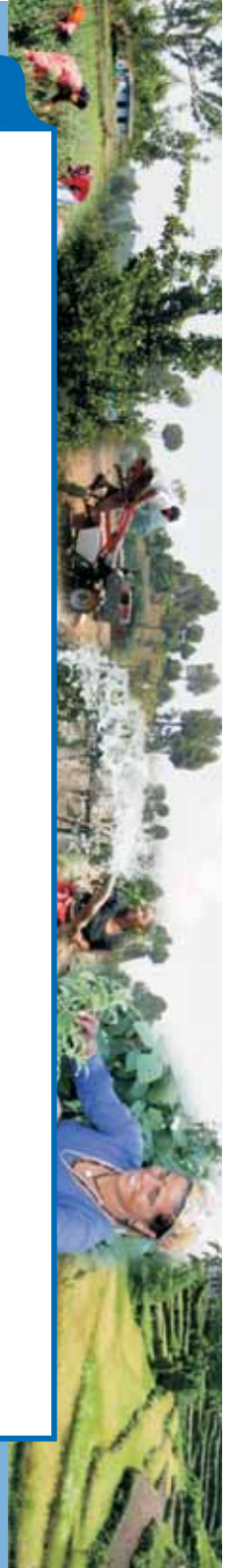
Name of Division	Name of DSA
Chinyalisaur	Himalayan Action and Research Centre (HARC)
Augustmuni	Centre for Business Entrepreneurial Development (CBED)
Gairsain	Himalayan Action and Research Centre (HARC)
Kotdwar	Asian Society for Entrepreneurship Education & Development (ASEED)
Nainital	Central Himalayan Environment Associate (CHEA)
Bageshwar	Grameen Evam Krishi Vikas Samiti (GKVS)
Gangolihat	Society for Uttaranchal Development & Himalayan Action (SUDHA)
Dwarahat	Institute of Himalayan Environmental Research and Education (INHERE)

Value Addition: The project took an initiative to analyze future demand and supply scenarios, available sustainable production options and the identification of a long term business model to maximize project benefits for farmers. Efforts were made to develop supply chain management system on case to case basis for Farmer's Interest Groups (FIGs). Integrated Processing Units were established in each block and viable business plans generated for each of the processing units. Each business plan addressed the availability of raw material (Season wise), Suitability of location and infrastructure requirement, Establishment of unit in phase manner, Cost and benefit estimation, Available potential market with forward and backward linkages, Institutional structure and its legal aspects. The feasibility and sustainability after the project withdrawal was clearly defined.

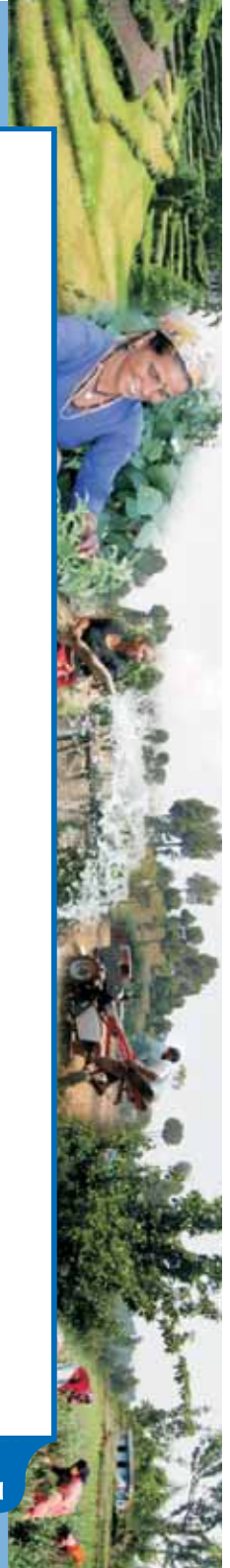
Status of Value Addition Centres

March 2012

S. No	Division/ District	Year of establishment	Place	Name of the Federation Managing the centres	No of Farmers & FIGs in Federation	Products	Brand Name	Marketing Linkages	Remarks
1	Vikasnagar / Dehradun	2009-10	Naingoun (Nainbagh)	Pragtisheel Fal Avam Sabji Utpadak Krishak Samiti,Naingoun	91 (8 FIG)	Tomato Puree, Kechup, Juice,Pickles, Squash, Turmeric powder	Jaunsar Fresh	Local Market,Dehradun, Doon Hatkardha Oudhanic Sahkarita Vikas Samiti	Applied for FPO
2		2009-10	Tuniya (Koti)	Tamsa Ghati Fal Avam Shabji Utpadak Samiti,Tuniya	72 (8 FIG)	Tomato Puree, Kechup, Juice,Pickles, Squash, Turmeric powder	Jaunsar Fresh	Local Market,Dehradun,Gram een Mahila Seva Sasthan	Applied for FPO
3		2010-11	Dagura (Achetpul)	Dev Bhumi Fal Avam Sabji Utpadan Krishak Samiti	120 (8 FIG)	Spices, Pickles	Jaunsar Fresh	Local Market,Dehradun,Doon Hatkardha Oudhanic Sahkarita Vikas Samiti	Applied for FPO
4	Chinyalisaur/ Uttarkashi	2009-10	Dharkot (Vanchora)	Daskigad Krishi Vyapar Swayat Sahakarita Ltd.,Vanchaura	244 (16 FIG)	Graded Pulses, Squash,Chutney	Garh Kalau	HARC Parvtiya women Autonomus Co-operatives Naugoun Uttarkashi, Local market	Applied for FPO
5		2011-12	Uniyal Goun	Nagraja Fruit & Vegetable Association Uniyalgoun	433 (23 FIG)	Graded Pulses, Squash, Chutney	Garh Kalau	Dehradun, Local Market, Rudraprayag, Gauchar	Applied for FPO
6	Agastyamuni/Rudrapra yag	2009-10	Kontha	Mandakini Mahila Swayat Sahkarita , Kyunjagad	441 (37 FIG)	Juice, Squash, Pickles	Mandakani Valley Fresh	Dehradun, Local Market, HIMALTO	Applied for FPO
7		2010-11	Durga Dhar (Bora)	Shiv Shakti Swayat Sahkarita, Chaupta	216 (16 FIG)	Spices, Graded pulses	Mandakani Valley Fresh	Dehradun, Local Market, Rudraprayag	Applied for FPO
8	Gairsain/ Chamoli	20011-12	Jangalchatti (Malsi)	Nanda Devi Kisan Swataya Sahakarita Malsi, Gairsain	437 (20 FIG)	Juice, Squash, Pickles	Himras	Deheradun, local market, Rudrapragh	Certification under process. Applied for trade mark



9	Gairsain/ Chamoli	2009-10	Gwar	Gairsain Fal Evam Masala Utpadak Swataya Sahakarita, Gairsain	904 (54 FIG)	Spices	Gairsain Fresh	Deheradun, local market, Rudrapragh,Delhi	Ag-mark Certified unit
10	Kotdwar/ Pauri	2009-10	Ghandalu	Gramya Kissan Bahudeshiya Sawayatat Sahakari Samiti, Ghandalu	128 (9 FIG)	Juice, Squash, Pickles	Gramya Fresh	Deheradun, local market, Rudrapragh,Delhi, Kotdwar,Saras Market	FPO-No A1315
11	Lohaghat/ Champawat	2009-10	Pau	Shiv Swayatya Sahkarita Ltd,Pau	190 (5 FIG)	Spices,Wheat & Maize flour	Gramya Masala	Local market,SSB campus,Maa Barahi Swayatya Sahkarita Ltd.	Ag-mark Certification under process
12	Haldwani/ Nainital	2009-10	Paharpani	Paharpani Utpadak Evam Vipran Self Cooperative	271 (16 FIG)	Spices, Graded pulses & vegetables	Parvatiya Shuddh	Nainital,Local maeket, Haldwani, Bhimtal	Ag-mark Certification under process
13	Bageshwar	2009-10	Pinglo	Gomati Ghati Swayatt Sahkarita Samiti,	111 (9 FIG)	Spices, Graded pulses, Madua flour	Sarmool Fresh	Local market,Uttrayani fair	Applied for FPO
14		2010-11	Dewalchaura	Sarayu Ghati Swayatt Sahkarita Samiti,	155 (14 FIG)	Mango Pickles,Spices powder	Sarmool Fresh	Haldwani,Local market,Uttrayani fair	Applied for FPO
15	Gangolihat/ Pithoragarh	2009-10	Bhatigoun (Bankot)	Gupteshwar Mahadev Kisan Sangh	240 (16 FIG)	Bakery product (Biscuits, Bun,Rush, Bread)	Hill Fresh	Local Market	Certification under process
16		2009-10	Kimta	Kalika Devi Kisan Sangh	199 (10 FIG)	Spices	Hill Fresh	NABARD Rural market Almora, Pithoragarh, Local market	Certification under process
17		2010-11	Ganai Gangoli	Gupteshwar Mahadev Kisan Sangh	240 (16 FIG)	Milk& Milk product (Paneer, Cream)	Hill Fresh	Local Market	Certification under process
18		2010-11	Gangolihat	Kalika Devi Kisan Sangh	199 (10 FIG)	Wheat Flour, Madua Flour, Mixed Flour	Hill Fresh	Local Market	Certification under process
19	Dwarahat/ Almora	2009-10	Chinoni (Chaukutia)	Maa Mansa Devi Krisak Swayat Sahakarita	350 (20 FIG)	Pulses, RTS Drink, Pickles, Squash	Himalayan Fresh	INHERE Aajivika Utthan Samiti,Local Market	FPO-No 13967



Trade in Value Added Products: Though in the initial stages the major value addition activities taken up by FIGs, FFs, Women Vulnerable Groups were processing of fruits & vegetables like Pickles, Morabba , squash, Badi etc., grading - packaging of pulses and flour making of different grains like Madua, Maize etc. A total sale price of value added products of INR 245.46 lakhs has been realized till March, 2012. The sale price of different value added products is given in the table below:-

Sale price of different value added products:

Division	Activity	Quantity of Value added products(Tons)	Sale price (Lakh Rs)
Vikas nagar	Buransh juice, Lime Juice, Tomato puree, Aonla murraba & Tomato chutney, Graded spices, etc.	3.51	2.84
Chinyalisaur	Processing of Aonla, Garlic, Tomato, Buransh and Grading of Pulses.	3.25	6.50
Augustmuni	Grading and Packaging of Malta, Citrus fruits, Pulses and Traditional Crops. Processing of Citrus fruits and Spices.	543.94	49.30
Gairsain	Tulsi powder, Mint oil, Malta Squash, Mandua flour, Maize flour, Buransh juice, Spices	49.00	37.59
Kotdwar	Juice, Pickle & Spices.	6.13	8.89
Champawat	Soyabean flour, Mandua flour, Maize floor, Pulses, cereals, dry ginger, mango powder etc.	16.92	28.18
Nainital	Pulses, cereals, Juice, Pickle & Spices.	44.50	10.87
Bageshwar	Mango pickles, Mandua biscuits, Spices powder & Malta squash, cereals, pulses etc.	2.62	1.83
Gangolihat	Mixed pickles, Mandua biscuits, Dried Mango powder, Spices powder, Badi Making, Mandua Flour , Mixed flour (5 in 1), Barnyard Millet, Rice, Maize flour, Turmeric Powder, Chili powder, Milk & Milk products.	101.35	95.91
Dwarahat	Juice, Pickle & Spices	4.72	3.55
Total		775.94	245.46

Market Linkages: During the lean period supply of vegetables and fruits in the project area is low thus; the local markets were exploited by the farmers in the lean season. However, for bulk supply of agricultural produce, regional markets at Haldwani, Tanakpur, Rudrapur, Bareilly, Dehradun, Gorakhpur, Lucknow and Delhi etc. and institutional markets like Mother Dairy, New Delhi, Bharti Wal Mart, SOS organics, Geo fresh, Gujarat and Reliance Industries Ltd. (RIL), Navdhania foods, Ferrocon Pvt. Ltd, Garhwal Mandal Vikas Nigam Uttarakhand, Khadi & Village Industries Board, Doon Hatkardha Oudhayanik Sahkarita Vivas Sanhasthan, Agri. Export Dev. Unit, Organic Board in Dehradun, Uttarakhand Vinodhara Agrotech, Bhowali,Nainital and Himalayan Trading Company, Almora were tapped. Local weekly Haat Markets and sale outlets / retail shops were developed in the various divisions.

The details of various crops which have been marketed at various levels i.e. Haats, Local Markets, State Level Mandies and sold to various companies is given in the Table below.

Crop wise sale price of marketed produce **March 2012**

Name of crop	Area (Ha.)	Produce marketed (Tons)	Sale price of marketed produce (Lakh INR)
Brinjal	131.04	394.63	48.89
Broccoli	15.40	15.25	3.04
Cabbage	650.24	3436.18	246.07
Capsicum	497.13	1992.09	339.42
Cauliflower	242.54	1025.34	121.21
Chilly	604.11	3057.08	390.22
Coriander	284.42	135.97	60.78
Cucurbits	201.93	276.13	50.86
French bean	576.27	1451.98	254.65
Garlic	97.98	509.44	133.77
Ginger	178.00	380.00	105.90
Okra	240.27	221.85	31.29
Onion	250.24	1165.81	86.31
Pea	883.30	2257.49	340.50
Potato	674.43	4507.07	452.21
Tomato	945.99	13418.69	1022.65
Other Vegetable crops	343.07	2109.58	335.45
Other crops (Fruits, Pulses, cereals, Medicinal plants etc.)	647.79	4343.37	600.12
Value added products	0.00	775.94	245.46
Total	7464.15	41473.89	4868.80

Market Rate through Information Technology: The project took an innovative initiative of bringing information technology at the door step of the farmer. To promote market linkages the federation members were linked with RML (Reuters Market Light) through mobile (SMS). Through this information technology revolution, all the federation members are informed about day to day regional markets price of their produce, improved crop practices and weather forecasts.

Multi Utility Centre (MUC): Forty two MUCs were established across the project area. These are being utilized for holding FIG trainings, demonstrations, and workshops etc. at MWS level. Wherever required these were converted into collection centres with facilities for grading, packing and for the value addition of agriculture produce.

S. No.	Divisions	No. of MUC	Location of the MUC
1	Nainital	3	Suni, Jalna Neel Pahari, Pashya
2	Champawat	4	Kolidheak, Kimtoli, Chanda, Baskuli
3	Bageshwar	3	Pinglo, Devalchaura, Naikanakhumatiya
4	Vikasnagar	8	Koti, Thaina, Mundhan, Dimou, Bijaou, Badnu, Bajou, Lakshyar
5	Pithoragarh	3	Pipli Nigalti, Jagoli, Oliyagaon
6	Rudraprayag	3	Kinjahri, Ghimtoli,Kotagi
7	Chinyalisaur	7	Tipari Daski, Ediyan, Garinagun, Choprali, Dharkot, Mathali, Jagargoun
8	Gairsain	3	Gairn, Kheti, Kalimati
9	Dwarahat	3	Manela, Basbada, Bheat
10	Kotdwar	5	Gwada Malla, Chamolisain, Gwen Bada, Ghandalu, Balooni Gaon
	Total	42	

INCOME GENERATING ACTIVITIES FOR VULNERABLE GROUPS

Entrepreneurship Development Programme: Capacity building for the development of income generation skills has been recognised as an essential input in the promotion of enterprise development. The need for training to impart entrepreneurial and managerial skills, particularly to the people in the project area with very little exposure to business enterprises is obvious. Traditional craftsman do not possess the entrepreneurial skills required for production for the market and face the risks involved in it. To ensure profitability and sustainability of income generation activities, sufficient inputs in the form of trainings, exposure visits, interactions with other SHGs, Federations, consumers, agencies etc. were provided to the groups. Entrepreneurship development trainings were imparted in the following areas:-

- Identification of viable IGAs
- Production aspects of IGA including technical training.
- Screening as regards ESMF

- Market analysis, trends, pricing, rules etc.
- Value addition and storage
- Marketing
- Record keeping, Book keeping and Management of finances.
- Follow up training to meet the ever-changing needs of the market.
- Capacity Building, institutional development, cooperatives, federations.

Fund for vulnerable groups:

The objective of vulnerable group fund was to enhance social equity in villages through the project and further assist those who either get left out or receive very little benefit from watershed development activities. Through the VG fund, funding support/ working capital assistance was provided to vulnerable group members for taking up income generation activities for their income enhancement.

This fund was initiated to finance small income generating micro-enterprises for vulnerable groups. Vulnerable groups were identified during the watershed planning process with the help of a set of guidelines designed for this Project. The 'C'- category households were identified by wealth ranking exercise.

'C' category / vulnerable group households are characterized by:

- Landless
- Kuchha House
- Reduced Livelihood opportunities
- Less Number / absence of livestock
- Living under debt
- Socially Vulnerable

Fund Flow arrangements:

- The vulnerable group fund was placed with the Gram Panchayat.
- Funding/ working capital assistance was provided on a one time grant basis for financing the IGA of Vulnerable Groups (VG) to promote the project's objective of equity.
- Level of grant support for working capital assistance was provided by project in the following manner:

S. No	Type of IGA	Level of grant provided by project
1.	Individual IGA	Up to 20,000.00 (Maximum INR 30,000.00 *)
2.	Joint IGA	Up to INR 80,000.00 (Maximum INR 1,00,000.00*)

- Maximum grant support was provided only in case of special proposals after approval by concerned Project Director.
- Funding /provision of working capital assistance for IGA from VG fund was given only after application of ESMF and subsequent approval of IGA plans.
- For approved IGA plans, the funds were transferred from Deputy Project Director (DPDs) to the Gram Panchayat account as grant.
- Subsequently funds from GP account were transferred to the VG for individual/ joint IGA as a onetime grant.

Selection of Income Generation Activities: The availability of resources, existing skills, quality, demand, marketability and financial inputs required were taken into consideration for selection of an IGA. The risk taking capacities of the groups were also considered. The following categories of Income generation activities were taken up.

- Livestock based activities - poultry, goatry, dairy, horse & sheep keeping etc.
- Traditional activities - barber, cultural activities as- choliya nritya, dol, damau, dance troupe etc., plumber, masonry, cobbler, fisheries etc.
- New innovative activities - tent house and band party etc.
- Secondary/value additional based activities - grinding machine, fiber works, bakery, soya & fruit processing and setting up expeller etc.

Status of Vulnerable Group/ Individual Fund: Till March 2012, total 754 vulnerable groups and 3819 vulnerable individuals received the grant (Fig. 3.2). A total of 8819 vulnerable members (4499 male and 4320 female members) were benefitted by this programme. The total fund disbursed for vulnerable activities is INR 8,53,83,228. This fund was allotted to 49% female and 51% male members (Fig.3.1).

Figure: 3.1

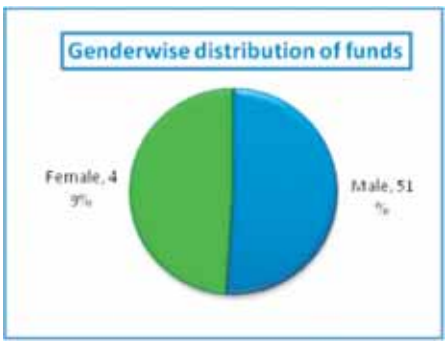


Figure: 3.2

Analysis of Preference of Income Generation Activities

Individual Beneficiaries: The beneficiaries adopted mainly traditional occupational activities such as Dairy, Poultry Goatry Shops and Blacksmithy. Other activities included Bee-keeping, Plumber, Off season- vegetable cultivation , Gharat, Mason, Fisheries, Weaving & Knitting, Cobbler, Tent House, Flour Mill, Pottery, Spice and grinding machine, Band Party, Nursery, Fruit Processing etc. The details are given in Fig. 3.3 and 3.4.

