

People's Science Institute

Annual Report (2010 - 2011)



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ANNUAL REPORT 2010-2011

I. Natural Resources Management

The Centre for Natural Resources Management (CNRM) at PSI, earlier known as the Centre for Participatory Watershed Development (CPWD), anchors the Institute's natural resource management activities. It is mandated by CAPART, Ministry of Rural Development (MoRD), Government of India (GoI), to provide training, development, research and communication support to non-government and government organizations engaged in watershed or NRM projects in Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, Uttarakhand and Uttar Pradesh.

In 2010-11 the CNRM team was largely involved in enhancing livelihoods and food security in Uttarakhand and Himachal Pradesh through projects on upscaling the System of Crop Intensification (SCI)¹ and starting the implementation phase of a project on sustainable mountain livelihoods in Uttarakhand and Himachal Pradesh. It also began a drought response programme in these two states. Training of community representatives from various districts in Himachal Pradesh on participatory watershed development was another important activity. A few small projects were wound up during the year.

I.1 UPSCALING SCI FOR FOOD & LIVELIHOOD SECURITY



In 2006 PSI initiated a **mission** to promote the SCI method of cultivation in Uttarakhand and Himachal Pradesh with the objective of persuading the two state governments to spread the practice of SCI. The Uttarakhand government included SCI extension in its Annual Agricultural Plan of 2008-09, while the HP government came on board a year later. Though PSI started its mission with paddy cultivation, it very quickly innovated SCI's application to wheat, kidney beans (rajma), pearl millet (mandua), maize and a few pulses. The growth of the SCI programme in Uttarakhand and HP is shown in Figs 1a - 1d.

¹ The System of Crop Intensification is an innovative way of cultivating crops that focuses on the root rather than the plant. It leads to enhanced yields and savings in water and seeds.

The average grain and straw yields for paddy and wheat in the two states are given in Tables 1a – 1d. Participating farmers have expressed satisfaction with the increased grain and straw yields and the perceived benefits of saving seeds and water. CNRM's scientists have also undertaken a variety of research trials to study the effects of varying factors like the sapling age at transplantation, spacing of plants, number of weeding and seeds per hill on the crop yields.

Strong linkages have been established with local VO's, district agriculture departments, Krishi Vigyan Kendras, agricultural universities and research institutions in both the states for the promotion of SCI. Programme Monitoring Committees have been constituted in each state with representatives from research institutions, government and other VO's apart from PSI's senior personnel. External scientists carry out periodic field reviews to assess the impact of different interventions and to interact with farmers.

I.1.A Upscaling SCI in Uttarakhand and Bundelkhand (2010-11)

In 2010 PSI extended its SCI programme, with the financial assistance of Sir Dorabji Tata Trust (SDTT), to enable farmers in all 13 districts of Uttarakhand and 4 districts of Bundelkhand address their food and livelihood security needs. The project aimed at SCI's adoption for paddy cultivation by 7,100 farmers in the kharif season and for wheat cultivation by 3300 farmers in the rabi season. PSI partnered with 18 local voluntary organizations (VO's) in Uttarakhand and with 4 VO's in Bundelkhand.

PSI and its partners selected 204 villages in UKD and 26 in BKD to widely spread the SCI method. Forty master trainers (MTs) and 92 village level support persons (VLRPs) were trained to provide field support to the farmers. With the support of PSI they conducted orientation workshops to train 9,712 farmers in the kharif season and 6003 in rabi season. The workshops presentations educated the farmers in the procedures and principles of SRI/SWI. The methods of seed treatment, nursery raising, transplantation, manure preparation and the use of equipment were practically demonstrated. Copies of a user-friendly manual “श्रीधान विधि अपनाओ उत्पादन बढ़ाओ” were distributed to the participants. A strategy to provide organic manures and weeders to the farmers was also discussed at each workshop.



Ultimately about 8125 farmers adopted SCI for paddy and over 4900 practised it for wheat cultivation. In addition 1759 farmers applied SCI principles for cultivating other crops during kharif and 636 farmers applied it for cultivating crops other than wheat in rabi. Details of the programme's achievements are given in Tables 2a and 2b.



Table 2a: SRI Coverage and Results for Paddy (Kharif-2010)

Particulars	Uttarakhand		Bundelkhand	
	Conventional	SRI	Conventional	SRI
No. of SRI farmers	7535 (6650)		590 (450)	
Area (ha)	-	413.6 (396)	-	47.5 (19.2)
Average grain yield (Q/Ha)	38	71	25	63
Average straw yield (Q/ha)	111	180	65	134
% change in grain yield	86		152	
% change in straw yield	62		106	

Note: Figures in brackets give the programme targets

Table 2b: SWI Coverage and Results for Wheat (Rabi 2010-11)

Particulars	Uttarakhand		Bundelkhand	
	Conventional	SWI	Conventional	SWI
No. of farmers	4271 (3000)		635 (300)	
Area (ha)	-	164.3 (117)	-	37.4 (6.4)
Average grain yield (Q/Ha)	33	62	45	68
Average straw yield (Q/ha)	53	94	68	99
% change in grain yield	87		51	
% change in straw yield	78		45	

Note: Figures in brackets give the programme targets

Exposure visits of 1961 non-practising farmers were organized during the kharif and rabi seasons as a part of the extension and upscaling strategy. Nine district-level experience sharing workshops (UKD-5, BKD-4) were organized in September-October 2010, when the paddy crop was ready for harvesting. Similar workshops in June 2011 were planned for wheat. A state-level workshop was scheduled for later in 2011 for SCI farmers to share their experiences directly with agricultural scientists, SDTT representatives, SCI experts and media reps, as well as officials from other states.

I.1.B. SCI for Addressing Food Security Needs in Himachal Pradesh

In 2010-11, with funding from World Wide Fund for Nature (WWF)-ICRISAT, PSI selected 14 POs (including itself) to popularize SCI in HP for addressing the livelihoods and food security needs of small and marginal farmers. In addition to six districts (Bilaspur, Chamba, Hamirpur, Kangra, Mandi and Sirmour) covered in earlier years, three more (Shimla, Solan and Una) were added in 2010-11.

PSI and its partners worked in 200 villages for widespread extension of the method. Teams of MTs and VLRPs were trained in each season to provide field support to the participating farmers. With the help of PSI's programme staff these local resource persons helped train 6379 new farmers (target 3900) during kharif and 3827 new farmers (target 1800) during the rabi season. The training was done at two-day orientation workshops in which officials from the state agriculture department also participated. The sessions focused on educating the farmers in the principles and procedures of the SCI methods. Demonstrations were conducted to explain the use of equipment to them. Copies of the SRI and SWI manuals prepared in Hindi by PSI were distributed to the new farmers. Posters sets describing the recommended SRI practices were used by resource persons during the orientation workshops. A strategy to manage the availability of organic manure and weeders for the prospective SCI farmers was also formulated at these workshops.



Details of the SRI and SWI extension programmes and their achievements are given in Tables 3a and 3b below. In addition, 1121 farmers applied the SCI method for cultivating other crops like maize, black gram and soyabean during kharif and mustard, peas, Bengal gram during rabi over a total area of 91.25 ha.