Figure: 3.3

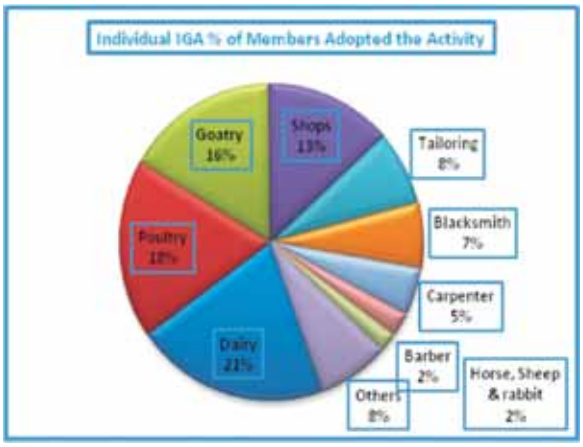
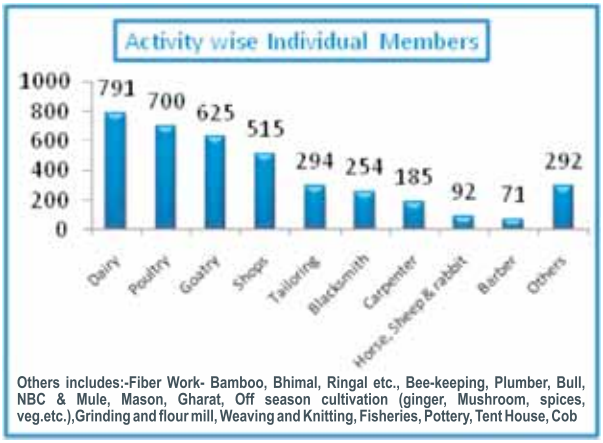
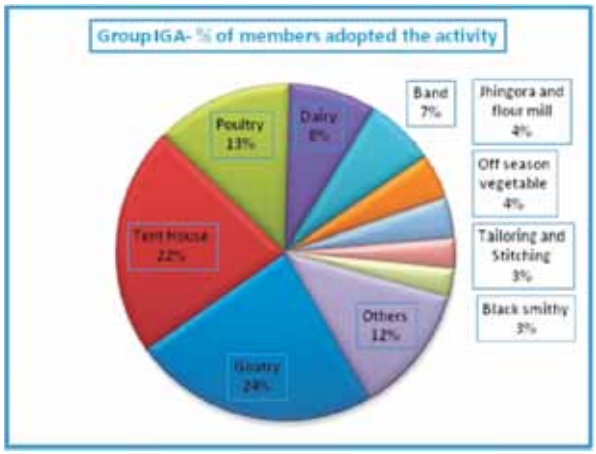


Figure: 3.4



Joint Beneficiaries: Activities adopted by the vulnerable group members were mainly as follows: Goatry, Poultry, Tent house, Dairy and Band Party. Other activities included Fiber works-Ringal/Bamboo/Bhimal; Cultural Programme, Shops; Bakery; Bee Keeping; Cobbler; Pottery; Weaving & Knitting; Carpentry; Thresher Machine; Expeller; Soya bean Processing; Fruit Preservation; Candle Making and Grading & Packaging. The details are given in Fig. 3.5 and 3.6.

Figure: 3.5



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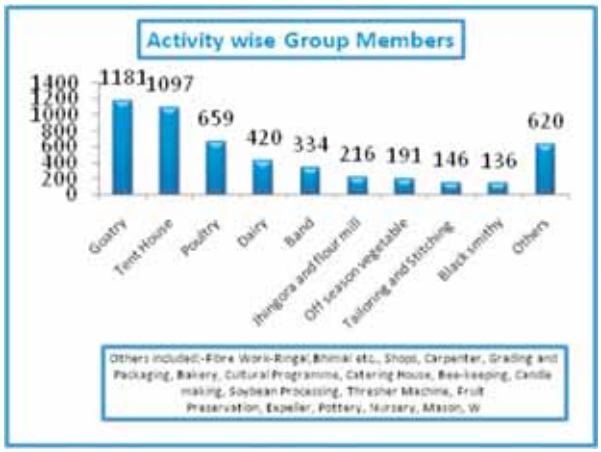
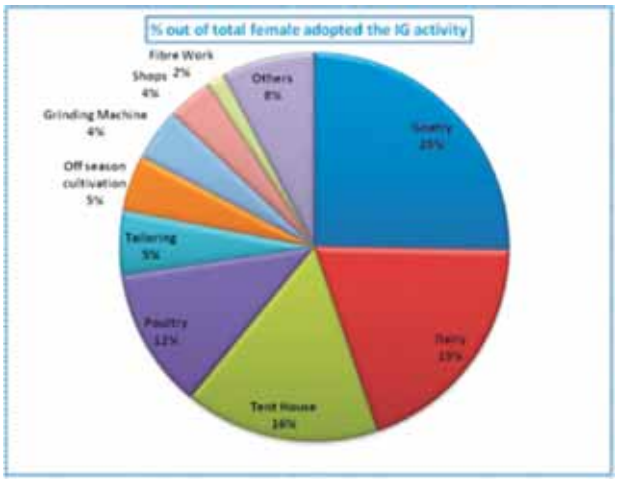


Activitywise Gender Analysis

On the basis of study in January 2012 of the various activities taken by the vulnerable members, the major activities are Goatry, Poultry, Dairy, Tailoring, Black smithy and shops. It was analyzed that more than 19% of all the total vulnerable members have taken up Goatry as an income generation activity. Most preferred activities are traditional activities. When gender wise preference of an activity was analyzed, it was noticed that 25% women opted for goatry and 19% opted for dairy. Activities like goatry, dairy, off season production and grinding machine were opted by women. Activities like black smithy, carpentry and shops are male dominated. Livestock based activities are the most preferred amongst both the genders as these are the traditional activities which can survive on a one time input.

Women: A total of 3963 women members opted for 29 income generation activities (Fig. 3.7 and 3.8). Among women Goatry was the most promising activity as 25% women adopted goatry. Other activities taken up by the women are Poultry, Dairy, off season vegetable production, Tailoring, Spice grinding machine/Jhingora and flour mill. Most women prefer livestock activities thus livestock based income generating activities like Goatry 25% and Poultry 12% and Dairy 19% amount for a total of 56% . Women have taking up tent house and band party as new innovative activities and need to be encouraged.

Figure: 3.7



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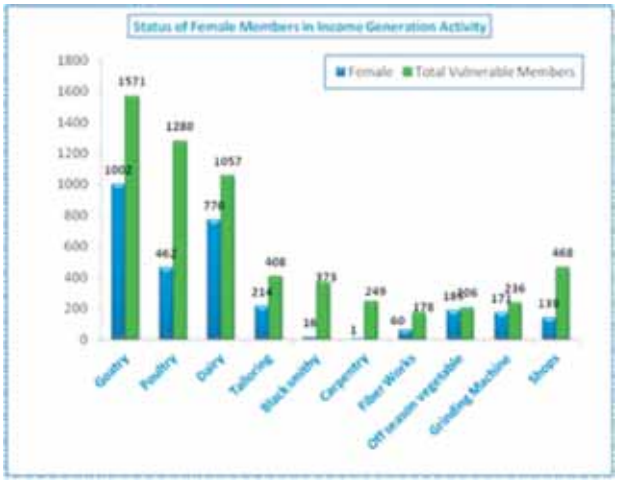


Men: About 4174 men vulnerable group/individual members adopted income generation activities. The preferred men IG activities are barber, black smithy, carpentry, cobbler, mule keeping/sheep/Male Goat NBC, plumbery, tin work, water pump, welding etc. Poultry reflected as

first preference amongst males. Second preference was goatry, followed by Shops, Tent House, Black smithy, Band and Dairy. The details are given in Fig. 3.9 and 3.10.

Figure 3.9

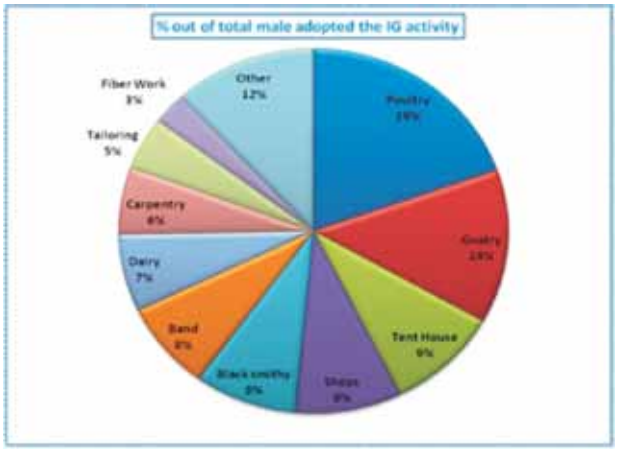
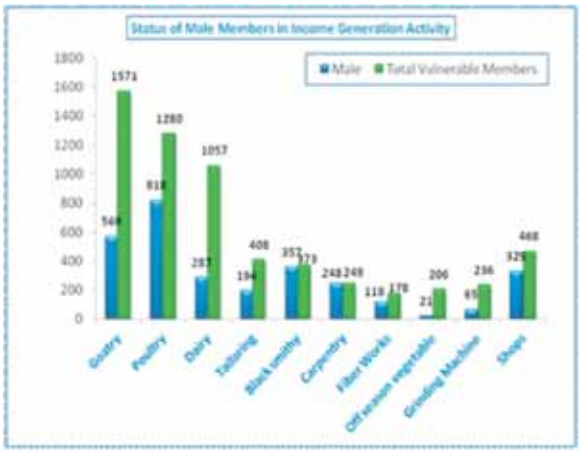


Figure 3.10



Transhumant plan:

Transhumance and Agro pastoral systems are commonly practiced in Uttarakhand involving both full time nomads and settled farmers taking their livestock to summer pastures. In the project a strategy was formulated for traversing and semi-sedentary transhumant population to assist them in an attempt to improve their quality of life through project interventions.

The transhumance systems are analogous in Garhwal and Kumaon region in that they are of the vertical type wherein livestock during winters inhabit the warmer zones, moving upwards as the weather warms during spring until they reach alpine pastures in summer. 'Gujjars' and 'Bhotiyas' are the primary communities practicing transhumance in the project area. Gujjars move with their herds of buffalo and cattle. Bhotiyas keep mixed flocks of sheep and goat for wool, meat and rituals, horses for baggage transport and dogs for protection. Transhumant communities camp from two to eight days during transit through the project area.

In the tribal/ nomadic group's strong self-identification is a distinct cultural group, they are vulnerable to being disadvantaged. Thus in the transhumant plan the following objectives were set:

- To sensitize all project partners about their cultural uniqueness and their ability to anticipate any possible adverse trends/ impacts due to which they neither suffer adverse effects during the development process nor face economic subordination.
- Informed participation of the indigenous people in the project activities to identify their local preferences through direct consultation process and incorporation of their indigenous knowledge.

- Development plans to give due consideration to the options preferred by the indigenous people.
- The indigenous people to benefit from development investments and receive special attention to avail of culturally compatible social and economic benefits with social opportunities.

Action plans were made to safeguards their interests and the provisions to ensure that nomadic populations within the project areas were not negatively impacted. Following services were provided to the transhumant population during their stay in project area-

- Veterinary services including veterinary first aid and vaccination to the livestock.
- Insurance facilities for themselves and the livestock.
- Solar lights, torches and drinking water facilities.
- Poly Sheets for livestock and tent.
- Fodder blocks for livestock.
- In case of few semi-sedentary groups (three to six months camping in project area) amongst Gujjars, a novel initiative of facilitating basic primary education for their children was started in Vikasnagar and Augustmuni division.

Till March 2012 approx. INR 1.32 crores have been spent on the various transhumant interventions.

CHAPTER -4

INSTITUTIONAL STRENGTHENING

Gramya was a community driven project, for the community, of the community, and by the community. It was based on joint relationship among three entities viz. Village communities and Gram Panchayats, Watershed Management Directorate and private bodies including NGO's. Institutional development was thus an important objective as well as a significant outcome of the project. In the component of institutional strengthening the following sub-components were there: i) Capacity building of Gram Panchayats and local community institutions ii) Information, Education and Communication (IEC) and iii) Project coordination, monitoring and management.

1. **CAPACITY BUILDING OF GRAM PANCHAYATS AND LOCAL COMMUNITY INSTITUTIONS:** Under this sub-component the following trainings were carried out: (i) training of elected officials of GPs in core administrative functions: (ii) all other stakeholders on the applications of the ESMF and (iii) training of community representatives, SHGs and community organisations in project related activities.

   To enhance the self sufficiency of Gram Panchayats & Local Community Institutions, capacity building was an essential phase. Capacity building was the key mechanism to introduce participatory approach for planning, implementation and management of watershed activities through Gram Panchayats (GPs). It was the major means by which Panchayati Raj Institutions (PRIs), community and project staff successfully implemented the project. For smooth implementation of project activities, capacity building of all the stakeholders was essential, to build their conceptual, managerial, technical and operational capabilities. Participatory approaches in project implementation required the project participants to go in for a novel approach and experience of working in collaboration with each other. Hence orientation of both project personnel and watershed communities including their capacity building according to the changing perspective was imperative.

Capacity Building Objectives:

- Develop proper conceptual understanding about integrated participatory watershed management including equity and environmental and social sustainability among all the implementation agencies including PRIs as well as local communities.
- Build necessary skill and competence among the project officials, PRIs specially GPs and other community institutions about planning, implementation and management of various project activities.
- Develop understanding about the environmental and social issue including application of Environmental and Social Management Framework (ESMF).
- Build and enhance the capacity of all stakeholders for the sustainability of programmes initiated by the project.
- Skill and entrepreneurship development for livelihood activities.

Training Need Assessment: The training needs, thrust areas contents, coverage and the project phase during which trainings were required to be imparted were assessed for all stakeholders. Besides, information available at training institutions located at different levels was also utilised in the finalisation of training proposals. Training lacunas as identified in the past projects were also covered in this project. The training enhanced the quality of the output of various individuals and organisations who were involved in community participation in natural resources management. In the fourth year of the project, training need assessment was again carried out in 2008 and areas for conduction of refresher courses were identified.

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.

- Agriculture and Horticulture issues: VPKAS Almora, G.B. Pant Agriculture University Pantnagar, HARC Dehradun.
- Livestock and IGA issues: G.B. Pant Agriculture University Pantnagar.
- Forestry and Van Panchayat issues: Uttarakhand and Forest Academy, Haldwani, G.B. Pant Institute for Himalayan Environment and Development, Kosi Katarmal, Almora.
- Soil Conservation and Water Augmentation: Central Soil and Water Conservation Institute, Dehradun, KAGAS, Ranikhet.
- Financial and Procurement Issues: D.S Jajj & Co, Chandigarh, RIRD Haridwar.
- Organic Training Issues: SUPA Biotech, Nainital, INHERE Masi, Almora.
- Bamboo Related Issues: Bamboo and Fiber Development Board, Dehradun.
- Medicinal and Herbal Related Issues: CIMAP Field Unit, Pantnagar, HIRD Gopeshwar.

- Field demonstration related issues: KVK of respective districts.
- Environment and Social issues: G.B. Pant Institute for Himalayan Environment and Development, Kosi Katarmal Almora, Uttarakhand Forest Academy Haldwani, EMPRI, Bangalore.

Capacity Building of the Primary Stakeholders

Trainings:

Village level trainings (One day)– 7678 one day trainings were carried out on issues of participatory approach & watershed concept, UDWDP orientation role of communities and institutions, watershed activities and budget envelop, formation of FIGs and technical inputs in agriculture, horticulture, livestock, forestry, IGAs, ESMF & financial management and project implementation.

Division Level Trainings(Three days)– 47822 centralized and decentralized trainings were imparted on issues of project orientation, ESMF, PRA, GPWDP planning, accounts, SHGs & FIGs, livestock, nursery technique etc.

Exposure visits:

Within State- About 31126 villagers including members of GP were taken on exposure visits to IWDP and Doon Valley Project areas to broaden their concept and vision on integrated participatory watershed management. Through these visits, the community members were exposed to the exemplary work done in the field of participatory watershed management, off- season vegetable cultivation, high value crops, FIGs and so on.

Outside State-1090 community members were also sent out of the state for exposure visit to various institutions like YS Parmar Agriculture University, Solan (H.P) for advanced practices in animal husbandry, agri -diversification, off season vegetable cultivation and floriculture etc.

Workshops:

State and Regional Level Workshops- To establish dialogue between the communities of the project area, the PRIs representatives and the project officers SAMVAD (Communication) workshops were held in each division. The workshop was successful in terms of participation by the communities, GP members and project staff. About 350 participants from sample villages took part in these workshops.

Division Level Workshops- 68842 community members participated in various programmes.

Village Level Workshops- 10739 village level workshops were conducted.

Unit level Workshops- 133311 community members participated in various programmes.

Capacity Building of the Project Team:

- Training of Staff- 4268 trainings on various topics like project orientation, project components, accounts, farming system components, monthly progress reports, MIS, silt observation etc. were conducted.
- Exposure visit of Staff- Most of the Staff members were taken on exposure visit to IWDP areas, HARC Naugaon, Pant Nagar University, Pantnagar, Vivekananda University, Almora, Local KVKs etc.
- Overseas exposure visits
  - ◊ Exposure visit to Mexico was organised for studying the Community Forestry Programme. Uttarakhand Team comprised of following members:
    1) Mr. Utpal Kumar Singh –CPD and Secretary Watershed.
    2) Mr. D.J.K Sharma. Additional Director. Watershed Management Directorate, Dehradun.
    3) Mr. V.K. Pangtey, Project Director, Watershed Management Directorate Dehradun.

After the exposure visit, project proposal for GEF funding under SLEM was submitted as additionality to UDWDP.

- Project Planning and Development Training- Manila –Mr. W. Longvah
- Project Planning Development Training- Singapore- Mr.SV. Sharma, Mr. R.S.Negi, Mr. J.P. Tiwari.
- Exposure Visit to Costa Rica and USA- Study tour for payment for Environmental Services in Costa Rica was conducted by the World Bank from 19th April, 2008 to Ist May, 2008. The officers from the various watershed projects of India from the States of Uttarakhand and Himachal Pradesh participated in the study tour. Uttarakhand Team comprised of following members:

1) Ms. Vibhapuri Das, Principal Secretary & Commissioner, Forest and Rural Development, Government of Uttarakhand.
2) Mr. D.J.K Sharma, Additional Director, Watershed Management Directorate, Dehradun.
3) Mr. W. Longvah, Project Director, Watershed Management Directorate Dehradun.
4) Mr. V.K. Pangtey, Project Director, Watershed Management Directorate Dehradun.
5) Ms. Meenakshi joshi, Deputy Project Director, Watershed Management Directorate, Dehradun.
6) Dr. S.K. Upadhyaya, Deputy Project Director, Watershed Management Directorate Dehradun.
7) Dr. Kamal Singh, C.E.O, ULDB, Dehradun

- National level workshop:
- A national level workshop on sericulture was organized in partnership with the State Sericulture Directorate, Dehradun on 24th -25th May, 2007. The workshop dealt with the issues of research and extension of sericulture in north-west India.
- A national level Uttarakhand Sustainable Development Summit (USDS) in collaboration with TERI was organized from 19-20-June, 2008. The USDS brought together various stakeholders such as

local government agencies, multilaterals, corporate and researches to discuss the way forward for the sustainable development of the State.

2. INFORMATION, EDUCATION AND COMMUNICATION (IEC): This subcomponent was designed to implement a strategy that identified specific audiences and developed targeted messages to increase general awareness about the project, terms of participation and overall transparency amongst all stakeholders. The strategy targeted the general public and the state's political establishment, the project team, NGOs, GPs, and communities. IEC activities were undertaken with the following objectives:

- For informing and shaping opinions within the community as regards participatory watershed development and their roles in decision making, planning and management of project activities.
- Transparency and accountability.
- Dissemination of technical knowledge.
- Documentation of best practices.

All forms of media from the verbal to the visual were used. Wall paintings writings, flyers, boards, puppet shows, folk theatre and audio visual shows were undertaken at GP level. An IEC consultant was placed in 2006 for developing appropriate communication material. Following IEC activities were under taken:

- Video Gramya Darpan (six monthly Video newsletter)–'GRAMYA DARPAN' was initiated and regularly shown in the project area. A documentation of activities undertaken at GP level were compiled into a video newsletter. The activities were narrated by three protagonists of Gramya Gyanwati, Gyanu and Sujan. These characters with local identities were created to impart specific messages.
- Gramya Darpan (quarterly news letter)- Gramya Darpan news letter on quarterly basis was initiated with documentation of various activities, that were carried out in the field and at the Directorate level.
- Hamara Akhbar (Community newspaper)-A monthly newspaper by the community 'Hamara Akhbar' was also initiated.
- Flyers, posters and folk songs were also produced on regular basis to maximize out reach of project activities and experiences.
- Thematic short Films on livelihood interventions in the project, water conservation, participatory monitoring and pine briquettes were prepared and exhibited.
- Wall paintings/writings display boards, puppet shows; folk theatre, audio-visual shows, etc. were undertaken at GP levels.

3. PROJECT COORDINATION, MONITORING AND MANAGEMENT :

This sub-component had (i) organizational change management initiatives to realign the Watershed Directorate to the new implementation arrangements; (ii) Development of links between the Management Information Systems(MIS), Geographic Information Systems (GIS)and impact evaluation.; (iii) Participatory monitoring; (iv)construction of office and/or residential quarters for field staff (if leasing is not possible); and, (v) incremental operating costs of the WMD.

The following management initiatives were taken at the Watershed Directorate Level to have an effective and efficient service delivery.

Application Of Information Technology: Information Technology was an integral part of the project from project formulation, planning, data base management to monitoring of the project's physical and financial progress and impact assessments, no part remained untouched by the use of information technology.

GIS was used as a planning tool. All the 1110 Micro Watershed (MWS) of the state (excluding Haridwar district) have been digitized. MWS wise data of land erosion, slope, elevation has been converted in digital format and linked with spatial data. Digitized watershed maps with all topographic features, erosion intensity (E1, E2, E3 and E4) with land use as forest, agriculture and blank areas was prepared. These maps were used for project planning and formulation. GIS was used to generate MWS wise/ division wise maps of project area.

GIS and Remote Sensing techniques were also used for Monitoring and impact evaluation of project interventions. GIS and remote sensing imagery (LISS III+ PAN Merge with 8.5 mtr. resolution) was used for establishing baseline for the vegetative and biomass status of the project area. Subsequently, the same technique was applied for change detection in the biomass status due to project intervention at the time of completion. Baseline data of selected villages was linked with spatial data and different thematic maps of selected MWS were generated for monitoring purposes.

Management Information System (MIS)- A MIS software was developed as an endeavour to use IT for management of information. Following five modules were part of the MIS: i) Baseline Module ii) Monthly Progress Report (MPR)- Physical and Financial achievement (FMIS) (Operational) iii) Panchayat Sheet- Progress of Implementation of Gram Panchayat Watershed Development Plans and Farming System Improvement sub- component iv) Training and Capacity Building Module and v) Impact assessment. All modules generated the information from divisional level. Among above modules only Physical and Financial Intervention module was utilized for generating Monthly Progress Reports and Reimbursement claims.

Silt Observation Using Turbidity Meter: Silt observation was carried out as a measure to assess the impact of project interventions on soil conditions of watersheds. To observe the silt status, 41 representative nalas/khalas (RNs) were selected in 39 Micro-watersheds of all project divisions. The

silt data was collected, using Turbidity Meters, on seasonal basis i.e. Winter Season (Oct, Nov, Dec, Jan, Feb and Mar) and Monsoon season (Apr, May, Jun, Jul, Aug and Sep). All the divisions had adequate number of Turbidity Metres for silt observation and were used regularly.

Automatic Weather Stations: Twelve automatic weather stations were placed under the project for generating weather data required for Agriculture and Horticulture crop planning. The automatic weather stations generated various data like minimum and maximum temperature, humidity, rainfall, wind velocity and frost etc. The data was recorded on daily basis and was shared with the KVK scientists and other stakeholders. The procurement and installation of automatic weather station by WMD was done in compliance with the recommendations given in the report of the task force on The Mountain Ecosystems (Environment and Forest Sector) Eleventh Five Year Plan of the Planning Commission GoI, November 2006.

Para 2.4.1 of the task force report states the following: "Establish Network of Meteorological Stations across IHR Create infrastructure for climate change research, especially a network of meteorological stations across IHR, and initiate an integrated study on climatology through coordinated effort among various institutions, garner technical (forecasting, monitoring, mapping and training for professionals) political and financial support for the said programme. Models need to be developed using composite data to predict the changes and quantify their impact in the various ecosystems of the IHR for better management strategies".

Transparency, Accountability And Grievance Redressal Mechanism: The Project placed special emphasis on transparency, accountability, openness and disclosure of information to the community, In keeping with above principles, wide spread disclosure of information through wall writings, paintings, awareness generation campaigns, radio programmes, publications, village level workshop, Samvad workshops were carried out. Besides above, website www.uttara.in/wmd and www.gramya.in was updated daily with the latest monthly physical and financial status of the project.

A Citizen Charter for WMD was prepared and as per the RTI Act, the Public Information Officer at State, Division, Unit and Gram Panchayat level were designated and information displayed. At block level and district level, information regarding the areas/ Gram Panchayat selected under project was widely displayed.

In keeping with the guiding principles of transparency, accountability and openness, a grievance redressal mechanism in UDWDP was put in place. Since the Gram Panchayat was the project implementation agency, grievance redressal mechanism both within and outside Gram Panchayat was required. A website for registering complaints at www.uttara.in/wmd was available. Stakeholders were welcome to use this facility. They could also write through the e-mail ID: wmd-

ua@nic.in or through postal correspondence at the following address– The Office of the Chief Project Director, Watershed Management Directorate, Indira Nagar Forest Colony, Dehradun PIN- 248006.

MAJOR INITIATIVES TAKEN FOR STRENGTHENING OF VILLAGE LEVEL INSTITUTIONS

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 Groups : 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 various Entrepreneur Development Programmes (EDPs), exposure visits, technical advice, support and forward & backward linkages. In the project areas mostly women beneficiaries were organized into Self Help Groups. A total of 536 SHGs were formed in the Garhwal and Kumaon regions with a corpus of INR. 12.5 Million. 88 SHGs were federated to form 15 Federations.

User Groups : For the sustainability and operation and maintenance of the community assets created in the project the concept of User Groups was initiated. User Group consisted of a group of villagers who had a stake in the sustenance of the community assets created. Formation of various User Groups for maintaining assets (related to conservation of water) was an important step in strengthening village level institutions. They manage their assets by maintaining a revolving fund. By the end of the project 1998 User Groups were formed for various water conservation structures having a corpus of revolving fund of Rs. 1.65 Millions.

Farmers Interest Groups : 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 690 FIGs were formed in project area, out of which 589 FIGs were actively involved in agribusiness activities. Twenty seven Farmers Federations were formed and registered under Self Reliant Co-operative Act, 2003. These Farmers Federations helped farmers to reduce their individual

cost of accessing these services by sharing input, processing & marketing costs.

The project enhanced the Administrative capacity of the village communities. About 304 Community members associated with the project in various capacities as motivator, assistant accountant, members of RVC,VG,FIG, & SHG etc. were elected at various levels Panchayati Raj Institutions, Anganwadi, Sarv Shiksha Abhiyan and others. The details of the members are given below:

MEMBERS ELECTED/SELECTED IN VARIOUS POSITIONS

S. No.	How they were linked to the project before/ earlier	Gender			Elected candidate and post
		M	F	Total	
1	**Account assistant**	1		1	BDC member
2		3		3	Pradhan
3		2		2	Sarpanch
4		5		5	Motivator in Sarv Shiksha Abhiyan
5		1		1	BDC member
	Total	**12**	**0**	**12**	
6	**FIG member**	2		2	Pradhan
7		14	4	18	BDC member
8		1		1	Sarpanch
9		1		1	Distt. Panchayat Member
	Total	**18**	**4**	**22**	
10	**Motivator**		9	9	Aganwadi Helper/Worker
11			1	1	Kanishtha Block Pramukh
12			1	1	BDC member
13			1	1	BDC member
14			1	1	Motivator in Sarv Shiksha Abhiyan
15			1	1	Van Panchayat Sarpanch
16			11	11	Pradhan
17			17	17	BDC member
18			1	1	Distt. Panchayat Member
	Total		**43**	**43**	

19	Member of RVC	1		1	BDC member
20		6	1	7	Pradhan
21		1		1	Sarpanch
22		19	13	32	BDC member
23		1		1	BDC member/Up Pradhan
	Total	**28**	**14**	**42**	
24	SHG Member		1	1	Panchayat Member
25			21	21	Pradhan
26			1	1	Up-Pradhan
27			2	2	RVC President/Member
28			94	94	BDC member
	Total		**119**	**119**	
29	UG member	1		1	Pradhan
30		1		1	BDC member
	Total	**2**		**2**	
31	VG President		2	2	Panchayat Member
32		2	10	12	Pradhan
33			3	3	RVC Member
34		9	23	32	BDC Member
35		1		1	BDC member/RVC President
	Total	**12**	**38**	**50**	**50**
36	WWC Chairman	1		1	Kanishtha Pramukh
37		1	1	2	Pradhan
38			4	4	BDC Member
	Total	**2**	**5**	**7**	
39	Van Sarpanch	4		4	BDC MEMBER
40		2		2	Pradhan
	Total	**6**		**6**	
41	PME Member		1	1	Panchayat Member
	Total	**0**	**1**	**1**	
	Grand Total	**80**	**224**	**304**	

CHAPTER -5

COURSE CORRECTIONS DURING THE PROJECT

PROCESS CHANGES

During the project implementation period there were certain process changes through World Bank and State Governments directions. These are enumerated as follows:

Change in the Expenditure Categories: As per World Banks instructions the following changes in the Expenditure Category took place in the year 2007-08.

ORIGINAL (ACCORDING- DEVELOPMENT CREDIT AGREEMENT) PROJECT ALLOCATION OF THE AMOUNT OF THE CREDIT TO EACH CATEGORY FOR ITEMS TO BE FINANCED

S. No.	Expenditure Category	Amount of the Credit allocated (Expressed in SDR equivalent)	% of Expenditure to be reimbursed
1	Goods works and services under subprojects	29,000,000	95%
2	Works (other than sub- projects)	2,500,000	80%
3	Good (other than sub- projects)	4,300,000	100% of foreign expenditure, 100% of local expenditure (ex-factory cost), 80% for local expenditure for other items procured locally.

4	(a) Consultants' services (other than services provided by tax – exempt providers, training workshop and study tours sub- projects)	1,700,000	90%
	(b) Consultants' services provided by tax- exempt providers, training workshop and study tours	8,200,000	100%
5	Operating Cost	1,700,000	80% until March 31, 2007, 60% from April, 1, 2007 until March 31, 2009; and 40% thereafter
	Total	**47,400,000**	

AMENDMENT TO THE CREDIT AGREEMENT – REALLOCATION OF CREDIT PROCEEDS (REF: WORLD BANK LETTER DATED OCTOBER 8, 2007)

S. No.	Expenditure Category	Amount of the Credit allocated (Expressed in SDR equivalent)	% of Expenditure to be reimbursed
1	Goods works and services under subprojects	29,000,000	95%
2	Works (other than sub- projects)	618,382*	80%
3	Good (other than sub- projects)	1,250,043*	100% of foreign expenditure, 100% of local expenditure (ex-factory cost), 80% for local expenditure for other items procured locally.
4	(a) Consultants' services (other than services provided by tax – exempt providers,	1,700,000	90%

	training workshop and study tours sub- projects)		
	(b) Consultants' services provided by tax- exempt providers, training workshop and study tours	8,200,000	100%
5	Operating Cost	1,700,000	80% until March 31, 2007, 60% from April, 1, 2007 until March 31, 2009; and 40% thereafter
6	Goods and works (other than sub-projects)	4,931,575	80%
	Total	47,400,000	

Note (*) Further claims would not be processed under Category 2&3, once category 6 is approved. The balance amount not claimed by the project under category 2& 3 has been transferred to new category 6.

RE-ALLOCATION IN PROJECT COST (IDA CR. NO. 3907-IN) IN THE YEAR 2010-11

There was a need for re-allocation of the project categorywise funding considering the following facts as given below:

- During October/ November 2009 the operational cost of the project was over run and the reimbursement became difficult in this category.
- This issue was raised by the project authorities during the Port folio review meeting in Bhubaneshwar on 24th /25th Feb. 2010 and it was suggested that by the time the additional financing is decided the project authorities may send a reallocation of budget line to meet the expenditure borne on the operating cost. In the meantime, the project has also overrun the category 6-Goods and Works (other than sub Project) in the month of August, 2010.
- In meeting which was held on 29-11-2010 regarding negotiation for additional financing, it was decided that retrospective funding was not possible and hence project should move an application for re-allocation in the original allocation so that the expenditures can be reimbursed in all those categories where the project had over run the allotted funds. The World Bank agreed for Re-allocation of funds vide WB letter dated January 10, 2011. The Re-allocation was done as per the following table:

RE-ALLOCATION TABLE (Figures in SDR)

S. No.	Expenditure Category	Amount of the Credit allocated (Expressed in SDR equivalent)	% of Expenditure to be financed
1	Goods works and services under sub projects	28,000,000	95%
2	Works (other than sub- projects)	618,382*	80%
3	Good (other than sub- projects)	1,250,043*	100% of foreign expenditure, 100% of local expenditure (ex-factory cost), 80% for local expenditure for other items procured locally.
4	(c) Consultants' services (other than services provided by tax – exempt providers)	1,700,000	90%
	(d) Consultants' services provided by tax- exempt providers, training workshop and study tours	6,870,000	100%
5	Operating Cost	2,300,000	80% until March 31, 2007, 60% from April, 1, 2007 until March 31, 2009 and 40% thereafter
6	Goods and works (other than sub- projects)	6,661,574	80%
	Total	47,400,000	

*The Categories 2 & 3 has been frozen.

ADDITIONAL FINANCING IN THE YEAR 2010-11 (IDA Credit 4850-IN)

It was proposed that the Additional credit would help finance the cost overruns largely due to increased costs of goods and services, not sufficiently reflected in the original project costing. While the project had a contingency provision of 2 percent of the total, the Economic and Financial Analysis during the MTR in November 2008 estimated that this provision is largely insufficient. The Additional financing was implemented in line with the project implementation plan and was mainly to continue support to the agribusiness activities already under implementation. These activities were critical for the project to achieve its expected outcomes, i.e. , 10% increase in rural income in the project area. Under the Additional Financing, the project development objective, outcome indicators and the credit closing date (i.e., March 31, 2012 remain unchanged.

ADDITIONAL FINANCING (Figures in SDR)

S. No.	Category	Amount of the Financing Allocated (Expressed in SDR)	Percentage of Expenditure to be financed (Inclusive of Taxes)
1	Goods works and services under sub projects	2,050,000	95%
2	Consultants' services Training workshops and study tours (Category 4a and 4b under the Original Financing Agreements)	1,000,000	90%
3	Operating Cost (Category 5 under the Original Financing Agreement)	330,000	40%
4	Goods and works (other than sub- projects) (Category 6 under the Original Financing Agreement)	1,720,000	80%
	Total	5,100,000	

Renaming of the Gram Panchayat Sub Committee: With the objective of implementing this project through the GPs, the State Government issued a notification whereby the Gram Panchayat Sub-Committee on serial no. 3 the "Water Management Committee" was delegated the additional work of Watershed Management. The committee was renamed as "Water and Watershed Management Committee".

Operation Of The Watershed Development Project Account: The Watershed Development Project Account at the GP level were operated by the Co-signatures of Gram Pradhan and Gram Panchayat Development Officer, due to the shortage of Gram Panchayat Development Officers in the field there was a considerable delay in the operation of this account. With the objective of total decentralization and providing financial autonomy to the Gram Panchayats this practice was amended by the State Government by issuing a notification in this regards whereby instead of the Gram Panchayat Development Officer the Co-signatory would preferentially be the women member of this committee nominated by the Gram Panchayat or if women member was not available then a member nominated by the Gram Panchayat would carry out these duties.

Vulnerable Group: The project design initially envisaged that small income generating microenterprises for vulnerable groups (women and landless) would be implemented through the Self Help Groups identified during the watershed planning process. Midway through the project implementation it was realized that the vulnerable groups should be identified from the category 'C' households identified by the community themselves. Thus the vulnerable group fund for income generating activities was given to the vulnerable groups in individual or joint manner.

AIDE MEMOIRES AND AGREED ACTIONS

- **Project Preparation Mission:** September 17-26, 2003: The project preparation mission visited Uttarakhand and had discussion with preparation team of state. The mission discussed the project objective and components, indicative project cost and co-financing, implementation issues, staffing issues, criteria for selection of target area, fiduciary issues and fund flow, procurement issues, monitoring and evaluation, budget norms for watershed treatment etc. The mission mentioned in its report the high priority action point such as preparation of the draft Environmental and Social Management Framework, Project Financial Management Manual, draft report on accounting and accountability arrangements, preparation of a draft Operational Manual and procurement plan for the first year of operation.

- **The Project Appraisal Mission February 16-20, 2004:** The mission appraised the project preparation and reviewed all documents prepared by State and appreciated the project team for the completing them as scheduled. A formula for the budget envelop for Gram Panchayat Watershed Management Plans was developed and agreed with the Bank.

- **First Supervision Mission: October 13-20, 2004 Main issues and Agreed Actions:**
  - To develop a training module for financial procedures till GP level.
  - Selection of senior level officers for the project at field and headquarters.
  - Selection of FNGO and PNGO.
  - To link Participatory Monitoring with the capacity building of GPs to monitor and post implementation sustainability.

- **Second Supervision Mission: October 14-21, 2005; Main issues and Agreed Actions:**
  - The Water Committee existing within the Panchayati Raj Institution was renamed as Water and Watershed Management Committee (WWMC).
  - The concept of Women Aam Sabha was approved to address the issues of women in the project.
  - Project Operational Manual was redesigned and detailed agri-business strategy developed.

- **Third Supervision Mission: 14-16th June 2006 Main Issues and Agreed Actions :**
  - The World Bank agreed on the procurement of Divisional Support Agency for agribusiness in six divisions.
  - The PNGOs were procured for Dwarahat and Kotdwar divisions.
  - The FMIS/MIS was finalized and made operational.
  - The project team with the FNGO developed the PME action plan.
  - The revised transhumant plans for Garhwal and Kumaon were finalized.
  - The delegation of administrative and financial powers for WMD staff was finalized.

- **Fourth Supervision Mission: 13th -15th , December, 2006 Main issues and Agreed Actions:**
  - The PME format was field tested and the results were submitted to Bank.
  - The Agribusiness Plan for Vikasnagar and Champawat division was finalized with summary of activities and the Agribusiness budget was reviewed and finalized.

- **Fifth Supervision Mission: 10th -15th, June, 2007 Main issues and Agreed Actions:**
  - 50% membership of women in RVC executive committee was made mandatory.
  - A complete final analytical report on PME with an action plan was submitted to the Bank for approval.
  - The Bank proposed converging GPWDPs to micro-watershed plans and development of Medicinal plants strategy (NTFP)

- The livestock based livelihood options was converted as grant and the grant was to be directly released to VG's / SHGs to promote back yard poultry units / brooder units under livelihood support.
- Stall-feeding of goats was to be promoted and at least one goat cluster was to be setup in each of the two regions. Fodder production to be promoted as a high value crop and link farmers to DCSs / Goat VG for marketing cut fodder on a daily basis.
- The procurement of six Divisional Support Agencies for Agribusiness was finalized.
- It was agreed that the Vulnerable Group Fund Activities be grant based.
- The World Bank modified the disbursement categories.
- The Financial Review Committee was appointed.