Table 3a: Paddy Crop Cutting Results in Himachal Pradesh, Kharif 2010.*

S. No.	Particulars	Conventional	SRI
1.	No. of Farmers (Villages)	-	6765 (290)
2.	Area (ha)	-	365.63
3.	Grain Yield (Q/ha)	39	63
4.	% Increase in Grain Yield	-	62
5.	Straw Yield (Q/ha)	100	140
6.	% Increase in Straw Yield	-	39

* Field data collected from different districts

Table 3b: Wheat Crop Cutting Results in Himachal Pradesh, Rabi 2010-11.*

S. No.	Particulars	Conventional	SRI
1.	No. of Farmers (Villages)	-	3966 (231)
2.	Area (ha)	-	200.45
3.	Grain Yield (Q/ha)	26	44
4.	% Increase in Grain Yield	-	69
5.	Straw Yield (Q/ha)	52	85
6.	% Increase in Straw Yield	-	63

* Field data collected from different districts



During the kharif season 1424 non-SCI farmers were taken on exposure visits to SRI farms while 677 non-SCI farmers visited SWI fields during rabi. Six one-day experience sharing workshops were organized in October 2010 at the time of harvesting the paddy crop. They were attended by district-level government officials, PAC members, agriculture extension officers, scientists and trainers from KVKs, media persons and progressive local farmers. Similar workshops were planned for April-May 2011, at the time of harvesting the wheat crop. A one-day state-level workshop was also scheduled for later in 2011 where SCI farmers could discuss their experiences with agriculture officers, scientists and experts.

I.1.C SCI Programmes Review

The year in review was a banner year for PSI's efforts to extend SCI cultivation methods. More than 27,000 farmers tried these methods across Uttarakhand, Himachal Pradesh and Bundelkhand. The extension of SCI by 590 farmers for paddy and 400 farmers for wheat



yielded good results in Bundelkhand. One of the reasons for this success was the selection of good POs as well as promotion of SRI in areas with higher availability of water during the kharif season. In Panna and Damoh districts, the areas selected for promotion of SRI traditionally had low productivity and thus the SRI productivity gains were significantly higher. Farmers also expressed satisfaction with the impact of organic manures on increasing crop productivity.

In Uttarakhand late monsoons led to late transplantation. Low temperatures in October-November reduced the time for maturing. Many farmers from Chamoli and Nainital districts of Uttarakhand expressed inability to adopt SWI in the rabi season, citing lack of proper irrigation facilities.

Disadoption of the SCI methods after a trial or two is one of the major problems encountered during the execution of the programmes. There are marked deviations in the adoption of recommended practices. These include transplanting of two or three 15-20 day old saplings per hill at 15-25 cms plant to plant and row to row spacing. Organic manures, especially *Panchgavya-Amritghol-Matkakhad* (PAM), were often not easily available. On the other hand easy availability of chemical fertilizers further discouraged farmers from making SCI a totally organic exercise.

Inadequate outlets of Mandua and Krishi Usha weeders limited their accessibility and hampered weeding operations. Where large farms were brought under SRI cultivation, farmers faced problems in manual weeding. Such farmers expressed a preference for power weeders. Women found it difficult to carry the Krishi Usha weeder due to its weight. The double row

seed drill designed by PSI also proved to be less effective in ensuring placement of wheat seeds at the specified spacing, especially on undulating plots.

Some important recommendations for the future are:

- (i) **Understanding Disadoption:** Systematic research needs to be undertaken to understand the reasons for disadoption of the SCI method by a large number of practitioners. Such studies can help in developing a farmers-led strategy for upscaling SCI in different regions.
- (ii) **Need for Better Package of Practices:** A large number of farmers deviate from the recommended package of practices as they learn while practicing. Rigid recommendations often lead to disadoption. There is a need to come up with flexible area specific practices for different crops. Agricultural universities, local research centres, e.g. KVKs, and VOs should conduct farm-based research and analysis on specific SCI aspects (varieties, spacing, nutrients, weeding, irrigation, etc.) and make suitable recommendations.
- (iii) **Effective Capacity Building Strategy:** A cadre of trained experienced farmers at the village level needs to be created for encouraging new farmers to adopt SCI. Even experienced farmers require refresher courses and support for a few years to avoid disadoption. Non-SCI farmers need to be exposed to the SCI fields prior to the harvesting of crops and during harvesting. Officers and scientists from Agriculture Departments and KVKs also need to be exposed to the SCI technique for extending its adoption.
- (iv) **Nutrients and Pests Management:** Another area of research is to study the impact of SCI on the soil nutrient status so that nutrients application can be more effective. The effectiveness of more easily available alternatives like vermicompost, NADEP, green manure, intercropping with other SCI crops and the use of organic pest repellants and seed treatments to minimize diseases need to be studied.
- (v) **Water Management:** Water is a critical factor in the promotion of SCI, particularly for paddy. Development of irrigation facilities and construction of rain water harvesting tanks in the targeted villages can help provide assured water supplies..
- (vi) **Cost-Effective & Quality Equipment:** There is a need to supply better quality weeders that are more suitable to the local soil and terrain. Adequate outlets of markers and weeders are required. Local fabricators need to be encouraged and trained to manufacture quality equipment in required numbers. The design of better weeders and seed drills for wheat needs to be put on the agenda of engineering institutions.



- (vii) **Networking and Convergence:** Farmers need to be organized and federated to demand better access to inputs like seeds, equipment, manures, etc. The federations can also help in strengthening partnerships with government programmes and agencies. Networking amongst the various stakeholders (i.e., farmers, CSOs, government, research institutions, agriculture universities, banks, media, etc.) would be helpful. Strategies should be developed for convergence with other programmes like ATMA, RKVY, BRGF, etc.



- (ix) **Policy Framework:** The central and state government should develop a policy of including incentives -- in the form of providing appropriate equipment, manure, organic pesticides, etc -- for adopting SCI. State governments should direct irrigation departments to ensure supply of water in irrigation canals, especially during the transplanting stage. Adequate outlets of quality markers and weeders also need to be established in different parts of the states.

I.2 Sustaining Mountain Livelihoods

Communities residing in the mountain areas of Uttarakhand and Himachal Pradesh have traditionally relied on integrated farming systems -- combining forestry, animal husbandry and agriculture -- for their sustenance. Forests and pastures degradation, low farm productivity, scarcity of fodder and fuel wood has significantly affected their livelihoods in recent decades leading to large-scale outmigration of men in search of jobs. Immediate interventions are thus required for providing livelihoods and food security to mountain communities.

Therefore CNRM began a pilot “Sustainable Mountain Livelihoods” project in 2008 as a follow up to its earlier watershed development programme in the two states with financial assistance from the Navajbai Ratan Tata Trust (NRTT). Its overall goal is to enable all the families achieve livelihood and food security. In the first phase of the programme, 2008-09, PSI and four partner organizations (POs) assisted communities in 31 villages located in four clusters (two in Uttarakhand and two in H P) to prepare village-level livelihoods development plans (LDPs). The entire planning process was guided by the principles of ensuring dignity of the beneficiaries, sustainability, equity, cost-effectiveness and transparency.

The LDPs aim to increase household incomes and enhance food security through the development of irrigation resources, extension of new agronomic and horticultural practices,

fodder plantations, and secondary income generation activities. Existing village level institutions will be strengthened and appropriate new institutions will be established to successfully implement the planned activities. A strong effort will be made to use the capital available with the local thrift (savings and credit) groups and banks to provide credit for productive purposes, including promotion of micro-enterprises. Producer companies/cooperatives and their networks or federations will be formed during the later part of the implementation phase to achieve economies of scale and increase local incomes.