♦ **Sixth Supervision Mission: 26th -30th, November, 2007 Main issues and Agreed Actions:**

- The Bank advised on preparation of 10 micro-watershed plans by pooling the GP plans.
- 100 demonstration units of Pine Needle Briquetting were to be established in Garhwal and Kumaon regions.
- The Agribusiness Plans for 8 divisions were finalized.
- The paravets were trained in the ULDB for minor veterinary services.

♦ **Seventh Supervision Mission: 23th -28th, July, 2008 Main issues and Agreed Actions:**

- The activity cards for faming system improvement and livestock activities were to be produced.
- A Commerce Graduate was appointed in DPD offices and Account Assistant working in the GPs to be trained.

♦ **Mid Term Review Mission: 17th – 26th November 2008 Main issues and Agreed Actions:**

- An exit strategy to be developed to ensure sustainability of services provided under the project. Operation and maintenance mechanism for common and private assets to be defined.
- The PME exercise to be conducted six monthly.
- An advance provision of up to 25% of the annual action plan to GPs subject to the performance of R1 and R2 returns in the PNGO divisions.
- M&E Consultancy of TERI to be extended to the Final Impact Assessment at the end of the project.

- **Eighth Supervision Mission: 22th -27th, June, 2009 Main issues and Agreed Actions:**
  - A Comprehensive Approach to Drainage Line Treatment was advocated to ensure long-term sustainability of the watershed development activities in 43 selected critical catchment areas (23 MWS from the project and 20 under the GEF project).
  - To ensure sustainability of Agri-business interventions a few critical agri-business issues pertaining to future demand and supply scenarios and the identification of a long term business model were to be fully determined. It required a value chain analytical work in identifying best possible options for the farmers.
  - The Paravet practices though encouraged but were not introduced in all Gram Panchayats.
  - The project objectives was to sustain the fodder production programme at the individual farmer level and not to link farmers to DCS for marketing cut fodder on a daily basis.

- **Ninth Supervision Mission: 23th -27thNovember, 2009 Main issues and Agreed Actions:**
  - The project established agribusiness processing units with the objective of scaling up the agribusiness interventions through value addition. The project also sought cooperation and support of other line departments to enhanced agribusiness and value addition facilities. After evaluation of the outcome of agribusiness models the Govt. may replicate them in the other parts of the State.
  - With the objective of ensuring efficient financial management of the Global Environmental Facility SLEM (Sustainable Land and Ecosystem Management) project the area of which falls within the ongoing UDWDP area. The village level account assistant and project staff already engaged at PMU and regional offices for financial management of UDWDP would also hold the responsibility for SLEM project.

- **Tenth Supervision Mission: 10th -20th June, 2010 Main issues and Agreed Actions:**
  - The Project established 12 (twelve) processing units as a initiative towards the forward linkages to market in all the divisions with the objective of value addition of the raw materials like cereals, spices, vegetables, fruits etc. It was envisaged to hand over these units to farmer federations and to make them sustainable with some hand holding by the project at the time of exit. For quality control the guidelines of Govt. of India and FPO were followed.
  - For O&M of the common assets created during the project, collection of user charges by User Groups was ensured.
  - The Bank wanted the project to form additional 30 Farmer's Federations.
  - An impact assessment in the project in terms of maintaining/improving and spreading the message of IPM and to encourage the use of bio-pesticides was proposed.

- **Eleventh Supervision Mission: 31st January to 5th February, 2011 Main issues and Agreed Actions:**
  - Identify weak FFs/FIGs and develop the guidelines and corrective measures for strengthening of these FFs/ FIGs.
  - The study on use of FYM/bio-compost and bio-pesticide (to cover 50-100 GPs) was carried out.
  - The study on the results of the NPK, organic carbon and micro-nutrient mapping was carried out.
  - Waste management guidelines under ESMF were circulated in the field for compliance.

- **Twelve Supervision Mission: 13th - 19th September, 2011 Main issues and Agreed Actions:**
  - Exit strategy and future business plans for agribusiness were to be developed for three years to ensure the sustainability.
  - The guidelines for the Withdrawal Plan and MoU for the O&M of the common assets finalized
  - ESMF and IPM trainings were imparted to Users groups/farmers.
  - As the project closes by March 2012 the monthly review of GP balance was initiated.


Gair-sain
Fresh
Turmeric / हल्दी
A Product of Uttarakh

CHAPTER -6

WITHDRAWAL AND SUSTAINABILITY

During the project conceptualization and design the issues of sustainability of various project interventions were duly addressed thus the project implementation at the field level was proposed to be done through the Panchayati Raj Institution to ensure the sustainability of CBOs, community and private assets created through the project. The project in its consolidation phase put in place an Exit strategy which clearly defined the roles and responsibilities of local institutions in the maintenance and sustainability of the various assets.

SUSTAINABILITY ISSUES DURING PROJECT IMPLEMENTATION

- Investments at Community level: Investments to be financed at the community level were decided by beneficiary communities through an intensive participatory process including the application of the ESMF. The GPWDPs were approved by a general meeting of the Gram Sabha. Once approved, the investments were physically constructed by user groups or RVCs and the finances and procurements were managed by the GP.
- Institutions at Local level: The project placed the responsibility for approval of GPWDPs with the Gram Sabhas. It placed the implementation responsibility with GPs and provided them with the financial resources to sub-committees (WWMC). Most of these institutions are statutory bodies whose existence is enshrined in legislation and would therefore endure beyond the life of the project. As far as possible, formal parallel institutions at the local level were not established. Furthermore the project provided incentives and capacity building support to GPs. This further encouraged them to continue operating and maintaining the investments financed by the project.
- Decentralized Participatory Approach: The project was designed to assist the State to implement the watershed development programmes applying the principles entailed in the Hariyali Guidelines. In the course of project implementation, it was expected that modifications required for the implementation methodology would be approved by the State and the guidelines suitably modified for its own purposes.

POST PROJECT MANAGEMENT STRATEGY

As per the Project Operational Manual, in the initial stage of implementation with the assistance of MDT and FNGO/PNGO, the WWMC and community were to complete the following tasks as part of the operations, maintenance and post-project management strategy:

- Ensure that each implementer (including the GP, WWMC, RVC, VP, User groups, SHGs, individual beneficiaries) is aware of the operations and maintenance (O&M) responsibilities. Preparation for this started from the very beginning during the planning phase.
- The RVC and VP to carry out a Vision Building exercise to develop long-term sustainable O & M plans for their village and surrounding areas
- A clear set of plans and agreements was developed by WWMC that outlined the responsibility in terms of time and money of each member of the community towards O&M activities, particularly for common properties and assets.
- WWMC to develop and maintain links with and concerned District Line Departments whose assistance it may be required in the management of assets and common properties. The assistance of project staff may be taken in this regard.
- Ensure that any savings achieved from project activities was used for O&M activities or improvements in existing assets and activities.
- Both RVC and VP to attempt to make an O&M fund. Some suggestions in this regard were given:
  - Collection of monthly contributions and/or periodic donations of small amounts from members and other users
  - Collection of fines from members for breach of rules (e.g. non-attendance at meetings, grazing their animals in protected areas, wilful delays in making contributions)
  - Collection of fees in exchange for certain usufruct rights
  - Raising money from group income generation programs such as fishing and sheep rearing
  - Raising money through auctioning of certain rights, e.g. collection of grass from common lands and fishing
- Develop clear rules and guidelines regarding management and usage of O&M funds; open separate bank accounts, rotation of signatories to the account, keeping books and records, making annual plans and budgets, etc.
- Role of project management: The FNGO and MDT/PNGO should develop a detailed timetable of activities they will undertake as part of their exit strategy in consultation with WWMC and the community.

EXIT STRATEGY

Background: During the Midterm Implementation Support Mission from November 17-26, 2008, the Mission suggested to develop an exit strategy at the Gram Panchayat level and to identify possible synergies to be established with ongoing government/externally aided projects in the State to ensure sustainability of project interventions after project completion.

Through various discussions and meetings with the community and project staff an exit strategy was developed for which capacity building workshops were conducted at village and divisional level to Prepare O&M mechanisms for common and private assets. The Exit Strategy prepared was presented in the State Steering Committee meeting dated 23th August, 2010 and the Committee approved the same.

Components: The assets created during the project period are of two types which can be categorized as individual assets and community assets. The options for operation and management of these assets were as follows:

I. **Individual Assets:** The entire responsibility of maintenance of assets created for individual beneficiaries viz. Mangers, vermi-compost pits, chaff cutters, fruit orchards, soil and water conservation structures etc. will be individual beneficiaries themselves. If they need monetary assistance for maintenance, it could be availed though SHG institutions. The various income generation activities taken up by the vulnerable groups to be sustained by themselves with the project providing support in the form of developing forward and backward linkages during the project implementation.

(Responsibility: Beneficiaries)

II. **Community Assets:** A large number of common community assets have been created by the project for the benefit of the village communities. The maintenance of these assets requires intensive participation of communities for which following mechanisms were proposed.

- **Plantations on Community lands:** The local community would avail usufruct benefits from these areas. Van Panchayats would be handed over all plantations. It is essential to protect the plantation through fencing in the initial year. The Van Panchayat would need to provide for watch and ward and maintenance of these areas. The community can decide on the following options for the protection and maintenance of plantations:
  - Rotational watch and ward by all families in the villages.
  - Continuation of existing watcher (chaukidar) with the provision to provide him certain portion of forest produce such as fuelwood, fodder & grasses etc. or on monetary payment basis for which contribution will be collected from beneficiaries.
  - Formation of fire control groups during fire season to combat forest fires
  - GP / VP can get funds through MNREGS for plantation and fencing works in case of major failure.

(Responsibility: GP/VP, UGs)

- **Pasture lands:** The user village/group will be responsible to maintain the pastures as most of the pastures have developed on such land which was previously used for the same purpose.

(Responsibility: GP/VP, UGs)

- **Community orchards:** This activity was mainly done in the civil land of GPs / Revenue village. This land is generally used by the specific group of the concerned revenue village. The users group will maintain such orchards. The UG will decide the amount per year per household for maintenance and for watch and ward of these orchards. This amount will be collected per month or by selling the grass and produce.

(Responsibility: GP/UGs)

- **Land and Water Conservation structures / works:** The farmers & beneficiaries would be motivated about the use and importance of soil and water and protection against erosion. Minor engineering works for soil and water conservation activities were done on the village commons. The Gram Panchayat would be liable for maintenance of these structures. GP will maintain these structures through Mahatama Gandhi National Rural Employment Guarantee Scheme (MNREGS) and Disaster Management Budget.

(Responsibility: GPs)

- **Rural Roads:** Rural roads were renovated/ constructed by the project through GP/RVC for better connectivity with main roads. The user groups of village should be responsible for lesser damages. In case of major damages due to natural calamity, GP would be responsible for its maintenance GPs would be able to manage from funds received from other schemes.

(Responsibility: GP/Beneficiaries)

- **Irrigation Channels:** User groups were made before the construction/ maintenance of irrigation channels. Trainings and workshops would be conducted before the completion of project, to motivate farmers for the successful working and maintenance of such collective assets such as irrigation channels and tanks. Arrangement of revolving fund for the maintenance would be made by the user groups. This fund can be collected on the basis of area irrigated crop season-wise or per months per Nalis from UG members. In case of natural calamity, the UG would request GP to maintain these structures through Mahatama Gandhi National Rural Employment Guarantee Scheme (MNREGS) and Disaster Management Budget.

(Responsibility: UGs/Beneficiaries)

Irrigation Tank : Approximately 40 naali of land can be irrigated through an irrigation tank. The UG will generate revolving fund for maintenance on the basis of area irrigated per crop season per naali. In case of natural calamity, the UG would request GP to maintain these structures through Mahatama Gandhi National Rural Employment Guarantee Scheme (MNREGS) and Disaster Management Budget.

(Responsibility: UGs/Beneficiaries)

Drinking Water facilities: Provision of drinking water facility is given the highest priority by the community. The maintenance of water sources and pipelines would be assured by generating Revolving Fund and labour contribution. Para- professionals would be developed for a cluster of villages for maintenance of these facilities.

(Responsibility: UGs/Beneficiaries)

Multi Utility Centres and Processing Centres: Processing Centres would be handed over to such FIGs/ Farmer Federations. It may be used as a collection centre for the FIGs and the FIGs/ UGs may pay rental charges for its use. A committee of FIGs members and UGs member may decide on the charges. The Multi Utility Centres may be handed over to the concerned Gram Panchayats for its future operations and maintenance.

(Responsibility: GP/FIGs/FF/UGs)

WITHDRAWAL PLAN OF GPs

Access to information and transparency are the most important aspect of project implementation, management and monitoring. The community needs to be aware about their rights, responsibilities, duties and functions. For sustainability of the project interventions the following were proposed:

- It was proposed to develop a Post Management Plan for each GP. The format of the Post Management plan was developed and discussed with field officials and community representatives. The Post Management Plan was approved and embraced by the GP in general body meeting.
- A copy each of the management plan was provided to the RVC chairperson, Gram Pradhan, Block Pramukh , Zila Panchayat President, Deputy Project Director, Project Director and Directorate This would aid in developing coordination and convergence with other programmes.
- After the project completion a Memorandum of Understanding (MoU) was signed by both the parties i.e. GP and project MDT. This MoU had the complete information about the number of community assets created and developed by the project and the cost for future maintenance of the common community assets.

STATE GOVERNMENTS GUIDELINES REGARDING THE UTILIZATION AND MAINTENANCE OF THE VARIOUS ASSETS

The State Government 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. These were as follows:

- All the assets created in the Gramya Project may be entered in a separate Register at the Gram Panchayat level.
- The Multi Utility Centres created in the Gramya Project would be utilized and maintained by the

Gram Panchayat. The ownership of the Multi Utility Centres would be vested with the Gram Panchayat. If the ownership of the land on which the Multi Utility Centre has been established is not of the Gram Panchayat then the necessary procedures of land transfer to the Gram Panchayat may be followed. The Deputy Project Director shall take the letter of consent from the Gram Panchayat while handing over the assets to the Gram Panchayat and copy of the same shall be given to the concerned District Panchayati Raj Officer.

- The Processing Centres established at the Gram Panchayat Level in the Gramya Project shall be utilized and maintained by the Registered Farmers Federations and the various equipments and materials ownership shall be vested with the Farmers Federations. If the Processing Centres have been setup on community land/ building then the ownership of the centres would be vested with the Gram Panchayat. The Deputy Project Director shall take a letter of consent from the concerned Farmers Federations and Gram Panchayat while handing over the assets and a copy of the same shall be given to the concerned District Horticulture Officer.
- The Weather Stations established in the Gramya Project are generally located in Schools, Development Block Offices, Tehsil offices and Kisan Vikas Centres. Thus, the utilization and maintenance of these stations would be vested in these departments/institutions. The Deputy Project Director shall take a letter of consent from the concerned department/institutions while handing over the assets and copy of the same shall be given to the concerned District level department/ institutions.
- To promote the Agri-business component of the Project the services of various Divisional Support Agencies have been taken on contract. As per the contract the assets/equipments provided by the Project to these Divisional Support Agencies shall be handed over to the concerned Deputy Project Director and a separate record of the same shall be kept. Then these assets/ equipments with their records shall be transferred to the Project Director.
- The Project has taken the services of Partner NGOs and Field NGOs for the purpose of project implementation and community sensitization and mobilization. As per the contract the assets/ equipments/ reimbursable etc. provided to the PNGOs shall be handed over the Deputy Project Director (Project Management Unit) along with the list of these items. Accordingly as per the contract the assets/ equipments/ reimbursable etc. provided to the FNGOs shall be handed over to the concerned Project Directors along with the list of these items.

CHAPTER -7

PHYSICAL AND FINANCIAL PROGRESS OF THE PROJECT

CUMULATIVE PHYSICAL PROGRESS:

The cumulative physical progress in various components and sub-components is given below:

Activities	Unit	Achievement till date
1	2	3
1- Participatory Watershed Dev. & MGMT.		
1.1 Promotion of Social Mobilization and Community Driven Decision Making		
I. Investment Costs		
A. Coordination of Social Mobilization NGOs at WMD Social Development Service at Directorate level	nos.	2
B. Coordination of Social Mobilization NGOs at Regional Level /a FNGO Services at PD and DPD level	man year	2
C. NGO Facilitation at Village Level	man year	6151
D. NGOs Services/Consultancy for Social Issues	LS	LS
E Partner NGO	LS	2
F. Purchase of Vehicles (Procurement at CPD level) 4WD Jeep/ Car (For division)	nos.	5
G. Motor Cycle	nos.	10
H. Purchase of Equipments		
Photocopiers, Fax Machine & other equipment etc.	LS	LS
I. Purchase of Furniture	LS	LS

II.	**Recurrent Costs**		
A.	Salaries of Field Officers/field staff	LS	LS
B.	Travel Allowances	LS	LS
C.	Project Allowance	LS	LS
D.	Operation & Maintenance - Vehicles	LS	LS
E.	Operation & Maintenance - Office Expense	LS	LS
F.	Operation and Maintenance - Equipment	LS	LS
1.2	**Watershed Treatments & Village development**		
A.	Watershed Treatments & village development	LS	468
B.	NRM Expenditure	LS	LS
2.	**Enhancing Livelihood Opportunities**		
2.1	**Farming system improvement**		
2.1.1	**Agriculture**		
a.	Terrace repair/vegetative field boundary	Cum	175273
b.	Compact area demonstration	Ha.	2929
2.1.2.	**Horticulture**		
a.	Orchard deve. (250) plants	Ha.	2121
b.	Orchard rejuvenation (250 plants)	Ha.	656
c.	Mehal top work (270 trees per ha.)	Ha.	240
d.	Seasonal/Off seasonal Vegetable Demo.	Ha.	3081
e.	Poly house Demonstration.	No.	834
f.	Poly-tunnel Demonstration.	No.	1247
g.	Bio/vermi-compost Demonstration.	No.	4805
h.	Community fruit plantations Demonstration.	Ha.	453
i.	Introduction of high value crops and medicinal/aromatic plants Demonstration.	Ha.	3105
j.	Procurement of tools/ implements for advance Agri/Horti. etc.	LS	LS
2.1.3.	**Animal Husbandry**		
A.	Breed Improvement programme		
a.	N.B.C.	No.	265
b.	Paravet centre (with 1 month training)	No.	71
B.	Health care programme		

a.	Live stock camp/show	No.	743
b.	Vaccination campaign	No. of doses	225979
c.	Castration of scrub bulls	No.	6935
C.	Stall feeding programme		
a.	Animal shelter/sheds	No.	5066
b.	Mangers	No.	3925
c.	Chaff-cutters	No.	1105
D.	Fodder Development Programme		
a.	Fodder crop Demonstration	Ha.	969
b.	Forage/Pasture development programme		
i.	Forage/Pasture dev.(Soil work)	Ha.	1261
ii.	Forage/Pasture dev.(Plantation)	Ha.	1277
iii.	Biting up (1st year)	Ha.	1150
iv.	Biting up (2nd year)	Ha.	971
c.	Napier/Fodder grass plantation	1000Rm	1745
d.	Establishment of fodder/ grass nurseries (Demonstration with Rs. 50,000 maintenance for five years)	No.	42
e.	Maintenance of fodder/ grass nurseries	No.	36
f.	Procurement of tools/ implements/ other medicines for advance livestock operations	LS	LS
2.1.4	**Forestry**		
a-	Establishment of nursery demo.	No./ P	36
b-	Maintenance of nursery demo.	no.	36
2.1.5	**Miscellaneous innovative activities**		
(I)	(agribusiness input support)	Ha.	7464
(II)	Pine Briquette Module Demonstration	LS	260
(III)	Briquette Stove Demonstration	LS	7500
2.1.6	**Consultancies**	**Ls.**	**Ls.**
2.1.7	**NGO Support**	**Ls.**	**Ls.**
2.2	**Value addition and marketing**		
A.	Pilot fund	LS	Ls.
B.	Consultancy	LS	Ls.
C.	NGO support	LS	Ls.