After an elaborate evaluation process, NRTT sanctioned funds in December 2010 for the implementation of the LDPs in 21 villages of Himachal Pradesh and Uttarakhand over a two year period from January 2011 to December 2012. An estimated 63 per cent of the 802 households in the selected villages live below a perceived poverty line (PPL) of Rs.8,000/person/yr. Thirty two per cent of the households belong to Scheduled Castes and another 15 per cent are OBCs. It is expected to lift all, except 9 families, above the PPL. It is estimated that the average annual household incomes could go up by about Rs. 14,000.

The total budget of the proposed project is Rs. 3.24 crores of which Rs. 1.71 crores (53 per cent) will be provided by NRTT over a period of two years. In addition to providing partial support (Rs. 65.29 lakhs) for the proposed physical interventions the Trust's funds will support the expenses for community mobilization, capacity building of the village level institutions and facilitation expenses of PSI and its partners. The village communities are expected to contribute Rs. 0.55 crores (17 per cent of the planned expenditure) in the form of cash and voluntary labor (*shramdan*). The remaining funds of Rs. 0.97 crores (30 per cent) will be sourced from government schemes, like the MNREG scheme, banks and other agencies. Thus, SRTT's support is essentially seen as a catalyst in this program as it will fill the critical gaps in this program.

After approval of the 21 plans in the first quarter of 2011, PSI began activities by strengthening the project's institutional base. It organized meetings with its partner organisations (POs) and a five day orientation programme for the POs' livelihood development promotion teams (LDPTs) and PSI's support team. The trained LDPTs started facilitating the local communities to organize *aam sabha* meetings in each selected village and strengthen existing village level institutions. The support team also documented the works completed by the communities after submission of the plans to NRTT in 2009, through convergence with government schemes and *shramdaan*.



1.3 Mitigating Drought in Himachal Pradesh and Uttarakhand

In 2009 India faced a rainfall deficit of about 25 per cent from the normal. In October 2009 PSI proposed participatory drought coping and mitigation interventions for directly benefitting affected people of twenty villages in Himachal Pradesh and Uttarakhand. The project “Mitigating Drought in the Mountain States of Himachal Pradesh and Uttarakhand” however, could start only in April 2010 when financial support from Sir Dorabji Tata Trust became available. Due to normal rains in 2010 the focus shifted to comprehensive village development, including interventions for coping with droughts in the future.

In April 2010 five Partner Organizations (POs) -- three in Himachal Pradesh and two in Uttarakhand were selected. Each of them formed a two member Village Development Team (VDTs). Nineteen target villages with a relatively larger presence of SC/ST, BPL, small and marginal farmers were finally chosen. A twelve day intensive orientation and training course was conducted for the VDT members and PSI staff. It focused on enhancing their motivation, commitment, knowledge and skills.

The VDTs assisted the village communities in preparing development plans, including drought mitigation interventions, through baseline surveys, application of various PRA tools and analysis of present resource use patterns, institutions, livelihoods, and other related concerns in the selected villages. Each village development plan details the status of resources, institutions, gaps in livelihoods and the possible interventions – in terms of the works, institutions and future management. Discussions at block level meetings with government department/ line officials were also held to identify possible financial linkages.



PSI's project team extended development and field support to the VDTs and communities to facilitate the plans preparation and execution. Priority attention has been given to locating drinking water sources in some of the villages. About 45 ha area of farm bunds has been covered with fodder grass plantations. SCI/SRI practices, that yield better harvests even during drought conditions, were introduced to 334 farmers who applied them on 17.8 ha of farmland. Irrigation facilities to irrigate an additional 10.40 ha in the villages were also constructed as drought mitigation interventions. It is expected that village development would result in substantially increasing the natural, social, and physical capital in the rural areas.

The most significant outcome of the programme has been that people in the selected villages have gradually taken charge of their development and in the process reduced their



vulnerability to droughts and other disasters. The drought hit communities now display a new confidence and self-esteem as a result of their preparing the plans, restructuring their institutions, implementing the plans and managing the new assets. Villagers have begun to appreciate their strength in unity. Women and economically weaker families have found a new platform to voice their needs.

The practice of SCI methods by half of the 677 households has increased farm yields, incomes and the sustainability of limited land resources. The increasing acceptance of the SCI techniques is evident from the fact that farmers are using their better irrigated and fertile fields for SCI cultivation. Availability of additional irrigation water through the project interventions will further add to the gain in yields. By focusing on fodder development in the project, some of the households have found an alternate livelihood option in livestock rearing, while most households have got more farmyard manure. The availability of green fodder with grater nutrition will have a significant impact on the productivity of the livestock.



Thus, it is expected that the proposed interventions will result in substantially increasing the natural, social and physical capital in the selected villages. Should the project enthusiasm be sustained by the village communities and the VDDTs, the former could access additional development funds in the future through annual panchayat plans as well as obtain better performance from the government health and educations services.

I.4 Preparation of DPRs for Nine Watersheds of Sirmour District, H.P

PSI has been selected by the National Rainfed Areas Authority to provide technical support to district administrations for implementation of watershed development projects under the Government of India's Integrated Watershed Development Programme (IWMP). At the request of the district administration, PSI prepared Detailed Project Reports (DPRs) for nine watersheds in Nahan block, Sirmour District, Himachal Pradesh (HP) are to be developed under IWMP. Two watershed planning team were exclusively dedicated to the exercise. The eight professionals included two experienced women social workers and six subject matter specialists from various disciplines like agriculture, forestry, civil engineering, etc. PSI's senior resource persons demonstrated the process of micro-planning whereby the watershed village communities were facilitated to prepare participatory development plans of their villages. These were later consolidated at the watershed level. This exercise was done in the presence of WPT members. Subject matter specialists from PSI visited the villages, conducted meetings and verified the technical feasibility of the proposed interventions.



The two teams worked strenuously to facilitate the watershed communities to complete all the nine plans in a period of seven months. The total cost of the watershed development activities for all the nine watersheds is over Rs. 18 cr for an area of 8,000 ha. Later additional plans costing Rs. 1.14 cr to cover reserved forests across 864 ha were also prepared.

I.5 Other Activities

The CNRM Group undertook a number of small projects and activities during the year. The most significant was to field test a new methodology for estimating below poverty line population in four mountain villages each of Himachal and Uttarakhand. PSI's resource persons carried out follow up visits to monitor and provide field support to communities in Sikkim who had earlier implemented springshed development projects under PSI's guidance. The Government of Sikkim has greatly appreciated PSI's work. The Institute trained officials of Uttarakhand state for implementing IWMP activities. It also assisted Winrock International (India) to prepare a catchment area treatment plan for Renuka lake region in Himachal Pradesh by designing soil and water conservation structures and their cost estimates. Towards the end of the year, PSI began providing support for training watershed communities representatives from Himachal Pradesh in implementing IWMP projects. Twenty five panchayati raj representatives from Nadaun block of Hamirpur district were given a five day orientation. This watershed training programme will continue throughout 2011-12 with other communities.



II. ENVIRONMENTAL QUALITY MONITORING

PSI's Environmental Quality Monitoring Group (EQMG) monitors environmental pollution and its impact. It builds the capacities of VO's and communities to gather and interpret pollution data and plan for mitigating pollution-related problems. It assesses the environmental impact of development projects. It operates a well-equipped laboratory in Dehra Doon.

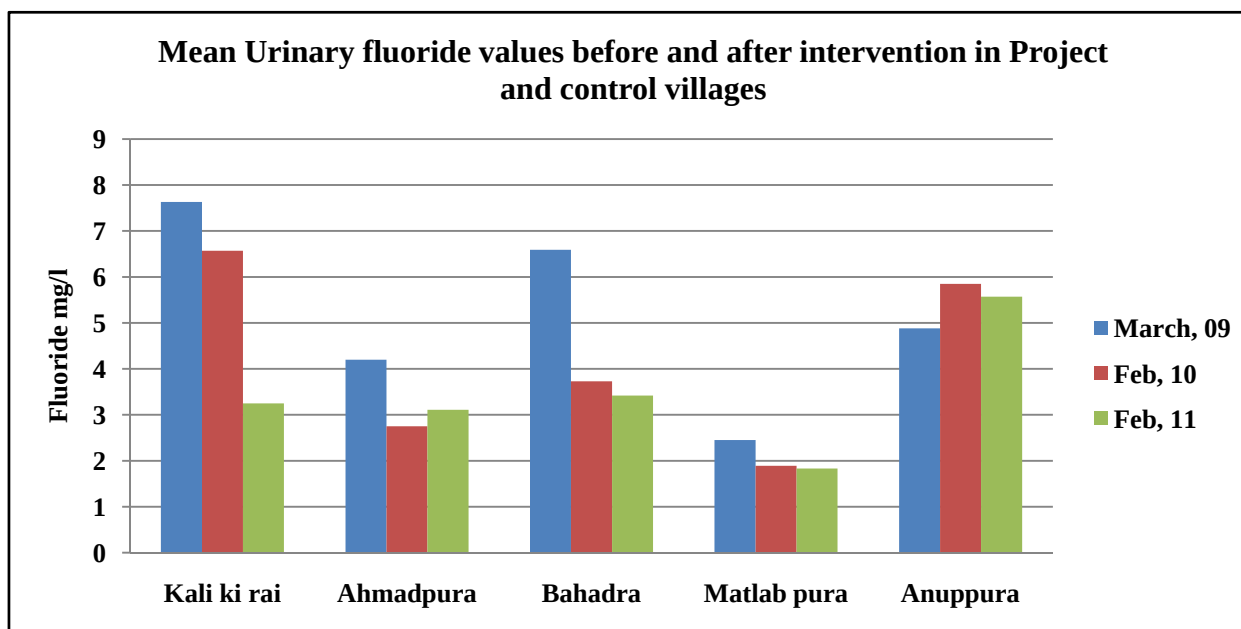
In 2010-11 the EQM Group carried out a few small projects on fluorosis mitigation, river water quality monitoring, reviewing biomedical waste management at health care facilities in Uttarakhand along with a number of other small public interest activities. It also began a major 3-year project on participatory ground water management with financial support from Arghyam.

II.1 Fluoride Monitoring and Fluorosis Mitigation in Dhar District (MP)

In earlier years EQMG had prepared plans for the provision of safe drinking water in 11 fluoride-affected villages of Dhar district. Vasudha, a WaterAid partner organization, implemented these plans in five villages of Dhar district with the technical support of EQMG. At Vasudha's request, EQMG conducted a study in the selected villages to assess the impact of Vasudha's interventions. In the study fluoride concentrations were measured in drinking water and urine samples of villagers. The monitoring was done (i) before undertaking the interventions in March, 2009; (ii) in February, 2010 (six months after the interventions) and (iii) in February, 2011. The study covered 10 villages, of which intervention had taken place in four villages, in five villages with no intervention and in one control village. In all 432 persons from the 10 villages were monitored.



The mean urinary fluoride values in the study villages before intervention (March '09), six months after intervention (Feb,'10) and in February 2011 are shown in the figure below. Interventions had been carried out in Kali ki rai, Ahmadpura, Bahadra and Matlabpura, while Anuppura, where no intervention had occurred, was the control village. The chart shows significant reduction in the mean urinary fluoride concentrations within six months of the mitigation intervention, while there is an increase in the control village, Anuppura. The latter finding should ring alarm bells for decision-makers and implementation agencies.



As a result of these findings the Public Health Engineering Department in Dhar has decided to supply safe drinking water to a number of other fluoride-affected villages in the district.

II.2 Biomedical waste management at healthcare facilities in Uttarakhand

Biomedical waste is a serious health hazard in India. Its careless and indiscriminate disposal by healthcare establishments and research institutions contributes to the spread of serious diseases like hepatitis and AIDS (HIV) among those who handle it and also among the general public.²

EQMG conducted a study of biomedical waste management practices at 30 healthcare facilities in Uttarakhand with financial support from Toxics Link, New Delhi. The project objective was to study compliance levels in the state and the phasing out of mercury use from the state's health care sector.

Five parameters (segregation, pre-treatment methods, treatment and disposal methods, training and awareness) mentioned in the Bio-Medical Waste (Management and Handling) Rules prepared by the Central Pollution Control Board (CPCB) were chosen to gauge the compliance levels at 30 healthcare institutions in five cities of Uttarakhand, through a scoring exercise. The selected facilities were visited to study their waste management systems and their compliance levels. The results are shown in Table 4 below.

² S. Gupta, R. Boojh (2006), Centre for Energy, Environment and Technology.

Table 4: Status of Bio-medical waste management in health care sector in Uttarakhand

Locations	Hospitals Surveyed			SPCB Authorization		BMWM Compliance		BMWM Rating			
	Govt.	Pvt.	Total	Granted	Applied	Yes	No	4	5	6	8
Dehradun	4	11	15	10	5	15		1	6	5	3
Haridwar	-	7	7	2	5	4	3	4	2	1	
Roorkee	-	3	3	-	3	-	3	3	-	-	-
Pauri	3	-	3	2	1	2	1	3	-	-	-
Srinagar	2	-	2	1	1	2	-	2	-	-	-
Total	9	21	30	15	15	23	7	13	8	6	3

BMWM Rating Scale: 1-10: Segregation: 0-2; Pretreatment methods: 0-2; Treatment and disposal methods: 0-2; Training and awareness: 0-2; Authorization from SPCB: 0-2

Out of the 30 hospitals surveyed, nine were government institutions and the remaining 21 were private units. Only half of them had been granted permission by the State Pollution Control Board for BMWM. Twenty one units had a BMWM rating of 5 or less and only three hospitals had a BMWM rating 8 which could be treated as a good rating.

During the quantitative study, the following observations related to infection control and waste management were recorded—

- In general, cleanliness in the healthcare facilities is not up to the desired level and waste management has not been given due priority. There is no regular administrative monitoring.
- In all the healthcare facilities, bins were available but the sizes of the bins did not match the quantity of waste generated. There is no bio-hazard symbol on the infected bins.
- Sixty per cent staff of the healthcare facilities was unaware about proper segregation and disposal methods for bio-medical wastes.
- 80 per cent health care workers reported not receiving proper training on biomedical waste management.
- 90 per cent health care workers were not immunized for Hepatitis B. Mixing general wastes with infectious wastes is a common feature.





- Used IV bottles and disposable syringes received at the quantification point were usually not cut or mutilated.
- Protective gears have been supplied to the sweepers at some healthcare facilities but they are usually not used.