2.3.	**IGA Fund for Vulnerable Groups**		
a.	EDP Training	LS	Ls.
b.	Transhumant Plan	LS	Ls.
c.	Fund for Vulnerable Groups	LS	Ls.
3-	**INSTITUTIONAL STRENGTHENING**		
3.1	**Capacity Building of Institutions**		
I.	Investment Costs		
A.	Training of beneficiaries		
i.	Training at Village Level (one day)	per event	7678
ii.	Training at Division Level (three days)	person	47822
iii.	State/Inter-state Level Trainings	person	1356
iv.	Exposure Visit within State (3 days)	person	31126
v.	Exposure visit outside state (5 days)	person	1090
B.	Training of staff		0
i.	Trainings	LS	4268
ii.	Exposure visit of staff outside of state	LS	476
iii.	Exposure visit of staff within state	LS	1313
iv.	Overseas Exposure visit/training	LS	18
C.	Workshops		
i.	National /State Level Workshops	event	141
ii.	WMD/PD level workshop /Project Staff	person	12084
iii.	Division level workshop	person	68842
iv.	Unit level workshop	person	133311
v.	Village level workshop	event	10739
vi.	Special workshop at WMD/PD level	person	8697
D.	Support to GP Staff	no. of GPs	468
E.	Incentive Fund	no. of GPs	5
3.2	Information, Education and Communication	LS	Ls.
3.3	Project Management	LS	Ls.
3.4	Information Management, Monitoring & Evaluation (IMME)	LS	Ls.

PHYSICAL PROGRESS UNDER GPWDP IN GRAM PANCHAYATS

(Cumulative of 468 Gram Panchayat)

S.No.	Activity	Unit	Cumulative Achievement
1	2	3	4
A-1	**Agriculture**		
a	Terrace repair / vegetative field boundary	m3	242164.8
b	Agriculture Minikit	Ha	1649.5
c	Thresher Machine	No.	18
A-2	**Horticulture**		
a	Orchard development	Ha.	586.3
b	Polytunnel	No	27
c	Poly House	No	81
d	Bio/ vermi- compost	No.	3297
e	Community fruit plantations	Ha	132.4
f	Homestead plantation	Ha	1043.7
g	Minikit	Ha	1471.0
h.	Seasonal/Off Seasonal Veg.	Ha	426.1
i	Agri/Horti Tools	No.	46
j	Intro. of High Value Crops	Ha.	23.9
A-3	**Livestock**		
i	NBC	No.	7
ii	Stall feeding Programme		
a	Animal Shelter/ Sheds	No.	10252
b	Mangers	No.	4936
c	Chaff cutters	No.	1055
d	Animal chari	No.	65
iii	Fodder Production Progremme		
a	Fodder Minikit	Ha.	395.8
b	Forage production/Pasture Development Plantation	Ha.	378.7
c	Napier Crop Border Plantation	Ha.	127.9

A-4	**Forestry**		
i	Afforestation	Ha.	4462.5
ii	Silvi Pasture	Ha.	669.0
iii	Fuel wood Plantation	Ha.	1655.4
iv	Bamboo Plantation	Ha.	33.0
v	Agave Plantation	Ha.	6.0
vi	Assisted Natural Regeneration of Oak Areas	Ha.	27.0
A-5	**Energy conservation**		
i	Bio Gas Plant	No.	20
ii	Solar Panel	No.	692
A-6	**Drainage Line Treatment& Soil Conservation**		
i	Off farm measures		
a	Construction of vegetative check dam	No.	4381
b	Construction of dry stone check dam	m3	322247.2
c	Construction of crate wire check dam	m3	226520.1
d	Road Side erosion control	m3	82320.9
f	Land Slide Treatment	Ha.	30466.2
g	Retaining Wall	m3	19799.3
h	Cement masonry check dam	m4	4538.4
ii	On Farm Measures		
a	Vegetative Treatment	Ha.	0.0
	Vegetative Treatment	Rm	186278.1
b	Construction of spur (river training work)	m3	5925.6
c	Riverbank Protection	m3	144800.0
d	Construction of cross barrier	m3	2574.8
e	1:6 C.C. Mortar work (including 3911 RM. of diversion drain)	m3	18626.1
A-7	**Water Harvesting**		
a	Irrigation Channel	Km.	578.6
b	Irrigation Tank	No.	2233
c	Roof Water Harvesting Tank	No.	19113
d	Village Pond	No.	554
e	Well construction /Digging / Repairing with pump & Diesel Engine	No.	34

f	Potable Water supply- Hand pump	No.	0
g	Potable Water supply- Pipeline	Km.	47.5
h	Tal/Naula/Khala Rejuvenation	No.	2709
i	L.D.P. Tank	No.	68
j	Khal-Chal	No.	584
A-8	**Road Programme**		
a	Rural road improvement	Km	845.8
b	Construction of Bridges	No.	319
A-9	**Kisan Nursery**	**No**	**6**
B	Natural Resource Management (N.R.M) Activities (Inter GP space)		
i	Afforestation	Ha.	11.0
ii	Fuel wood Plantation	Ha.	18.0
iii	Bamboo Plantation	Ha.	41.0
iv	Agave Plantation	Ha.	23.8
v	Forage Pasture Development	Ha.	71.5
vi	Assisted Natural Regeneration of Oak Areas	Ha.	57.0
vii	Forest fire management	Ha.	340.5
viii	Conservation of water resources	Ha.	40.0
B-1	**Drainage Line Treatment& Soil Conservation**		
a	Construction of vegetative check dam	m3	477.0
b	Construction of dry stone check dam	m3	2453.5
c	Construction of crate wire check dam	m3	906.1
d	Road Side erosion control	m3	216.5
f	Kacha Pond	m3	11.0
h	Diversion drain	Rm	320.0
i	Khal/ Chal Rejuvenation	No.	9

Cumulative Financial Progress: The cumulative financial progress in (IDA credit no. 3907-IN, and 4850-IN) various components and sub-components since inception is given below:

(In ₹ lakh)

Activities	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	Total Expenditure
1	2	3	4	5	6	7	8	9	10
1- Participatory Watershed Dev. & MGMT.									
1.1 Promotion of Social Mobilization and Community Driven Decision Making	34.92	443.88	823.77	984.30	1247.62	1446.66	1519.50	1566.06	8066.71
1.2 Watershed Treatments & village development.	0.00	54.40	1187.31	2847.55	3203.21	4389.78	4029.07	2910.81	18622.13
Sub total-1	**34.92**	**498.28**	**2011.08**	**3831.85**	**4450.84**	**5836.44**	**5548.57**	**4476.88**	**26688.84**
2. Enhancing Livelihood Opportunities									
2.1 Farming system improvement	0.00	277.49	590.41	988.33	1052.05	1176.51	1630.17	1207.82	6922.79
2.2 Value addition and marketing	0.00	0.00	17.05	75.23	103.05	195.98	213.24	237.86	842.41
2.3 IGA Fund for Vulnerable Group	0.00	5.62	36.99	125.21	212.11	271.53	306.12	194.99	1152.58
Sub total-2	**0.00**	**283.11**	**644.46**	**1188.78**	**1367.21**	**1644.02**	**2149.53**	**1640.66**	**8917.77**
3-INSTITUTIONAL STRENGTHENING									
3.1 Capacity Building of Institutions	44.08	279.01	400.93	486.35	559.58	475.88	513.39	406.86	3166.09
3.2 Information, Education and Communication	26.40	105.09	119.57	151.34	128.73	140.32	160.83	188.61	1020.87
3.3 Project Management	21.60	463.50	372.10	448.84	515.38	592.00	625.75	692.53	3731.69
3.4 Information Management, Monitoring & Evaluation (IMME)	2.52	34.81	90.27	200.67	168.89	136.62	130.07	190.85	954.69
Sub total-3	**94.60**	**882.40**	**982.87**	**1287.20**	**1372.57**	**1344.82**	**1430.04**	**1478.85**	**8873.35**
TOTAL (Budgeted)	**129.52**	**1663.79**	**3638.41**	**6307.82**	**7190.62**	**8825.27**	**9128.14**	**7596.39**	**44479.96**
Beneficiary contribution	**0**	**71.07**	**299.39**	**502.88**	**563.64**	**812.82**	**1165.63**	**924.77**	**4340.20**
Grand Total	**129.52**	**1734.86**	**3937.80**	**6810.70**	**7754.26**	**9638.09**	**10293.77**	**8521.16**	**48820.16**

Financial Profile of the Project: The status of reimbursement claims (for IDA Cr. 3907-IN & 4850-IN) is given as below:

(INR Lakh.)

Financial Year	2004 -05	2005 -06	2006 -07	2007 -08	2008 -09	2009 -10	2010 -11	2011-12
Reimbursement Claimed	00	699.64	2264.98	4577.34	5552.93	7116.10	7805.35	5999.60
Reimbursement in Pipeline	00	00	0	00	00	00	00	343.83
Total Annual Reimbursement processed	00	699.64	2264.98	4577.34	5552.93	7116.10	7805.35	5999.60
Cumulative Reimbursement position	00	699.64	2964.63	7541.97	13094.89	20210.99	28016.35	34015.94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CHAPTER -8

MONITORING ARRANGEMENTS

MONITORING ARRANGEMENTS:

External Monitoring (Baseline, MTR and Final Impact Assessment consultancy): The Energy and Resources Institute (TERI) New Delhi was the External M&E Consultant for Baseline, MTR and Final Impact Assessment consultancy for UDWDP. The procurement was carried out through an NCB process using QCBS method. Baseline survey-TERI was involved with the project for developing baseline and to undertake midterm impact assessment in selected villages. A multistage process was followed for developing the baseline for the project. It involved developing sampling framework, designing questionnaires, staff selection and capacity building, field testing, pilot surveys and refining questionnaires, field surveys, data cleaning and entry and finally data compilation and aggregation.

Baseline Survey it was carried out at the levels of GP, RV, and HH. Both quantitative and qualitative methods of research were employed. Several approaches such as interviews and group discussions were adopted to generate desired information from the respondents. The baseline dataset on 265 indicators was provided. The data was reported at the Gram Panchayat level, irrespective of the questionnaire from which they were derived.

Midterm impact assessment: The scope of TERI's assignment included conduction of a baseline survey to provide the foundation for the MTIA, and actual conduct of the MTIA to determine whether the project objectives, set in terms of outcome indicators (results framework) as defined in the Project Appraisal Document (PAD) have been achieved. The sample for the assessment was 40 project GPs, 40 Revenue Villages (one in each GP), and 400 households (10 in each Revenue Village). The impacts in the sample GPs were assessed against 15 control GPs.

Final Impact Assessment: The TERI was awarded the consultancy for Final Impact Evaluation of the project. The Final Impact Evaluation was carried out in 50 GPs among the 100 sample GPs in the Base Line Survey and 23 GPs were common with the Midterm evaluation samples. A total of 101 RVs (2 RVs

per GP on an average) were sampled. Within each RV, atleast 8 households were selected with proportional representation to each socio-economic group to obtain a sample of 800 households. The Control Group consisted of 15 GPs, 30 RVs and 300 households with socio- economic features similar to the treatment group but without any watershed intervention in the recent past. The results of the Final Impact Evaluation report have been elaborated in Chapter-9.

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. Performance Indicators at Govt. Level and WMD level were formulated and were used for assessment.

Participatory Monitoring and Evaluation (PME): PME was introduced in project to not only to gauge the performance of the project but, more importantly to make timely improvement in the working of all stakeholders. A series of consultative village level workshops were conducted in 19 selected project villages in May-June 2006 to identify and develop PME Indicators. Initially Twenty-Nine indicators were selected for assessment by the community, with regards to the level of awareness about project, participation, inclusiveness and equity, transparency, creation of assets and financial management.

Under the guidance of WMD the social development experts, after various sessions of feedback, revision and modifications were including the feedback from the community. Six objectives were finalised with 28 indicators. Appropriate execution methods or tools were practiced to exercise these set of PME indicators at regional level. After Mid Term Review (MTR) it was decided that the frequency of PME exercise should be reduced to six monthly basis and Twenty five indicators were finalized on the basis of nine broad objectives i.e. Awareness, Inclusiveness and equity, Transparency

and accountability, Financial management, Performance of committees and Group, Inputs by Multi disciplinary team, Grievance redressal and Execution of Withdrawal Strategy. The PME exercises acted as a progress measuring and community feedback assessment tool.

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

Constitution of PME team at GP level was done followed by the team's orientation and training on the conduction, importance and sanctity of the PME so as to ensure maximum participation. Sufficient publicity was given as regards the date, time, venue and importance of the PME. Prior to conduction of actual exercise, orientation of DPDs, FNGO and MDTs as regards the conduction, importance and sanctity of PME by way of number of orientation trainings, meetings at WMD, Division and Unit level was carried out. Data collection on selected participatory indicators through simple PRA methods that were flexible and adapted to the local context was done. The tools applied were mainly Ballot box exercise, focused group discussions, physical verification of assets and review of records. By end of project PME was done in all the 468 GPs.

AUDIT ARRANGEMENTS

Internal Audit: The project accounts were subjected to quarterly internal audit by a firm of Chartered Accountants engaged by the WMD. M/S Sachdeva and Co. were hired as the Internal Auditors for the project. The Internal Auditor conducted quarterly and annual audits and submitting Annual Financial Statement to the World Bank and Department of Economic Affairs (GoI). The Internal Auditor completed audit for the FY 2004-05, 2005-06, 2006-07, 2007-08, 2009-10, 2010-11. The statuses of the reports of Internal Auditors are given below:-

S. No.	Financial Year	Dates of submission of Annual Financial Statement to the World Bank and DEA (GoI)
1	2004-05	705/3-7-1(S.O.E) Dt. 20-09-2005
2	2005-06	489/3-7-1(S.O.E) Dt. 31-08-2006
3	2006-07	878/3-7-1(S.O.E) Dt. 04-10-2007
4	2007-08	540/3-7-1(S.O.E) Dt. 23-08-2008
5	2008-09	530/3-7-1(S.O.E) Dt.29-08-2009
6	2009-10	207/3-7-1(S.O.E) Dt.30-07-2010
7	2010-11	418/3-7-1(S.O.E) Dt. 16-08-2011

External audit: The CAG through its offices in Uttarakhand were the statutory auditor for the project. The CAG's office conducted annual audit of the operations of the WMD and its constituents at the regional and district levels. The CAG also covered the GPs on a sample basis. So far the CAG has carried out audit for FY 2004-05, 2005-06, 2006-07 and 2007-08, 2009-10, 2010-11. The status of various SOE audits are given below-

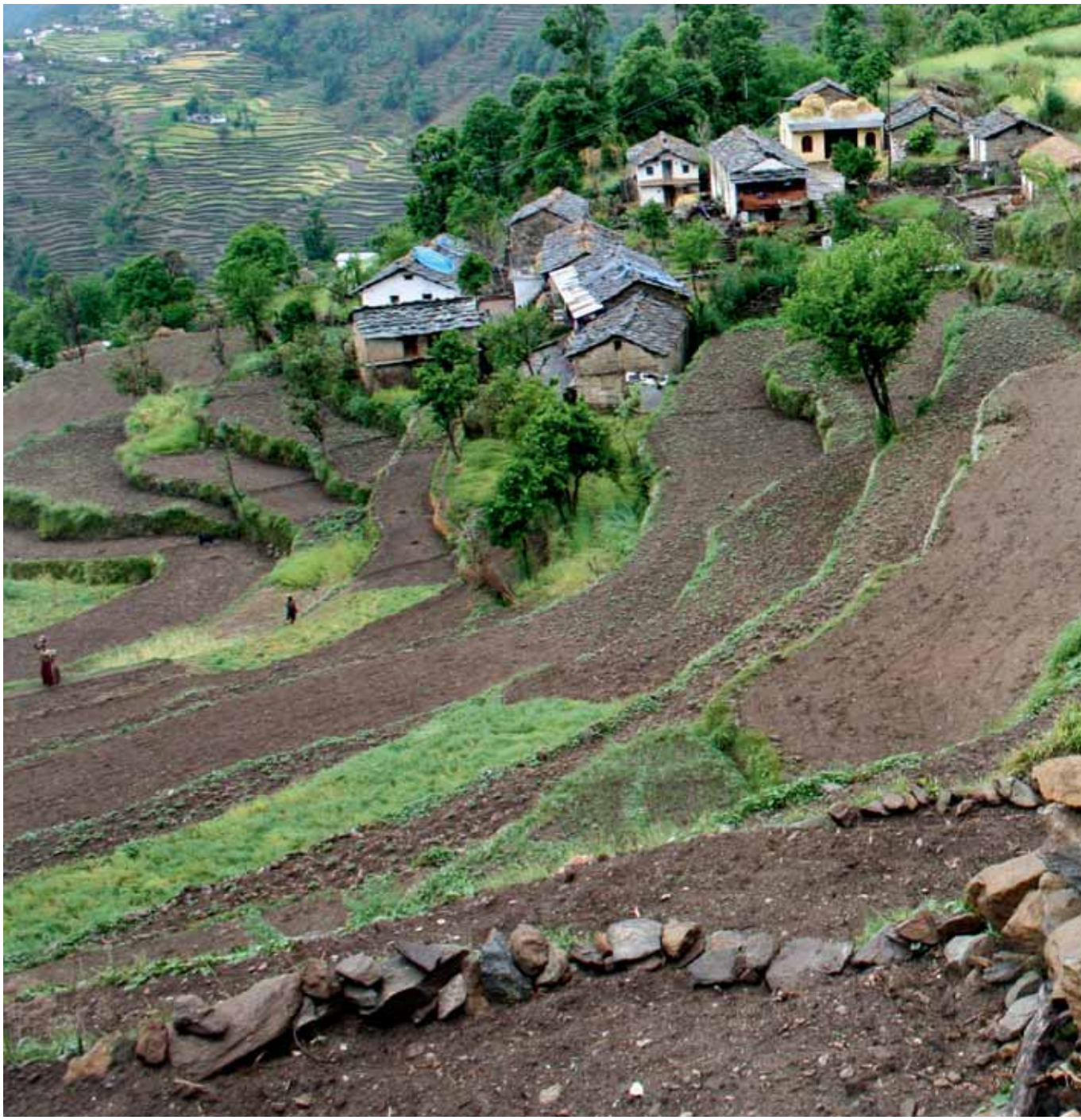
S. No.	Financial Year	Dates of submission of Annual Audit Report to the World Bank and DEA (GoI)
1	2004-05	250/3-7-1(S.O.E) Dt. 27-12-2005
2	2005-06	656/3-7-1(S.O.E) Dt. 15-09-2006
3	2006-07	1206/3-7-1(S.O.E) Dt. 12-11-2007
4	2007-08	843/3-7-1(S.O.E) Dt. 24-09-2008
5	2008-09	839/3-7-1(S.O.E) Dt. 09-10-2009
6	2009-10	1000/3-7-1(S.O.E) Dt.29-10-2010
7	2010-11	1012/3-7-1(S.O.E) Dt. 13-10-2011

Status of Prior Review Consultancy: Following are the details of prior review NCB procurements. No objection was sought from Government of Uttarakhand and World Bank at various stages of procurement.