Mercury in Health Care Facilities

- Only two private hospitals in Dehra Doon have adopted digital thermometers and BP apparatus. Both reported satisfaction saying that their accuracy was better than the mercury-based products.
- All the remaining hospitals visited were using mercury thermometers and BP apparatus. They claimed cost to be the problem in adopting aneroid/digital thermometers and BP apparatus.
- In most hospitals mercury spill management is done properly and after collection they give it to a dealer.

Conclusions: Most health care facilities surveyed neglected their statutory responsibilities and rules for safe disposal of biomedical wastes. This reflects a lack of concern for the dangers of improper disposal and possibly a lack of trained personnel to create and manage safe waste disposal systems. The State Pollution Control Board has also failed to implement the relevant legal provisions. It has not been able to enforce the laws and hold healthcare establishments legally responsible for the safety of all concerned. The survey has shown that segregation and understanding the need and importance of segregation needs to be imbibed in the minds of the health functionaries from CMOs to **safai karamcharis**. Safe disposal planning is a prerequisite. It should be supported by appropriate training and motivation of the healthcare staff, management and healthcare managers. The study highlights the need for strict enforcement of legal provisions within an effective policy and legislative framework for the safe disposal of biomedical wastes in the hospital and healthcare establishments in Uttarakhand.

II.3 Water Quality Monitoring of River Goriganga

The EQMG team has carried out a study of the water quality of river Goriganga. The latter is a tributary of river Sarda, known as the Kali in Uttarakhand. The Kali, or the Mahakali as it is referred to in neighbouring Nepal forms the Uttarakhand-Nepal border. Goriganga originates in the Nanda Devi range from the Milam glacier and flows generally in a south to south-east direction. It experiences a drop of 2,530 m in its course of about 95 km till it joins the Kali.

Five major hydropower projects are proposed to be built in the 95 km stretch of the Goriganga. Five smaller projects will be constructed on its tributaries. Each of them will divert the river water into a tunnel and drop the water several kilometers downstream at a



powerhouse.³ The main objective of the study is to get base line water quality data before any dams are built on the river so that future impacts on the water quality can be identified.

Methodology:

- Water samples collection
- Physico-chemical and bacteriological parameters are tested as per the APHA Standards

Table 5: Details of sampling locations on the River Gori Ganga

S. No.	Sampling Location code	Description of location*	Elevation (m)
1	S-1	Gori-ganga near Mapang (d/s of confluence with Laspa river)	3026
2	S-2	Gori-Ganga near Nahar Devi Temple	2745
3	S-3	Gori-ganga at Bogdiyar before confluence with glacial Gad (stream)	2418
4	S-4	Gori-ganga at Rupasiabagad after confluence with river Rilam	1988
5	S-5	Gori-ganga d/s of Kethe Bend	1213
6	S-6	Gori-ganga near Chhoribagar	955
7	S-7	Gori-ganga at Jauljeebi (before confluence with river Kali)	600

*See map

Observations: On the basis of all the monitored parameters, the stretch of the river up to Rupsiabagad falls under A category as per CPCB guidelines.⁴ The remaining stretch is under CPCB's B category. Overall the river is in a pristine condition and any power project construction on it will destroy its water quality. The change in the water quality downstream of Rupsiabagad is due to human settlements influence. As the population density rises downstream the chloride concentration increases slightly due to mixing of some waste water. The presence of fecal coliforms is also noted in this stretch indicating a need for better sanitation facilities in the neighbouring settlements.



³ The catchment of the river at the dam of the controversial Rupsiabagar-Khasiyabara hydroelectric project near Paton village of Munsyari Tehsil is 1120 sq.km. It includes 29 glaciers and permanent ice caps measuring 346 sq. km. The seasonal snow covered area in the catchment is about 640 sq. km.

⁴ CPCB has classified river water quality into five classes, A to E.

Table 6: Water Quality of the River Gori Ganga (16- 19 May, 2010)

S. No	Water quality parameters	S-1	S-2	S-3	S-4	S-5	S-6	S-7	Standard
	Sampling date	16	16	17	17	19	19	19	
	Sampling time	10:30 - 12:00	14:44- 15:44	8:15- 9:15	15:15- 16:15	9:30- 10:40	12:10- 13:35	15:25- 16:30	
1	Temperature ($^{\circ}\text{C}$)								
i	Ambient	14.5	17.5	12.5	21.0	16.5	30.0	34.5	
ii	River water	4.7	10.0	5.5	12.0	11.0	15.0	17.5	
2	TSS (mg/L)	341	300	266	169	188	255	227	
3	EC($\mu\text{mho/sec}$)	226	237	213	221	216	235	224	
4	pH	6.0	7.2	7.8	7.2	8.2	7.6	8.1	6.5-8.5
5	DO (mg/L)	10.6	10.8	10.5	10.4	10.6	10.2	10.1	Min.5
6	BOD 5 th days (mg/L)	2.4	2.2	1.3	2.0	2.0	2.4	3.7	Max. 3
7	COD (mg/L)	67.2	59	53.6	65.6	35.2	44.4	59.6	
8	Alkalinity (mg/L)	72.0	75	82.0	71.0	86.0	86.5	82.5	
9	Total Hardness (mg/L)	60.0	62.0	62.0	58.0	64.0	68.0	66.0	
10	Calcium Hardness (mg/L)	60.0	62.0	62.0	58.0	64.0	68.0	66.0	
11	Magnesium Hardness (mg/L)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
12	Calcium (mg/L)	24.05	24.3	24.85	23.25	25.65	27.24	24.45	
13	Chloride (mg/L)	2.50	2.35	2.25	2.75	2.50	2.99	3.25	
14	Sulphate (mg/L)	24.8	18	BDL	23.6	2.3	19.7	16.2	
15	Nitrate (mg/L)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
16	Fecal coliform (MPN/100 ml)	Absent	Absent	Absent	Absent	10	16	>23	

II. 4 Participatory ground water management:

The Himalayan region is characterised by steep slopes and a tortured geology consisting of highly fragmented and fractured rocks. This is not conducive to the formation of large underground aquifers. Ground water occurs largely in disconnected localized bodies in jointed fractured zones. Perennial springs and underground seepages primarily provide rural communities with water for domestic use. Over millennia mountain communities have developed a glorious tradition of harvesting these resources. But the Himalayan ground water resources are threatened by inadequate recharge, over extraction and pollution. In addition to biological contamination there are pockets of arsenic, fluoride, iron and nitrates contamination and salinity.

Many actors in watershed development programmes are not aware that ground water catchments need not be co-terminus with the topographic watershed. The management and conservation of ground water resources are thus usually restricted to interventions to the



topographical catchment instead of considering the underlying geology. This issue also needs to be considered in the case of contamination of groundwater resources. Most rural households defecate in the open while the use of soak pits is common in smaller cities. This means that fecal contamination is a very real challenge. The Himalayan geology- the existence of faults and folds- often means that the cause of contamination of a spring may be across the ridge of a watershed. This factor is often overlooked.

A key shortcoming of natural resource management projects is the lack of equity. This is equally true in the case of ground water management where decrease of water resources either by over extraction or by contamination increases rural poverty and conflicts between urban and peri-urban users.⁵ These problems have prompted a group of organizations (ACWADAM, ACT, WASSAN, PSI) to work together to promote integration of geo-hydrology and mainstream watershed management. Funding for the programme is provided by Arghyam. PSI will anchor the ground water quality component of the programme. Its overall focus is to:

- Create a resource base of people aware and knowledgeable about groundwater
- Implement ground water conservation measures through action research and
- Enhance equity and quality in ground water use through community based institutions

The main activities proposed are:

- ✓ Training of PSI's project and watershed development personnel at ACWADAM
- ✓ Preparation of training materials on ground water quality
- ✓ Conduct two training workshops per year for the Himalayan region
- ✓ Publication of a status report on Himalayan ground water resources
- ✓ Implementation of action research projects
- ✓ Publication of case studies, research reports.
- ✓ Advocacy of ground water management issues

In the first quarter of the programme two members of the PGWM team, Dr Anil Gautam and ChicuLokgariwar, underwent training at ACWADAM in Pune. Work began on the preparation of the situation analysis report and the training materials on ground water quality monitoring.

II. 5 Other Activities:

Water Samples Analysis: EQMG operates a state-of-the-art laboratory in Dehra Doon, equipped with sophisticated instruments like atomic absorption spectrophotometer (AAS), gas chromatograph, respirable air and gas sampler, flame photometer, spectrophotometer and a

⁵ Janakarajan S., Zerah M, and Llorente M. 'Urban water conflicts in Indian cities: Man made scarcity as a critical factor', Paper presented in an International Workshop on Urban Water Conflicts, 27 and 28 October 2005, organized by the International Hydrology Programme, UNESCO, Paris.



TKN assembly. In 2010–11, over 300 drinking water samples were tested by the lab. Most of these samples came from the SWAJAL programme of the Government of Uttarakhand and institutions like Lal Bahadur Shastri National Academy of Administration, Doon School, Welham Girls School, Doon Girls School, etc. Seventy samples came from Hazards Centre, Delhi for analysis of heavy metals and pesticides.

Sale of water quality testing Kits: EQMG produces two types of water testing kits, viz, comprehensive and domestic. In 2010–11, it sold 129 kits and forty refills/chemicals during the year.

Training Support to National Institute of Hydrology (NIH) Roorkee: In February 2011 PSI's EQM Group supplied 90 kit to NIH and trained the targeted local population for understanding the importance of water quality and its analysis. The participants were teachers from primary and junior schools of Roorkee, health workers like ANMs and *Gram Panchayat* presidents and members. About 10-15 participants were present in each training programme. As a continuation of the same programme a PSI scientist demonstrated water quality tests at Haridwar during the Kumbh Mela.

Internship programme: As in previous years EQMG organized an internship programme during April-June '2011. Students from Indian Institute of Social Welfare and Business Management, Kolkata, carried out their internship on determining the impact of the SWI method on soil nutrients and on production of wheat as compared to the conventional cultivation method. They measured the concentrations of soil nutrients from SWI and conventional wheat farms from Una (H.P.) where the SWI method was practiced for cultivation of wheat.

Based on the above test on laboratory it is clear that nutrients uptake is less in SWI fields as compared to the traditional fields. Some highlights are:

- The pH value after harvesting all SWI plots averaged 6.5 with a range of 6.0-8.5, whereas the traditional plots has averaged only 5.6 which was below the desired range. Thus it is clear that the SWI method does not hamper the soil nutrients equilibrium.
- The content of organic matter increased in some SWI plots but decreased in all traditional plots.
- Similarly phosphorus and potassium increased in most SWI plots but they decreased on the traditional plots.

These results are not surprising since most farmers choose to regularly apply a variety of organic manures as required in SWI. This appears to help minimize nutrient extraction.

III. INNOVATIVE PROJECTS GROUP

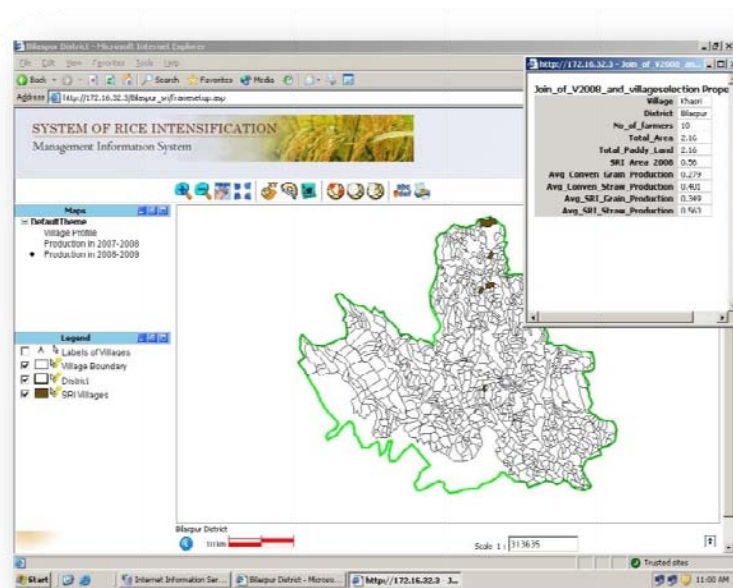
PSI's Innovative Projects Group (IPG) is charged with innovating technologies and social processes that can provide a cutting edge to the Institute's work. Since 2002 the Group has been engaged in developing a revolutionary web-based GIS software application -- Village Information System (VIS) which provides Census data and other information for every village and district of several states in India. PSI is developing VIS for the entire country. The VIS application is also useful as the basis for preparing Management Information Systems (MIS) that are often used today for project/programme management.

In 2002 IPG also pioneered the Gram Swaraj Abhiyan as a community-led developmental response to the starvation deaths in western Orissa. This innovative and very effective social process has been appreciated by many. In 2010 the Ministry of Rural Development, Government of India approached PSI to replicate the effort in Bundelkhand.

III.1 MIS for SCI Programme

PSI has been promoting and popularizing the SCI technique since 2006. Since 2008 WWF-ICRISAT have supported the Institute to popularize the SCI technique and promote its

extension in Himachal Pradesh. The IP Group developed a Programme Management Information System (MIS) for effective monitoring of the SCI activities and crop performance. All SCI villages in Himachal Pradesh were identified and located on PSI's VIS maps and linked with their area and production data. An applications software was developed to update crop information through mobile telephones. The system can give a visual grasp of crop performance and the geographical spread of SCI.



III.2 Maintaining Himmothan MIS

In 2007-08 a web-GIS based Management Information System (MIS) was developed to create and manage a central database on natural resources for Himmothan. The GIS based

system aids quick analysis and interpretation of spatial and non-spatial data. A review of the project suggested that there is a need to create a system of regular updating so that it is effectively used by various stake holders. Himmotthan provided financial support for developing the MIS and maintaining it on PSI's web server. The system is now available online at www.villageinformationsystem.org/himmotthanmis.

In 2010-11 GIS maps for old projects were updated and the latest database was attached to the spatial data. Himmotthan provided information for four new projects (IFLDP, HVLV, Catchment Area Treatment and Micro-Irrigation). The operational villages of these projects were identified and located on the PSI's VIS maps. New databases for these projects were created and linked with maps. The maps were published with their databases in the public domain via PSI's web server. The web-GIS based system now provides visuals of the geographical spread of Himmotthan's activities and also updated online project information.