Sl. No.	Year of procurement	Consultancies that were procured
1	2005-06	FNGO, Kumaon (HSC Pithoragarh)
		FNGO, Garhwal (Manav Bharati, Dehradun)
2	2006-07	PNGO, Kumaon (INHERE Masi, Almora)
		PNGO, Garhwal (ASEED, New Delhi)
3	2007-08	Baseline and MTR (TERI, New Delhi)
		DSA for Gangolihat Division (Society for Uttaranchal Development & Himalayan Action (SUDHA) Almora)
		DSA for Chinyalisaur Division (Himalayan Action Research Center (HARC), Dehradun)
		DSA for Augustmuni Division (Centre for Business Entrepreneurial Development (CBED))
		DSA for Gairsain Division (Himalayan Action Research Center (HARC), Dehradun)
		DSA for Nainital Division (Central Himalayan Environment Associate (CHEA), Nainital)
		DSA for Bageshwar Division (Grameen Evam Krishi Vikas Samiti (GKVS) Nanital)
4	2008-09	-
5	2009-10	-
6	2010-11	Final Impact Evaluation (TERI), New Delhi

Status of Post Review Audit: Post Review Audit by the Bank auditor (Price Water House Coopers) was carried out for FY 2005-06, 2006-07, 2007-08, 2008-09, 2009-10. The observations by them were 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 for financial year 2004-05, 2005-06, 2006-07, 2007-08,2008-09,2009-10, 2010-11 and 2011-12 for all the GPs was completed.



CHAPTER -9

EVALUATION OF THE PROJECT BY EXTERNAL CONSULTANTS

The project had contracted and external consultant through QCBS method for the Baseline, Midterm and Final Impact Evaluation of the project.

EXTERNAL CONSULTANCY FOR BASELINE, MIDTERM AND FINAL IMPACT ASSESSMENT OF THE PROJECT

The external consultancy for the Baseline Survey and Midterm Impact Assessment was awarded to The Energy Research Institute (TERI), New Delhi. The Baseline Survey and Midterm Impact Assessment study was given in the year 2007-08 for an amount of INR 2, 24, 25,328. The Final Impact Assessment study was also later awarded to TERI in March 2011 for an amount of INR 1,03,06,984.

Sampling Size

For the Baseline Survey undertaken by TERI, 100 GPs were selected out of the total set of project GPs, as per the ToR for the assignment. Since implementation of the project was planned in phases, the sample selected provided due representation to GPs belonging to each implementation year. The GPs where implementation started early were given progressively higher weights – on the assumption that impacts were proportional to the time elapsed between year of implementation year (start year) and the year of impact evaluation. This was meant to ensure that the mid-term impact assessment adequately captured project impacts for early phase GPs (since a proportionately higher number of these GPs were included in the sample for baseline survey). Among the GPs allocated to each implementation year, sampling was done using topography as a stratification variable (ridge/middle/valley).

For the Midterm Impact Assessment undertaken by TERI, 40 GPs were selected from among GPs with implementation years 2004-05 and 2005-06. Since the assessment was done in 2008, GPs where implementation was taken up in later years were not included in the sample.

15 GPs were selected as control (from non-project micro-watersheds) for the Baseline Survey and Midterm Impact Assessment. In the control GPs, no interventions under UDWDP or any other watershed programme have been carried out. While selecting control GPs, care was taken to ensure

that overall socio-economic characteristics were similar to the selected project GPs as far as practicable. The same control group was used for the final assessment.

The Final Impact Evaluation was carried out in 50 GPs among the 100 sampled GPs in the baseline survey. Of the 50 selected GPs, the Midterm Assessment had been carried out in 23 GPs (about 50% of the total).

For each selected GP (both project and control), 1 to 4 Revenue Villages (RVs) were sampled – with a total sample of 101 RVs (2 RVs per GP on an average). Within each RV, at least 8 households were selected with proportional representation to each socio-economic group to obtain a sample of 800 households. (A similar approach was used for selecting 10 sample households per RV in the Baseline and Midterm Assessment). As far as practicable, efforts were taken to re-visit the same households (at least 8 of the 10) that were interviewed in the baseline survey. The control group consisted of 15 GPs, 30 RVs and 300 households with socio-economic features similar to the treatment group but without any watershed intervention in the recent past (about four years).

As per the Midterm Impact Assessment Report the project had achieved its midterm targets. The trends of the various interventions were as follows (Source: Status of Project data Collected from Field and MTR report of TERI):

- Social mobilization resulted in formation of community institutions viz. 447 WWMC, 930 RVC, 677 FIGs.
- Approx. 70% of target households were found to be involved in preparation of GPWDP.
- The women focus in the project resulted in high participation of women in project activities.
- Up to 52% benefits found to be flowing to 'C' category household which constitute the vulnerable groups in the project.
- The number of people provided labour from the vulnerable group for works was in the range from 60%to100%.
- Demonstrations of improved varieties resulted in crop diversification as well as enhancement of productivity of crops.
- The aggregate increase in area under improved varieties was found to be 7%.
- Increase in area under improved varieties of paddy was 5.07%, wheat 8.52%, Madua 10.92%, Maize 14.14%, Tomato 332.88% and Cauliflower 189% in sampled GPs.
- Increase in productivity of agriculture and horticulture crops due to adoption of improved varieties. Productivity increase of 15.61% in Paddy, 10% in Wheat, 24.5% in Madua, 13.03% in Maize, 14.10% in Tomato, 10% in Cauliflower was observed.
- Adoption of improved farming techniques by the farmers in the project area was observed.
- Under Agribusiness, approx. 5368.5 tons of vegetable produce had been marketed from the project area. The gross returns were to the extent of Rs. 444.8 Lakh.
- Market linkages with Mother Dairy and other local and outside Mandies were established.
- Increase in income from project intervention was approx. 12% in sampled villages (After adjusting for inflation).

- Increase in fodder availability across all categories was about 3%.
- Shelters and Mangers had increased the usage of stall feeding practices.
- Extent of irrigated agricultural land had increased by 10% in sampled GPs. Relative contribution of sources was as follows: Canal/ Gul- 54%, Tank- 23% and Water Harvesting Structures- 1%.
- PME had evolved as a forum and process for involving stakeholders in monitoring the project implementation progress (quality and quantity). It was also turning out to be an important feedback mechanism from the stakeholders to the project.
- Leadership building amongst community members in the project area was observed. About 66 community members associated with the project as motivator, assistant accountant, members of RVC, VG, FIG and SHG had been elected as Gram Pradhan or ward member in the Panchayat elections held in Sept. 2008.
- About 94% of the families in the sampled GPs were found to be aware of the project objectives while 87% of families were aware of content of respective GPWDPs.
- Up to 55% increase in frequency of Gram Sabha meetings has been observed in sampled GPs. Further increase in attendance of upto 60% while participation of women and vulnerable group members was 91% and 72% respectively.
- 92% of sampled GPs reported enhancement in capacity to maintain accounts. The annual audit of GP account by a firm of Chartered Accountants empanelled with CAG had been conducted in all the GPs up to 2006-07.
- An average increase of 101% in number of project related GP meetings was observed in sampled GPs while increase in attendance was found to be up to 39%.
- Administrative capacity of staff had also increased.
- Action was taken on 84% of monitoring reports (that needed action)
- About 72.49 lakh mandays had been generated in the project since inception of the project.

The Final Impact Assessment report of the project summarises the impact of the project interventions as follows: The project has performed well in terms of achieving enhanced potential of natural resources and enhanced incomes, the standout feature would be its effective social mobilization strategy, leading to broad-based participation in various project processes, and significantly, the inclusion of Vulnerable Groups.

Improving the productive potential of natural of natural resources

- The productivity and irrigated area under almost all key crops showed an increase. The increase in area (21%) and value (27%) were significantly higher than the target values. (The increase in value captured the combined impact of the increase in area and the increase in productivity of

the key crops). The key reasons for such increase were the increased availability of water due to soil and water conservation activities.

- Community fruit plantations and homestead plantations were key interventions and fallow lands in several GPs were gainfully utilized for this purpose. Poly houses and poly tunnels were a major contributing factor to the growth of offseason vegetables.
- Wherever processing centres were established, post harvesting operations were successfully adopted in the grading and packing of vegetables, spices, pulses etc, grinding and packing of spices, preservation of fruit juices, and making of pickles. Commercial packing with different trade names proved to be attractive for sale of these products in local markets, fairs and even in the outside market. Agribusiness ventures were successful in several places and there existed several innovative cases. The agribusiness activity in Garsain deserved particular mention on account of its innovative arrangement of 'reverse profit'.
- The number of livestock belonging to improved breeds showed a notable increase. Members of Vulnerable Groups were the major beneficiaries. On the whole, there was 19% and 191% increase in the holdings of improved breed cows and buffaloes respectively in the sampled GPs.
- Introduction of improved fodder grasses and crops on farm boundaries and uncultivated land, increased availability of agriculture waste residues and protection of common land from grazing, there was an overall 9.6 % increase in fodder availability over the baseline. The average fodder production ranged between 0.5 -5.67 q/ha/year across different land uses. The highest percentage change (24.18%) in availability of fodder was recorded for irrigated agriculture land suggesting that farmers in the project area were motivated to grow fodder crops / trees on the bunds / risers of their agriculture resulting in increase in fodder availability.
- The percentage change in household dependency for fodder and grasses from private agricultural/barren land/other land was the highest (13%), while dependency on fodder from forests and feed purchased from market declined by 8% and 5% respectively. The average time taken for fetching fodder had reduced. On an average, there was an 11% reduction in time spent on collecting fodder by a household.
- It was observed (based on remote sensing techniques) that the biomass of the treated areas had increased by 9.37% from 2004-05 to 2011-12 (across treated micro watersheds). The area which was covered was Van Panchayats, civil soyam forests and barren/ fallow lands. These changes were on account of increase in vegetation cover due to new plantations under the project and natural regeneration of grasses, shrubs and tree seedlings because of the protection against grazing and over usage. The average survival percentage within the surveyed sites was around 45% in a range of 23% to 85%.
- The treated plantation sites had higher values of diversity and species richness as compared to the control sites. The shrubs had higher diversity values and species richness as compared to the tree and herb species. Increase in the species richness and diversity index were largely due to

effective dry stone fencing and watch and ward in plantation sites.

- The impact of soil and water conservation measures was seen in terms of increased amount of irrigated land (increase of 24.7%), an increase in crop yields and an increase in access to domestic water.
- The time spent in collecting water had significantly reduced with a sharp increase (48%) in the number of households taking < 1 hour to collect water and a similar decrease (39%) in the number of households taking between 1-2 hours.
- In terms of efficacy of impacts, it was seen that turbidity levels during monsoon months had reduced significantly in the case of successful catchment treatments.

Increase in incomes of rural inhabitants

- The total increase in income across all categories was 57%, but increase in farm income was overall higher (61.1%) than non-farm incomes (56.6%). The total increase in income of 57% translated to a real income increase of 17% when adjusted for inflation using the Consumer Price Index (CPI) for rural labourers, using agricultural year average values, and accounting for the impact of non-project interventions. There was almost a doubling in the ownership of consumer durables, indicating a general increase in living standards.
- The economic analysis of the project included benefits from agriculture, livestock, horticulture, forestry, soil conservation, domestic water and employment. Following the approach used in the PAD, aggregate level economic analysis had been done. The Benefit Cost Ratio (r=8%, t=10 years) worked out to 2.63 including the employment benefits. The Economic Rate of Return was estimated at 18.5%.
- Economic analysis had also been done for selected interventions as well as for selected IGAs. Irrigation channels and irrigation tanks returned BCR values of 1.36 and 1.54 respectively over a 10 year horizon, indicating their economic viability even in the medium run. Almost all IGAs returned favourable BCR values with traditional/caste based IGAs such as carpentry and blacksmithy returning the highest values, indicating that project support to buttress existing skills provided quicker returns.

Socially inclusive, institutionally and environmentally sustainable objectives

- Decentralized institutional approach had helped to enhance levels of participation at various levels. Participation in Gram Sabha and Gram Panchayat meetings showed a sharp increase. For example, the attendance percentage in Gram Sabha meetings had doubled and the attendance percentage of women in Gram Sabha meetings had increased fivefold. The average number of GP meetings had increased from 5.28 in a year to 11.14 in a year.
- The assessment also pointed towards a high degree of transparency in various project processes. An average of 78.96% of total households in a Gram Panchayat had been involved in the preparation of GPWDP. An average of 48.7% of the community members was aware of GP budget

and expenditure and 91% of households were aware of project objectives, activities and methodologies.

- Formation and successful functioning of a large number of SHGs under the project with a majority of women members was an indication of awareness generation among the women. The Income Generating Activities for Vulnerable Groups had led to significant livelihood enhancement for weaker sections and led to high economic returns in the short run. The emphasis placed on activities for non-landed households in parallel with land-based interventions had an equity-enhancing impact.
- The credit for strong involvement of women and weaker sections of society in the project activities went in large measure to the FNGOs. The involvement of PNGOs in two Divisions was seen as an important innovation and a progressive feature of the project. This experiment of handing over the roles and responsibilities of the government machinery to civil society organisations in a multi-disciplinary project of this scale was quite successful and it was observed that while the teams fielded by the PNGOs had relatively fewer years of experience, their levels of motivation and openness to new ideas was high.
- Though the initial response to the process of FIG formation was low, as the produce of off-season vegetables and cash crops increased and farmers started selling the surplus, the response picked up and helped establish the necessary market linkages.
- For the purpose of post-project maintenance of structures created under the project, 1943 user groups (UGs) were formed. The collection of a small monthly sum from the members for the maintenance of the structures would not only help in sustainable operations of the structures in a physical sense, but also would help foster group cohesion. Since most of these structures benefit a well-defined group of individuals, the interest in maintaining them was found to be very high.
- The level of transparency in the project was quite high largely on account of different levels of auditing (CA, Internal and CAG) and regular Participatory Monitoring and Evaluation (PME).
- Most of the interventions undertaken under the agriculture and horticulture component had strong potential of sustainability. For instance, minikits had been effectively utilized by almost all the farmers and wherever the productivity had substantially increased, the farmers had retained the seeds to be used for the next agriculture season.
- The soil conservation structures that withstood the heavy rainfall in 2010 and 2011 had served their purpose to a large extent, and the formation of UGs for maintenance of these structures was a step towards ensuring post-project sustainability.
- In case of plantations, most of the activities had been taken up in Van Panchayats, managed by Van Panchayat Committees with strict codes of conduct and usufruct sharing. It was expected that these institutions would ensure adequate upkeep of the plantations.

RESULTS FRAMEWORK

PDO

To improve the productive potential of natural resources and increase income of rural inhabitants in selected watersheds through socially inclusive, institutionally and environmentally sustainable approaches.

Outcome indicators

- 10% increase in household net income (in real terms) in targeted villages. (Rs/HH) (Achievement: 17%)
- 10% increase in vegetation increase in vegetation and biomass index of treated watersheds (Achievement: 9.37%)
- 10% increase in percentage of households accessing water for domestic use. (Achievement: 12% increase in households accessing tap water, attributable to RWH structures)
- 15% increase in irrigated area in treated areas. (Ha) (Achievement: 24.7%)
- 20% improvement in administrative capacity of GPs as measured by performance indicators.

a. Overall attendance in Gram Sabha meetings increased by 102.5%
b. Attendance of women in Gram Sabha meetings increased by 482.33%
c. Attendance of VG members in Gram Sabha meetings increased by 200.56%
d. Number of Gram Panchayat meetings increased by 110.98%
e. Attendance in Gram Panchayat meetings increased by 52.05%

Intermediate Results One per Component

Component One:

a) Communities are mobilized and prioritize their own mix of watershed and village development technologies by actively involving all households

Results Indicators for Each Component

Component One:

- 80% of households are included in preparation of GPWDP (Achievement: 78.96%)
- 60% of financial allocation in GPWDP to

b) GPs directly implement the mix of watershed treatments and village development investment using appropriate User Groups / sub – committees at revenue village levels (if necessary)	address soil conservation measures, water resource management, forest fuelwood and fodder management indentified during PRA exercise (Achievement: 65.43%) • More than 50% of GPs have treated 80% of area proposed for treatment in the approved GPWDPs (Achievement: 52%)
PDO **Component Two :** a) New high value crops, horticulture and livestock technologies have been adopted by farmers and/or herders.	**Outcome indicators** **Component Two:** • 10% increase in area over baseline of improved varieties, high value crops (Ha) (Achievement: 21%) • 10% increase in fodder production over baseline (Achievement: 9.6%) • 1% increase over baseline in number of improved breed (No. Cows in sample households) (Achievement: 19% (cow), 191% (buffalo) • 15% in net value of produce realized by farmers in treated area (Achievement: 27%)
b) Appropriate technologies for grading, storage and processing, and market linkages have been adopted by farmers to increase the value of their produce.	• 30% increase in number of functioning SHG (Achievement: >30%) • Number of Income Generating Activities funded under the project (Achievement: 4573) • 15% increase in average net income generated by Income Generating Activities for Vulnerable Groups Households (Rs/HH) (Achievement: 29.6% in real terms)

c) Vulnerable groups (including women and landless) establish income generating activities through VGs o SHGs	• 50% of IGAs still active after two years from the start of activity (Achievement: 90%)
Component Three:	**Component Three:**
a) GPs and other relevant local institutions have developed sufficient capacity to design, prioritize, implement watershed treatment and operate and maintain assets created	• At least 50% attendance in statutory Gram Sabha meetings (% of households) (Achievement: 46.8 %) • 50% of GP constituents aware of annual budget and expenditures (Achievement: 48.7%) • 80% of GPs targeted under project having satisfactory annual audit report (Achievement: 100%)
b) All stakeholders are informed and educated about key design and participation features of the project using targeted messages evolved through a comprehensive communication strategy.	• 50% of target households aware of project objectives, activities and methodologies (Achievement: 91%)
a) Effective and efficient project coordination, management, monitoring and evaluation system are established and operational	• PME regularly (at least 3 times) carried out in 400 GPs and reports received by WMD (Achievement: PME carried out regularly (at least thrice) in all sampled GPs) 90% staff deployment as per agreed schedule (Achievement: 100%)

INDEPENDENT STUDIES CONDUCTED IN THE PROJECT AREA

Independent Researchers, Students from various disciplines and Institutes had also conducted studies in the project area and evaluated it from different angles. The conclusions of their studies are summarised as follows:

- **Study on "Effectiveness of Soil & Water Conservation Measures in Kumaon Region" by P.V. Singh, Dr. S.K. Upadhyaya , Akhilesh Kumar, Mayank Kansal and P.K. Arya in the year 2009-10 from Department of Soil & Water Conservation Engineering, College of Technology, G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarkhand.**

  The Study was undertaken with the objective to evaluate the effectiveness of structure like trenches, percolation tanks and check dams under field conditions. The Ratouda hamlet of village Selalekh of Dolgad Microwatershed of this project located in Nainital district was selected for this study. The conclusion of the study were as follows:

  Contour trenches have been found very cost effective and efficient measures in retaining the eroded soil and thereby reducing soil loss from the area and are also proving to be a very effective option for water recharge. The sediment deposition analysis of the staggered contour trenches revealed that the average silt load deposition in the trenches is 7804.16 kg. The moisture content analysis of the soil revealed that the staggered contour trenches and percolation tanks are effective in water conservation which is manifested in the form of increase in the ground water recharge, being reflected in the form of increased water available in the naulas. The analysis of rainfall and groundwater discharge through naula exhibited that before these interventions, the increase in discharge which was earlier confined only to the rainy season has now extended to remaining part of the year also.

  Check dams were found effective in arresting silt load behind them, restricting the runoff velocity below erodible velocity thereby, effectively controlling soil erosion. The average silt load deposited in the check dams is 9600 Kg. The ground water was found suitable for drinking purposes as per BIS 10500: 1991.

  The village Selalekh, District Nainital has won the National Water Award /Ground Water Augmentation Award given by the Ministry of Water Resources, Govt. of India for the year 2010 for its soil and moisture conservation interventions done under this project.

- **Study on "Quantitative evaluation of watershed structures in a primary stream of Dolgad watershed" By B. Mohandaas, IFS Officer Trainee in the year 2011 at IGNFA, Dehradun under the guidance of Mr. R.K Tiwari, IFS, Associate Professor, IGNFA.**

The different watershed structures in the project area were evaluated the suggestions given are as follows:

Staggered Contour Trenches (SCT)

- For the given slope and soil, SCT are effective structures which follows the spacing calculated from Q value of the watershed.
- On the lower sides of trenches where the dug soil is heaped is stabilised with planting of grasses in two rows followed by seedlings of Quercus spp.

- For effective working these SCT may be dug in Trapezoidal shape which gives dimensional stability than the square shaped SCT.
- It is highly recommended for arable lands with more than 20 % slope.

Earthen Dugout Ponds

- Of the all the dug- out ponds observed, the pond no 1 in village Selalekh with natural drainage features and sufficient watershed area is the recommended structure.
- To prevent the collapse of wall core of the wall may be built with impermeable materials like clay. For sand or sand and gravel with clay core, 3:1 upstream slope and 2.5:1 downstream slope shall be given.
- The chute spill way of the pond no 1 which is provided for the safe disposal of excess water should be given to all other ponds. Apron that absorbs the impact of water falling from spill way should be provided to prevent the under cutting of structure.
- The watershed area of the dug-out ponds should be provided with erosion control structures to improve storage condition in ponds.

Gabion check dams

- The lateral sides of gabion structures were eroded and collapsed. This may due to lateral hinging were not proper. This can be modified by strengthening the lateral support to wall.
- The floor and the wall is amenable to scouring of the water, thus stone pitching for a length of 2 meters can be provided along the downstream structures.

Traditional Water Harvesting Structures (TWHS)

- TWHS are indicator of healthy watershed in the study area. These types of structures need to be identified all over the watershed for assessing progress in watershed programmes.

- **Study on "Implications of Watershed Projects to Adaptation and Increasing Resilience to Climate Change- An Analysis of Watersheds in Uttarakhand" by Mousumi Mandal in the year 2011 as Dissertation Report for M.Sc. Environmental Management, FRI University, Dehradun conducted under the guidance of Prof. N.H. Ravindranath, Centre for Sustainable Technologies, IIS, Bangalore.**

The study was undertaken in two Microwatersheds – Sunindagad of Vikasnagar Division, Dehradun District and Dolgad of Haldwani Division, District Nainital to study the impacts and implications of the project with the following objectives:

- To predict the short-term climate variability of Uttarakhand (2020-2050), A1B scenario
- To understand and assess the activities implemented under the watershed project and their role in reducing vulnerability to climate change

- Analyze livelihood diversification opportunities in the Middle Himalayas through improved agriculture and horticulture practices- to maintain food security during water scarcity.
- To study the carbon sequestration benefits from afforestation programs conducted as a part of the project.

The conclusion of the study was as follows:

- The rural communities in the project area faced severe scarcity of water in the dry seasons prior to project implementation. Given there is zero recharge due to slopy nature in the mountainous regions, project interventions have successfully increased its water recharge capacity, water harvesting, and increased water availability for drinking, domestic and irrigation purposes by constructing the various water conservation structures like check dams, contour trenches, percolation tanks, irrigation tanks, rejuvenated springs, rain water harvesting tank and drinking water tanks.
- Enhancement in the top soil fertility and its conservation achieved through measures such as construction of check dams and staggered contour trenches have resulted in checking the run off of water, thereby reducing soil erosion. The direct indicator of its impact is seen in the sediment study done where gradual and significant decrease in silt deposition downstream is recorded.
- Food security and nutrition has improved, not only in terms of quantity but also the quality of the diet, as more vegetables have become available because of the programme's promotion of and investment in vegetable growing.
- The surveys have revealed an increase in household incomes and assets, as well as improved health, education, and empowerment of poorer vulnerable families, including women.
- Reduction in drudgery of women, how they utilize their time thus saved by them in useful domestic activities is another important contribution of the project.
- The survey reveals 50% decrease in pressure on natural forest or reduction in the vulnerability of forest carbon stocks has been achieved due to introduction of pine briquettes (an alternate to fuelwood). This is yet another adaptation to increase resilience to climate change.
- Climate change poses an increasing threat to the sustainability of agricultural production and livelihood strategies of poor rural people. Thus, enhanced livelihood opportunities and diversification of income generating activities through enhanced agriculture and horticulture practices is a direct indicator to the reduction in vulnerability of farmers'economy. The introduction of improved and more drought-resistant crop varieties combined with the promotion of intercropping production systems has reduced farmers'exposure to crop failure. It has also reduced their economic vulnerability to climate change by increasing yields for consumption or for sale.
- In addition, agro-forestry systems have provided better environmental services compared to monoculture systems since the monoculture practiced earlier decreases the capacity of the

agricultural system to contribute to climate change mitigation– biodiversity conservation and carbon sequestration (ICRAF scientists proved that agro-forestry systems can sequester much greater quantities of carbon compared to agricultural systems without trees or monocultures. Another analysis of ICRAF shows that agro-forestry systems can help protect soil and maintain water quality and quantity – in short, increase watershed services – while simultaneously generating livelihood options for larger populations).

- Response of communities to climate change and its impacts vary from short-term coping responses to evolving long-term adaptive strategies. In some cases, the stress levels have forced them to shift occupations or, in extremely drastic situations, to migrate. However, one lesson that is emerging clearly is that despite changes, communities are showing their capacity for resilience and innovation and watershed projects help increasing resilience through the various activities implemented to check run off, conserve soil, improve soil fertility, increase agricultural productivity, crop and income diversification and afforestation.

- **Study on "Carbon Mitigation Potential" by Sumaiya Waheed in the year 2011 for M.Sc. Environmental Management, FRI University, Dehradun conducted under the guidance of Prof. N.H. Ravindranath, Centre for Sustainable Technologies, IIS, Bangalore.**

This case study conducted in two Microwatersheds – Sunindagad of Vikasnagar Division, Dehradun District and Dolgad of Haldwani Division, District Nainital tried to assess the mitigation potential of the project. The study was also aimed to survey the species diversity, the density, increase in basal area, biomass present in the area and finally estimate the mitigation potential of the project and its benefits in combating GHG emissions from the area, and finally, its small but significant role in Global Climate Change.

The conclusion of the study was as follows:

- Baseline mitigation potential of both farm forestry and community forestry option remains stable through 2010-2030.
- Cumulative incremental mitigation potential of both the activities for the period 2010-2020 is 6 MtC while it is 11 MtC for period 2010-2030, i.e, 50% increase. Overall cumulative incremental mitigation potential of community forestry option is higher than that of farm foresty.
- Mitigation potential of the project is high and thus, the state of Uttarakhand can benefit financially, if it ventures in market based mechanisms. In absence of watershed projects (the baseline scenario), the mitigation potential remain stable for a period of upto 20 years. However,

after implementation of such projects, mitigation potential increases many folds.

- In the project, several hectares of land were brought under community lands and plantations, apart from agriculture boom. The main thrust of this project is improving carbon mitigation and biomass content of the area. This is achieved by protecting and restoring the natural forests and undertaking plantations on farm lands and community lands.
- The project also induced a fervor for a massive plantation drive in this hilly area, and various plantations done on waste/degraded lands promise to be a major carbon store house in coming years. The project enthused the farmers to grow trees on the boundaries of their farms; known as TOF (trees outside forests) and on fallow lands around their farms. This not only helped in stocking carbon, but also in improving their farm's condition by providing litter, dead twigs etc. which on decomposition, provides valuable organic manure.
- The agriculture, as seen in the survey, has improved over the years due to improved irrigation systems, channelizing of water, distribution of high quality seeds etc. The farms not only have crops but also trees in their boundaries or any fallow land around. This has helped in increasing the biomass content of farm lands, which usually did not have much of it, due to the practice of growing annual or biannual cash crops.
- The study shows that the propagation of composting, using organic manures and minimizing the use of fertilizers have played an important role in improving soil health, crop yield in addition to enhancing GHG benefits.
- The project introduced Pine briquetting as a pioneer venture in its project areas to meets its objectives of reducing drudgery of women and forest fires. This is practice of BIOCHAR which recently, is gaining attention as a means of cutting down on the use of fuelwood in hilly areas, where fuelwood consumption in a single household is recorded to be 10 kg/day. Conserving fuelwood means conserving Carbon stocks, which is significant in Carbon Mitigation.

CHAPTER -10

LEARNING'S FROM THE PROJECT

UDWDP was a community oriented watershed management project. The lessons learned from the previous projects were incorporated into the project design. By and large the lessons incorporated worked satisfactorily. The project design had the following arrangements:

- Project to be implemented through the elected GPs and the GPs and their block and district level organizational structures will be engaged in resolving externalities that go beyond the jurisdiction of an individual GP. Formal decentralized institutions (i.e. GPs) play an active role in decision making.
- Project funds to be managed by GPs and beneficiary communities and cost sharing between the project and beneficiary groups will be used to ensure true ownership of sub-project investments.
- The poorest and vulnerable groups to be encouraged to participate actively in decision making.
- Transparency in project implementation arrangements.
- The screening of subprojects for environmental and social safeguards.
- Private agencies and NGOs will be used (in addition to Govt. Deptts.) to: (i) disseminate technologies and provide advisory services; (ii) produce and distribute quality seeds and seedlings; and (iii) establish linkages between Farmer Interest Groups (FIGs) and suppliers for processing and marketing of high value crops.

A decentralized institutional setup with Gram Panchayat as the main planning and implementing agency was an important feature of the project. The village community was involved from planning to implementation and monitoring. GP was responsible for handling of funds, procurement and maintenance of assets. To provide financial autonomy to local government, withdrawal and disbursement of funds, from the watershed account of the project, was vested with Gram Pradhan and one of the elected women ward members of the GP. Some of the new, innovative

approaches which are sustainable and can be upscale and replicated in the future projects are as follows:

- **Involvement of Women Social Mobilization Workers:** The most essential vehicle to bring about awareness about decentralised management is social mobilisation. In the project a number of facilitators for a cluster of Gram Panchayats and village motivators at the village level were engaged through FNGO (Field NGO's) These village motivators and facilitators visited villages, assisted in PRA and organised women along with other stake holders into groups. They assisted them in their need assessment, capacity building and initiation of income generation activities (IGA), exposure visits, trainings and motivated them to join the village user group communities. Thus FNGO played a very important role in motivating and mobilizing the community. These facilitators and motivators were an important interface between the community members and the project staff. The role of FNGO was seen as an important factor in the formation and continued functioning of SHGs. Community members conceded that persuasion and meetings of women members of the village by FNGO women workers was regular and useful.

- **Women Aam Sabha:** Women related issues were generally sidelined in the Gram Sabha meetings. With the objective of addressing women specific issues and concerns into the Gram Panchayat Watershed Development Plan (GPWDP), the concept of women Aam Sabha was introduced in the project. Women Aam Sabhas were held prior to finalization of Gram Panchayat plans to identify and prioritize issues impacting the women locally. The Gram Sabha prior to final approval of GPWDP ensured inclusion of women issues in the GPWDP. Due to the positive impact of these Sabhas, the women Aam Sabhas were regularized and were mandatory before finalisation of the Annual Action Plans. These Sabhas served as a platform for bringing up issues of concern, identifying needs and redressing grievances. The proceedings of the meetings were being recorded and the proposals kept in these Sabhas were reviewed from time to time by the women members themselves.

- **Involvement of Women in Governance:** Woman Ward member was made a co-signatory with the Gram Pradhan for the operation of the dedicated watershed account of the project. Earlier Gram Panchayat Development Officer was the co-signatory. This change provided the impetus for involvement of women in the project. The capacity building measures enhanced the administrative capacity of the local people which were associated with the project in one or the other way.

- **Vulnerable Group Fund (VGF) for Livelihood Interventions:** The project was designed to target the poorest and the most vulnerable sections of the community these included the landless, women and the people Below Poverty Line. The community identified the 'C'- category households, by wealth ranking exercise carried out as part of participatory planning for preparation of Gram Panchayat Watershed Development Plans. Amongst these the vulnerable group were identified by the community and a grant was provided on individual and group basis to finance small income generating micro-enterprises for these vulnerable groups.

- **Participatory Monitoring and Evaluation:** Participatory Monitoring and Evaluation (PME) were carried out in the project as a social audit process. PME proved to be an important feedback tool and learning mechanism for the project about the community's aspirations. Community expressed keen interest in PME and fully supported the entire exercise with over whelming presence during exercise. Community member's men, women and vulnerable groups were highly participative and eagerly sought clarifications for their doubts and information regarding expenditure under the project. The PME ensured transparency in the project through scrutiny of vouchers, bills and account books by the community. PME evolved as a public forum for seeking grievance redressal as regards issues of project implementations such as delay in payments or works, non performance of project staff or committee members etc. Quality of the various project interventions was assured through the introduction of 'OK Card'. The OK cards were discussed in the open forum provided by PME. Several instances of strong public scrutiny during PME emerged as a deterrent for any malpractices and at the same time motivated for higher standards of delivery under the project.

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- **Pine briquetting:** The project introduced pine briquetting as a pioneer venture to meet the objective of reducing drudgery of women and forest fires. The women saved time by not going to forests for collecting fire wood and instead used this time for other household chores. The pine briquette was also an income generating activity where the user groups could sell the briquettes in the village and in the nearby market. The calorific value of the briquettes was 5885 kilo Calories which nearly equals to that of an LPG cylinder and is 47% higher than that of fire wood. This intervention has a potential to be up-scaled and replicated in future.

- **Cost Sharing:** To ensure sustainability of activities that enhance productivity and incomes of the rural population, the project laid emphasis on sharing of costs by the individual beneficiaries. For all the activities undertaken in the GPWDP for which funds were drawn from the 'Budget Envelop' of the GP the cost sharing norms were clearly defined.

  Cost sharing Norms for activities like Natural Resource Management and Watershed Treatment was 6%; Orchard Development, Orchard Rejuvenation, Agriculture Terrace repair 40%; Compact Area Demonstration, Vermi- compost pit, Seasonal and Off Seasonal vegetable demonstration, Community Fruit Plantation, Introduction of High Value Crops was 30%; Poly house and Poly tunnel was 20% and NBC was 15%.

- **Enhancing the capacity of the GPs:** A separate dedicated project account was opened by the Water and Watershed Management Committee which was operated by the Gram Pradhan and Women Ward Member of the GPs. To ensure proper, effective and efficient management of the project funds the project funded for the appointment of Account Assistant each Gram Panchayat. This Account Assistant was generally a local of the village having knowledge in accounting procedures. The capacity of these accounts was also built up by providing trainings to these assistants from reputed CA firms. This practice has not only built the capacity of the Gram Panchayats but has also ensured proper accounting of the project funds. Most of the GPs have reported satisfactory GP audit as a consequence.

- **Sustainability through User Groups:** Through participatory watershed management users of common property assets help to define problems, set priorities, select technologies and policies, and monitor and evaluate impacts to improve performance of the assets. On the basis of effective collective action (CA) smallholder farmers or beneficiaries jointly invest in

management practices that provide collective benefits in terms of economic and sustainability of gains. The main components of collective action for the effectiveness of watershed management interventions were as follows:

- **Enabling institutions:** The rules and regulations for operation and management of the various common assets such as grazing lands, agro-forestry, water harvesting, water storage and soil and water conservation structures were developed. These rules also included establishment of mechanisms for conflict resolution, regulation of behavior, and agreed norms for sharing costs and benefits.
- **Organizational performance:** Under organizational performance designing and establishment of local mechanisms for coordination and implementation of watershed activities were evolved. This also structured the establishment of user groups and watershed committees, wherein the objectives and basic structure of authority and decision making were determined.
- **Sustainability:** Generation and provision of revolving fund to maintain and post management of the developed assets is most essential for the sustainability. The user groups were organized and a common decision taken on the basis of use and operation of the assets and for such purpose memorandum of understanding were developed to generate and utilize the revolving fund.

Status of Users Groups: In the project for future sustenance and O&M of common assets user groups have been formed. User Group is a set of beneficiaries who have similar interests, goals, or concerns for the community assets created by the project. In the project user groups were especially for water based structures such as irrigation tanks, roof rain water harvesting tanks, irrigation channels/guls, naula and ponds. The members of user groups conducted regular meetings and generated fund for operation and maintenance of created common assets. The funds were collected on monthly basis or on crop basis depending on the rules and regulations of that particular user group.

- 1485 user groups for irrigation tanks, 432 for irrigation channels, 68 for water storage ponds and 13 for naula were formed.
- Out of the total of 1998 groups, 1805 groups have generated revolving fund to the tune of INR 1.65 million.

STATUS OF USER GROUPS **March 2012 (INR Lakh)**

S. No.	Activity	Total User Group Formed	No. of User Groups who have deposited the money	No. of members	Total Amount Deposited	Amount utilized for Maintenance	Grand Total Amount
1	Irrigation Tank	1485	1358	9723	9.00	2.51	11.52
2	Irrigation Channel	432	402	3305	3.95	0.53	4.48
3	Water storage Pond	68	32	279	0.36		0.36
4	Naula	13	13	2532	0.11		0.11
	Grand Total	**1998**	**1805**	**15839**	**13.42**	**3.04**	**16.47**

- **Agribusiness Interventions:** Various agribusiness interventions of providing technical advisory services, provision of quality planting material and through DSAs provision of market linkages played a key pivotal role in increasing the returns from agriculture. From the perspective of a hilly state where agriculture is sustainable by nature, it has become a profitable venture for the farmers. The project provided input in the form of value addition, and setting up of processing centres in the project area. The farmers were motivated to form Farmer Federations, through continued support of the next project these Farmer Federations can form Producer Companies in future.

- **Analysis of Role of NGOs:**

  Role of FNGO's: The FNGO along with other members of the MDT disseminated the key information regarding the project amongst the villagers, facilitated and encouraged the participation of local communities in the planning process of GPWDP, assisted RVC in preparing proposals for GPWDP as well as in the identification of vulnerable groups and initiation of IGAs for them. They ensured participation of women in programmes and management of project activities. Further they also raised awareness about the need for soil conservation, water resource management, ESMF and other NRM interventions. They helped in the organization of vulnerable groups and SHGs and also assisted in the formation of User groups and also helped building the capacities of these institutions in the project period.

FNGO played a very vital role in PME. They facilitated the formation of the PME team and capacity building in terms of enhancing their capacity to monitor the work done by them. They helped in evolving innovative techniques of participatory assessment and facilitated the whole process. The FNGOs also assisted the community members in planning and organizing the evaluation exercise. They helped the community in analyzing all the records and developing a hand book and action plan on the PME process which included details on stakeholders, indicators, methods, tools and training plan. The FNGOs submitted an annual report summarizing the findings from PME, subsequent decisions and actions taken and general lessons learned to the Directorate.

The FNGOs experience with the project was as follows:

- The community had more faith in social workers being associated with government PIA, than otherwise.
- Rules and regulations for beneficiary selections were strictly followed.
- The field visits and meetings (General body meetings/ "Mahila Aam Sabhas") were conducted seriously and the attendance, quorum was assured and monitoring of the same was done on monthly basis.
- The project was intensive, very focused with regard to objectives, indicators, output and outcome.
- The participatory mode of planning, implementation, financial management and even monitoring and evaluation was its key to projects success.
- Project focused on the lowest economic section of the society and there was provision of selecting the vulnerable people for IGA and EDP training and hand holding by the PIA staff.
- Grievance redressal, Monitoring and evaluation in participatory mode was a new experience for all the stakeholders and implementers.
- Project was dynamic with regard to corrections and amendments in policies, and modus operandi following every World Bank team visit and suggestions thereof.
- The technical expertise given by WMD and project team was a learning experience.

The difficulties faced by the FNGOs during implementation were as follows:

- Although the project ensures a women's active participation in the decision making process, however, it was quite often viewed that the male counterparts overpowered their spouses' views, decisions and even their powers in the GP.
- Cases of pseudo-representation were observed in some Gram Panchayats where the male

members of the WWMC used their wives to put forth their demands of funding through the Mahila Aam Sabhas instead of the general body meetings.