In addition in 2010-11 it was also decided to prepare an MIS for Himmotthan's IFLDP project for online data entry and progress report generation. The system helps in updating programme information online and also generates desired reports. In August, 2010 a demo of the software was presented to Himmotthan. The project was completed thereafter and the final report submitted to Himmotthan in December 2010.

III.3 Development of a web-GIS based information system for ULIPH

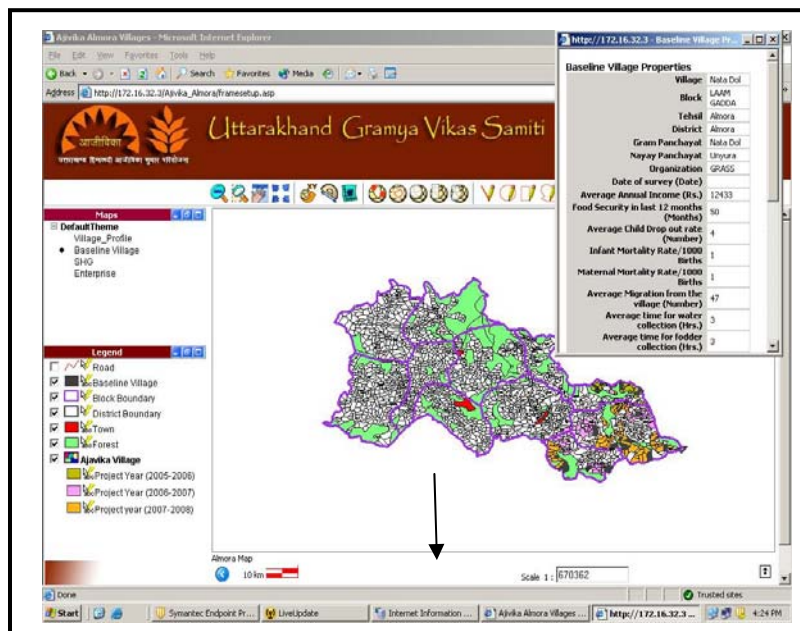
A project to develop a web-GIS based information system for the Aajeevika project of Uttarakhand Livelihood Improvement Programme for Himalayas was initiated in 2009-10. It was completed in November 2010.

The main objective was to develop a web-GIS based information system for ULIPH with geo-referenced maps and updated information to aid quick analysis and interpretation of data.

Almost one thousand villages spread over five districts (Almora, Bageshwar, Chamoli, Tehri Garhwal and Uttarkashi) where the Aajeevika programme is operational were located, marked and colour coded on GIS maps. Project information for each village was provided by

ULIPH. This information was converted into three different databases like village profile, baseline and project information which were then linked to the operational villages. The district maps locating the Aajeevika villages along with the databases were published in the public domain via PSI's web server.

A separate web page was designed to access the MIS system. The system was presented to ULIPH in August, 2010 and the final report was submitted in November, 2010.



III.4 Gram Swaraj Abhiyan - Bundelkhand

As mentioned earlier, in 2010 MORD (GoI) approached PSI to replicate its Gram Swaraj Abhiyan programme in Bundelkhand. PSI submitted a proposal "Developing Self-Reliant Villages in Bundelkhand" to NIRD an agency of MORD in March 2010. In it the Institute proposed an innovative long term action research programme to enable and empower drought stricken communities in Bundelkhand to initiate self-reliant development for mitigating droughts and eradicating poverty in a socially just and sustainable manner. It proposed to combine self help (*Shramdaan*) with improved governance and convergence of funds from the MGNREG and other government schemes. It also proposed to create mobile telephony based IT tools for programme planning, real time reporting and monitoring. This new application software could in future also aid administrators to review real time data and visually monitor distant projects involving physical works.

Though the proposal was submitted in March 2010 with a promise of quick funding, no funds were released in 2010 -11. To save time PSI started work on developing a VIS platform for Bundelkhand. Digitizing of village boundaries for three districts was completed and their databases were normalized during January to March, 2011.

IV. OTHER PROJECTS & ACTIVITIES

During the course of the year smaller multi-disciplinary teams at PSI carried out a number of projects and activities. Many of them deal with critical or frontier issues like disaster response, Himalayan water resources, river flows, climate change, etc. The major projects are outlined below.

IV.1 Uttarakhand Disaster Response

Uttarakhand witnessed record breaking rainfall in September 2010. Torrential rain from September 17 to 20 led to localized disasters in the form of flash floods and landslides in various parts of the state. In September-October 2010 several individuals and organizations in Uttarakhand approached PSI to assist with disaster response. With winter barely a month away, PSI realized that construction of temporary shelters that could provide homeless families with security from the elements and wild animals was the need of the hour. It therefore approached Sir Dorabji Tata Trust with a proposal to fund the construction of temporary shelters for 100 affected and needy families. The Trust responded with an immediate grant of Rs. 22.93 lakhs.



PSI and partner organizations in six districts prepared criteria for selection of truly deserving beneficiaries. The Institutes project team visited almost all the villages to verify that the selected beneficiaries met the criteria set. Most of them were residing in distant villages where health was unlikely to reach in a reasonable time. Simultaneously a senior PSI engineer planned the material procurement and transportation to the beneficiaries. Bhushan Steel Limited gave a generous discount on the purchase of corrugated GI sheets.

A training workshop was organized on November 9-11 for masons/carpenters and the staff of the POs. By the end of the workshop the participants had succeeded in building two temporary shelters for selected



families. Despite inclement weather and snowfall in some of the project villages temporary shelters were built quickly for 101 homeless families by the beginning of January 2011. More than 50 families belonged to the SC or ST category. PSI's support team verified the construction of each unit by visiting the sites. The project also helped build the disaster response capabilities of the seven POs.

Not only were 101 good quality shelters built in time but a major cost saving of 13 per cent was made possible due to the discount on the purchase of the GI sheets.

IV.2 Himalayan Water Resources: A Situation Analysis Report

In response to discussions at a consultative meeting in the Planning Commission in July 2009, PSI proposed to prepare a situation analysis report on Himalayan water resources for use by the commission during the preparation of the Twelfth Five Year Plan (2012-2017). With a generous grant from the Planning Commission, PSI began gathering quantitative data from official sources and published scientific literature. The project team visited several Himalayan states to obtain qualitative information, micro-level studies and hold discussions with local communities and experts.