- Though the project ensures beneficiary selection in participatory manner, in a few cases, the biased vision of Gram Pradhan in favour of ruling party, reflected in GPWDP.
- Since the project is an open menu system, quite often, sustainable, long term and community interventions are often sacrificed over the individual, short term, quick return interventions.
- Since the appointee of Village Motivator and Account Assistant at GP level was the Gram Pradhan, their bias in appointment of their peers can't be overruled.
- It was seen that few Gram Panchayats attached more importance to infrastructure development. In the process, they tend to ignore or attach less importance to NRM which includes land, water, vegetation, livestock and livelihood for the poor and income generating innovations for unemployed women and youth.
- In few cases, collection of beneficiary share and user's charges after formation of User's group was really tough; this affects the sustainability of assets.
- The remuneration proposed at the start of the contract remained the same till the end of the project i.e. for six years. The costing was outdated and not revised as per the inflation rate. As a result FNGO lost quite a few important staff, drop-out rate increased to a great extent towards the end.
- While hiring a particular FNGO across the divisions, the quality, competence of the staff and training of staff suffers adversely. It's widely experienced that the expertise and impact of a particular NGO in a specific field, is confined to a particular area. Probable solution may be the hiring of individual social worker at division level or hiring of individual FNGO at division level to maintain the competitiveness and the quality.
- Due to this dual control (FNGO being the appointing authority and PIA being the implementing authority), many a times, due to lack of co-ordination, communication and understanding the works suffered.

Role of Divisional Support Agencies: To promote agribusiness activities, six specialized agencies, Divisional Support Agencies (DSAs), were hired under the project to provide support for value addition and marketing, and to develop forward and backward linkages.

The DSAs surveyed the traditional crops (both cash crops and vegetables) that were being cultivated in the area before the project. Technical Support was provided by selecting more suitable seed varieties, giving guidance for prevention and cure of common diseases and finding better markets.

The DSAs were also instrumental in formation of FIGs. DSAs prepared production plans for different crops and vegetables for both Rabi and Kharif crops. This was done in advance (as a forecast) upon assessing the production through FIGs. The production plan also helped in assessing the seed requirement of farmers which could be procured and distributed before time. The expected production of various crops helped DSAs to establish forward and backward linkages for sale. FIGs were joined together at the cluster level to form Farmer Federations which were registered under the Self Reliant Cooperative Act 2003. The FFs established market linkages, and also helped in processing, grading, and packaging for value addition. In certain cases, due to ineffectiveness of FIGs or non-federation of FIGs to cooperatives, the farmers continue to be exploited by middle men and buyers in the nearby markets. This was seen in Vikasnagar and Lohaghat Divisions where DSAs were absent.

The DSAs experience with the project was as follows:

- All stakeholders participated in the planning phase and a separate strategy was developed for each activity. Due importance was given to the local needs while planning. There was good coordination between all the stakeholders.
- The capacity building was as per the felt needs of the community which played a major role in building Community Based Organizations (CBOs).
- During implementation there was good coordination between the DSA, project team and community. The roles and responsibilities were clearly defined .The works implemented were as per the local expertise. There was clarity in decision making and problems were resolved through discussions.
- Monitoring and impact evaluation by the project team was continuous so that modifications and conflict resolution was easy. The strategy of Participatory Monitoring was a success.
- The selection of agri produce should be based on availability of a strong supply chain and should ensure good returns.
- The experience of developing sustainable agribusiness strategies in remote locations of the project in partnership with DSA was a successful initiative. Through the project the villagers realized that agriculture is a viable business option. Through the technical advisory services provided they learnt to harvest and to utilize the runoff water and get high returns from agriculture.

The difficulties faced by the DSAs during implementation were as follows:

- Usually the CBOs are project based, in the initial phase the DSA faced difficulties in developing the organizational capacity of these CBOs.
- Due to the remoteness of the project area there was a high turnover of the DSA staff.
- As the project was implemented in remote locations and the market was situated at far off distance, the DSAs realised that to develop a sustainable agribusiness plan the choice of the product /produce would depend on the shelf life of the product/ produce.

ROLE OF PARTNER NGOS (PNGO) IN THE PROJECT: In the project context, the PNGOs were required to play the following roles.

Their role as Facilitator entailed following activities:

- The PNGO provided technical guidance and support to the GPs, communities and CBOs etc. in implementation of project activities.
- Facilitated social mobilization, socially inclusive participatory planning and decision-making, local institution building and social equity.
- As resource persons, facilitated the preparation of RVC proposals, IGA proposals and their integration into GPWDP.
- Facilitated compliance of ESMF, IPM and IPNM guidelines in project interventions.
- Facilitated conduction of PME with the stakeholders.

Their role as Implementer entailed following activities:

- To undertake farming systems improvement based activities.
- Promotion of value addition and marketing support activities.
- Capacity building of communities / CBOs /User Groups /GPs.
- Institutional strengthening.
- Consolidation and sustainability of institutions formed under the project.
- Transhumant activities.
- Implementation of Participatory Monitoring & Evaluation (PME) – action plan.
- The successful implementation of the project in decentralized mode was a learning experience. The basis of success was total transparency about the project amongst all the stakeholders.
- The CBOs should be developed and trained with due care as community based organizations play a key role in project planning and implementation.

The period of consultancy as per agreement with the PNGOs was upto five years. The preparatory phase was for one year, implementation phase was for three year and with consolidation/ withdrawal phase of one year.

The PNGOs experience with the project was as follows:

- The selection of the PNGOs was unbiased and transparent.
- The project team help the institutions develop a clear idea of the project. They provided trainings for different subjects at all levels.
- The project team provided support in problem resolution and were open to exchange of ideas and views.
- There was timely disbursement of funds to the PNGOs.
- Continuous monitoring and evaluation by the project staff was useful in project implantation.
- The successful implementation of the project in decentralized mode was a learning experience. The basis of success was total transparency about the project amongst all the stakeholders.
- The CBOs should be developed and trained with due care as community based organizations play a key role in project planning and implementation.

The difficulties faced by the PNGOs during implementation were as follows:

- The orientation and trainings of the CBOs had to be conducted again due to the reorganizations of the Gram Panchayats in 2008.
- The labour was available only from November to February, thus labour availability throughout the year was a problem.
- The direct shopping limit to the PNGOs needs to be raised to ' 50,000 per purchase.
- High turnover of the PNGO staff.

BORROWER'S PERFORMANCE

1. Government of Uttarakhand

The performance of Govt. of Uttarakhand (GoUK) was highly satisfactory. GoUK extended full support to the project right through preparation, implementation to closure. The release of the counterpart funds was timely and adequate. The policy support as and when required was provided for. The continuity of staff both administrative and technical was maintained throughout the project

with few exceptions towards the end. The GoUK allowed WMD substantial flexibility and authority for implementing the project activities.

2. Implementation Agency

The Watershed Management Directorate was the implementing agency for the project and the performance is rated as highly satisfactory. The project could be launched well in time due to timely preparedness and completion of pre-project activities. The financial targets for the original project were completely achieved and the utilization of additional financing was also highly satisfactory. The highly satisfactory implementation of the project resulted in obtaining co-financing under GEF. All the activities envisages under the three sub components of the project were initiated and successfully completed. The project design and implementation arrangements were widely accepted by all the stakeholders and no major conflict related to implementation was reported. The project largely achieved/ exceeded outcome result indicators under various components.

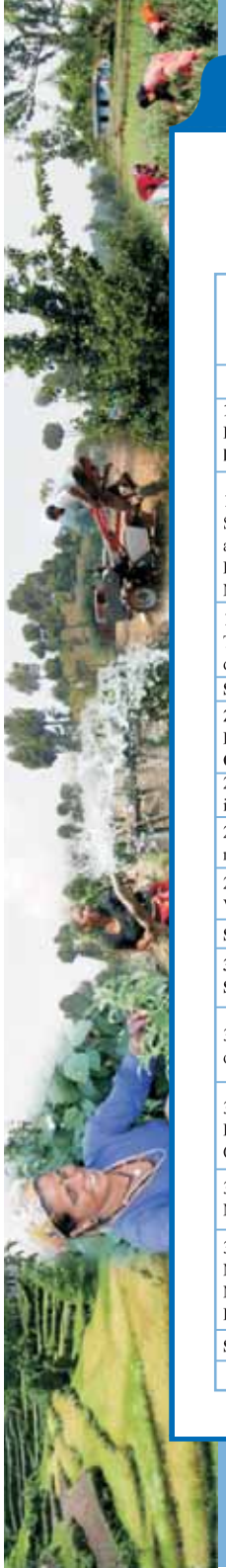
The implementing agencies at all the levels reflected enormous commitment in achieving the project outputs and goals. Implementation of the project through the Gram Panchayat, the lowest administrative unit under the Panchayat Raj Institution and introduction of women ward member as a co signatory at WWMC level was a successful experience which is being mainstreamed in to the Integrated Watershed Management Programme (IWMP) a CSS of Govt. India. The NGOs as project implementation agencies, social mobilizers and as supporting agencies for various interventions played key role in project implementation. The Financial management systems put in place at the community level were also satisfactory, as the annual Gram Panchayat audit reports were satisfactory. The concept of implementing the project through the Environment and Social guidelines helped mitigate any negative impacts of the project. The Project introduced the concept of women Aam Sabha and participatory monitoring and evaluation (PME) which ensured social equity, transparency and accountability at the village level. To ensure sustainability user groups and withdrawal plans were put in place. Through this project farmers were organized into farmer interest groups and farmer federations so that strong and sustainable forward and backward linkages could be developed and they started viewing agriculture as a viable business option.

BANK'S PERFORMANCE

1. Lending – Bank's performance is rated as satisfactory. The project preparation ensured adequate consultations with borrowers and other stakeholders. The preparation mission gave a lot of support in finalizing the projects objective, components and implementation arrangements. The subsequent missions were also of great help in prioritizing the activities, finalizing the various operations manuals and the institutions arrangements for implementation. The project design

provided for a lot of flexibility, which allowed location specific interventions and some very good results were achieved. The PDO indicator and log frame were inadequately formulated and hence could not completely capture the project impact and outcomes.

2. Supervision- The Bank's performance is rated as satisfactory. Though in the initial phase there was a change in the team leaders but the task team more or less remained the same. There was a continued focus on social, equity, participatory, environmental, agriculture, financial and procurement issues by the Bank team. Any issues raised by the project regarding implementation, management and sustainability were effectively and efficiently addressed by the Bank team. The Bank fielded 11 missions, one MTR mission and supportive missions. The six monthly supervision mission's field visits and Aide-memoires provided guidance and suggestions to the implementing agency towards achieving the project objectives and outputs. The MTR mission was very supportive and appreciative of the project team's view point and agreed to the changes sought in the result framework and allocation. Bank also highlighted the critical issues in meetings with the Chief Secretary, Forest and Rural Development Commissioner and Secretary Watershed, Govt. of Uttarakhand as well as in the Annual Portfolio Reviews with the Department of Economic Affairs, Govt. of India and Govt. of Uttarakhand.



UTTARAKHAND DECENTRALIZED WATERSHED DEVELOPMENT PROJECT (3907-IN & 4850-IN)

YEARWISE STATEMENT OF PROJECT EXPENDITURE

Annexure 1 A

Activities	2004-05			2005-06			2006-07			2007-08			2008-09			2009-10			2010-11			2011-12		
	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total	Project Share	Benef - iciary Share	Total
1																								
1- ParticipatoryWatershed Dev. & MGMT.																								
1.1 Promotion of Social Mobilization and Community Driven Decising Making	34.92	0	34.92	443.88	0.00	443.88	823.77	0.00	823.77	984.30	0.00	984.30	1247.62	0.00	1247.62	1446.66	0.00	1446.66	1519.50	0.00	1519.50	1566.06	0.00	1566.06
1.2 Watershed Treatments & village development.	0.00	0	0	54.40	2.40	56.80	1187.31	130.21	1317.53	2847.55	252.73	3100.28	3203.21	342.23	3545.44	4389.78	559.81	4949.59	4029.07	792.37	4821.43	2910.81	641.08	3551.90
Sub total-1	**34.92**	**0.00**	**34.92**	**498.28**	**2.40**	**500.68**	**2011.08**	**130.21**	**2141.29**	**3831.85**	**252.73**	**4084.58**	**4450.84**	**342.23**	**4793.06**	**5836.44**	**559.81**	**6396.24**	**5548.57**	**792.37**	**6340.93**	**4476.88**	**641.08**	**5117.96**
2. Enhancing Livelihood Oportunities																								
2.1 Farming system improvement	0.00	0	0	277.49	68.67	346.17	590.41	169.18	759.59	988.33	250.15	1238.48	1052.05	221.41	1273.46	1176.51	253.01	1429.53	1630.17	373.26	2003.43	1207.82	283.68	1491.50
2.2 Value addition and marketing	0.00	0	0	0.00	0.00	0.00	17.05	0.00	17.05	75.23	0.00	75.23	103.05	0.00	103.05	195.98	0.00	195.98	213.24	0.00	213.24	237.86	0.00	237.86
2.3 IGA Fund for Vulnerable Group	0.00	0	0	5.62	0.00	5.62	36.99	0.00	36.99	125.21	0.00	125.21	212.11	0.00	212.11	271.53	0.00	271.53	306.12	0.00	306.12	194.99	0.00	194.99
Sub total-2	**0.00**	**0.00**	**0.00**	**283.11**	**68.67**	**351.79**	**644.46**	**169.18**	**813.64**	**1188.78**	**250.15**	**1438.92**	**1367.21**	**221.41**	**1588.62**	**1644.02**	**253.01**	**1897.03**	**2149.53**	**373.26**	**2522.79**	**1640.66**	**283.68**	**1924.35**
3-INSTITUTIONAL STRENGTHENING																								
3.1 Capacity Building of Institutions	44.08	0	44.08	279.01	0.00	279.01	400.93	0.00	400.93	486.35	0.00	486.35	559.58	0.00	559.58	475.88	0.00	475.88	513.39	0.00	513.39	406.86	0.00	406.86
3.2 Information, Education and Communication	26.40	0	26.4	105.09	0.00	105.09	119.57	0.00	119.57	151.34	0.00	151.34	128.73	0.00	128.73	140.32	0.00	140.32	160.83	0.00	160.83	188.61	0.00	188.61
3.3 Project Management	21.60	0	21.6	463.50	0.00	463.50	372.10	0.00	372.10	448.84	0.00	448.84	515.38	0.00	515.38	592.00	0.00	592.00	625.75	0.00	625.75	692.53	0.00	692.53
3.4 Information Management, Monitoring & Evaluation (IMME)	2.52	0	2.52	34.81	0.00	34.81	90.27	0.00	90.27	200.67	0.00	200.67	168.89	0.00	168.89	136.62	0.00	136.62	130.07	0.00	130.07	190.85	0.00	190.85
Sub total-3	**94.60**	**0.00**	**94.60**	**882.40**	**0.00**	**882.40**	**982.87**	**0.00**	**982.87**	**1287.20**	**0.00**	**1287.20**	**1372.57**	**0.00**	**1372.57**	**1344.82**	**0.00**	**1344.82**	**1430.04**	**0.00**	**1430.04**	**1478.85**	**0.00**	**1478.85**
TOTAL	**129.52**	**0.00**	**129.52**	**1663.79**	**71.07**	**1734.87**	**3638.41**	**299.39**	**3937.80**	**6307.82**	**502.88**	**6810.70**	**7190.62**	**563.64**	**7754.25**	**8825.27**	**812.82**	**9638.09**	**9128.14**	**1165.63**	**10293.76**	**7596.39**	**924.77**	**8521.16**

Annexure 2 A

STATUS OF REIMBURSEMENT IN UDWDP UPTO MARCH, 2012 (IDA-3907 IN)

Currency in XDR

Category	Category Description	Allocated XDR	Reimbursed upto March,2012	Balance	Percentage Expenditure
1	2	3	4	5	6
1	GOODS WORKS SERVICES (SUB PROJECTS)	28000000.00	26293784.02	1706215.98	93.91
2	WORKS (EXCEPT SUB PROJECTS)	618383.00	618382.19	0.81	100.00
3	GOODS (EXCEPT SUB PROJECTS)	1250043.00	1250042.50	0.50	100.00
4A	CONSULTANT (TAXABLE)	1700000.00	1843171.07	-143171.07	108.42
4B	CONSULTANTS(TAX EXMT), trg,WkShps,STs	6870000.00	6185867.16	684132.84	90.04
5	OPERATING COSTS	2300000.00	2213663.79	86336.21	96.25
6	GOODS,WORKS (OTHER THAN SUB PR)	6661574.00	6513838.31	147735.69	97.78
Total		**47400000.00**	**44918749.04**	**2481250.96**	**94.77**

STATUS OF UNSPENT BALANCE (In XDR)

1. Undisbursed by WB-	1129096.28
2. Unutilized in Designated Account-	1352154.68
Total-	**2481250.96**

Annexure 2 B

Status of Reimbursement in UDWDP(AF) upto March, 2012 (IDA-4850 IN)

Currency in XDR

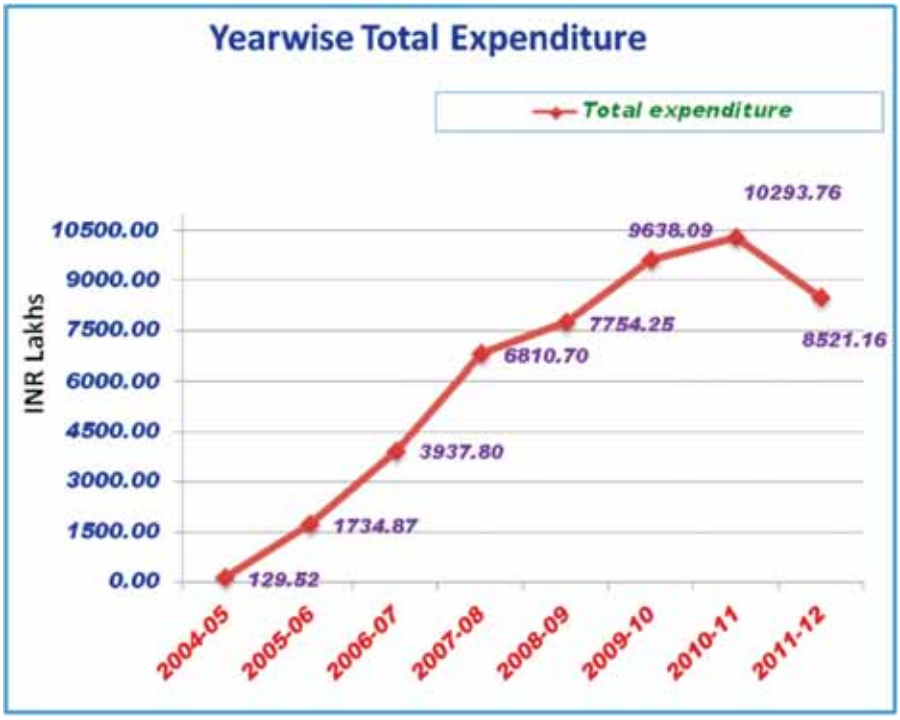
Category	Category Description	Allocated XDR	Reimbursed upto March,2012	Balance	Percentage Expenditure
1	2	3	4	5	6
1	GOODS WORKS SERVICES (SUB PROJECTS)	2050000.00	1502306.71	547693.29	73.28
2	CONS SERVS, TRG, WKSHPS, STUDY TOURS	1000000.00	610504.03	389495.97	61.05
3	OPERATING COSTS	330000.00	270596.45	59403.55	82.00
4	GOODS,WORKS (OTHER THAN SUB PR)	1720000.00	1466786.09	253213.91	85.28
Total		**5100000.00**	**3850193.28**	**1249806.72**	**75.49**

STATUS OF UNSPENT BALANCE (In XDR)

1. Undisbursed by WB-	1255673.18
2. Unutilized in Designated Account-	-5866.46
Total-	**1249806.72**

Annexure – 1 B

GRAPH SHOWING YEARWISE TOTAL EXPENDITURE IN THE PROJECT



Annexure – 1 C

GRAPH SHOWING COMPONENTWISE EXPENDITURE IN THE PROJECT