Major highlights of the report include:

- Water availability data and detailed estimates of water demands are presented. The data show that though these states are well-endowed with water resources on a state-wide basis, there are localized shortages in almost every state due to local factors especially in rain shadow and deforested areas.
- Major reliance in the Himalayan states is on surface water resources including glacier and springfed rivers and lakes. The analysis identifies problems of decreasing flows in the rivers due to natural and anthropogenic factors. From the policy perspective, a case is made out for enacting legislation to protect pristine Himalayan rivers and to ensure that environmental flows are always maintained despite disruption of the natural flows for developmental purposes. Watershed development programmes hold a key to curb the growing water shortages in rural areas.
- Domestic water supply ground realities for each Himalayan state are discussed. Nagaland, Uttarakhand, Sikkim and Himachal have relatively high percentages of fully covered rural habitations while J&K, Tripura,





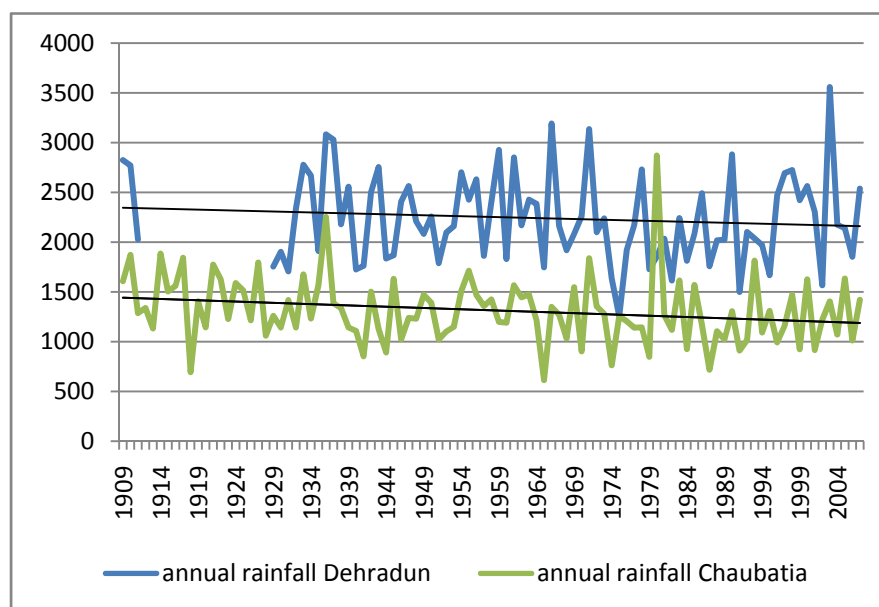
Manipur and Arunachal Pradesh bring up the rear. A state-wise analysis reveals similar problems in all the Himalayan states: drying water sources, increasing water quality problems and unplanned urbanization leading to water shortages. At the same time modernization and alienation of local communities are making traditional water harvesting structures dysfunctional. Water quality problems are more acute in urban areas.

- Despite limited cultivable area, agriculture has been the primary occupation in the Himalayan region. Irrigation in these states is mainly by traditional farmer-managed irrigation systems. Unfortunately the growing shift to non-farm employment has made traditional management of irrigation systems difficult, especially in the western region. The challenge now is to devise effective institutions for managing irrigation and other related natural resources.
- The Himalayan region is home to 70 per cent of India's hydropower potential and the Central and State governments have prepared ambitious plans to develop it. But dam building is among the most contested development activities because of social and environmental factors. If not done carefully, dams can threaten the stability of slopes integrity of rivers, livelihoods and physical security of the local people. The major issues that require redress include promoting sustainable hydropower development through optimization instead of maximization of water use, assessment of the impact of climate change on river flows, revamping the procedures of EIA so that social and environmental concerns take precedence over clearing projects, strengthening the role of Gram Sabhas, and in general ensuring transparent systems of project selection and approvals. Alternatives like demand management and softer energy options have become desirable in the context of global warming.
- It is shown that there are several opportunities for community based INRM even within the existing policy-legal frame work. New policies, laws and programmes, however need to be framed to protect traditional water conservation, use, agriculture and irrigation systems. Ownership of the resources by the local communities is a necessary condition for sustenance of the traditional systems
- The major recommendations include strengthening equitable community management of natural resources, rejuvenating springsheds to enhance base flows of rivers and sustaining river flows, increasing focus on urban resource management and treatment of waste water, water conservation in agriculture and sustainable and safe hydropower development.

IV.3 Documenting Climate Change

Most people in the mountain regions of Uttarakhand are subsistence farmers with little resilience to environmental changes. Considering that climate change is a leading factor in such changes and that it manifests itself in varying forms across region solutions can be developed only for a small regions once the impact of climate change on that area is determined.

With this end in view PSI, supported by the Himmotthan Society conducted a baseline study of the impact of climate change in two valleys in 2009-10. The methods used included participatory means such as group interviews, direct collection of information through field surveys and an analysis of 100 years weather data obtained for 4 stations in Uttarakhand. The field surveys have provided baseline information about species composition in the bugyals, forests and cropping patterns in the fields and orchards as also information about pastoralism, bee-keeping and other activities. Information about historical weather patterns and recent changes were noted.



Some of the changes observed can be directly attributed to climate change. The most important phenomena is the decrease in precipitation, especially a drastic reduction in snowfall which is leading to bare mountains and a subsequent decrease in water availability in summer. At the same time, there is winter rainfall. This is leading to a decline in the production of wheat and potatoes and consequently has an impact on food security. Similarly, this lack of rainfall increases aridity which encourages the proliferation of thrips that impact the apple crop. Lack of freezing temperatures has led to a decrease in apple production.

Analysis of the weather data reveals a rising trend towards increasing extremes in weather, with hotter summers and colder spells in winters. While there is no significant trend towards later or earlier occurrence of seasons, there is an increase in the frequency of variation. There is a decrease in length of the winter season as also a shift towards later monsoons.

A strategy to enable mountain communities to cope with climate change will include sustaining their food security in the face of winter drought. Improved agriculture techniques to help them cope with water shortage while lessening their reliance on a single crop are required. Establishing a system for managing commons will help prevent over-exploitation of natural resources that are already vulnerable due to climate change.



IV.4 Miscellania

The River Conservation Group was engaged in a major collaborative effort to study the building block methodology to assess environmental flows requirements of rivers. This effort was sponsored and coordinated by WWF-India under its Living Ganga Programme. In this method several expert groups are formed to deal with different aspects of flow requirements such as hydrology, bio-diversity, water quality, socio-economic, geomorphology, etc. PSI chose to work on the flow requirements to maintain spiritual needs and cultural practices. A paper on cultural flow requirements for environmental flows in river Ganga has been prepared for publication.

Whoever said that learning, or teaching for that matter, is confined within the walls of a classroom? It is obvious that we all learn a lot more outside our classrooms than in them. As part of its continuing efforts in the field of environmental education, PSI worked with the Winterline Foundation to prepare a booklet titled “The 5 Kilometer Classroom”. The Five Kilometer Classroom booklets are a series developed and funded by Winterline Foundation based on a concept by Richard Wechter a former science teacher at Woodstock School. Woodstock published the first book in the series in 2005. PSI’s booklet is based on a short five kilometer walk along the Kedarnath pilgrim route from Guptkashi to Jurani village. It provides visual lessons about the region’s history, geography, geology, eco-systems, flora, fauna, people, culture and more.

V. FINANCIAL REPORT

PSI's balance sheet and consolidated income and expenditure account for 2010-11, ending March 31, 2011 are attached as Annexures 1a and 1b.

PSI began the year with a total opening balance of Rs. 6,615,999. During the year it generated total receipts of Rs. 32,231,042 and spent Rs. 27,222,689 leaving a closing balance of Rs. 11,624,352. Over 88% of the expenditure was on project activities, nearly 11% on administration and a mere 0.8% was on the purchase of fixed assets.

The figure alongside gives an indication of the Institute's ability to raise funds in recent years. After FY 07 the growth in income has been maintained at a steadily increasing rate. The 2010-11 receipts grew by almost 37% over the previous year.

The pie-chart shows the sourcing of income from local grants and donations, foreign grants and donations and revenues from the sale of goods and services.

The main donors for local and foreign grants are listed below. PSI is thankful to all of them for their support. Revenue income was earned from consultancies, training programmes, sales of publications, calendars, water quality testing kits and posters.

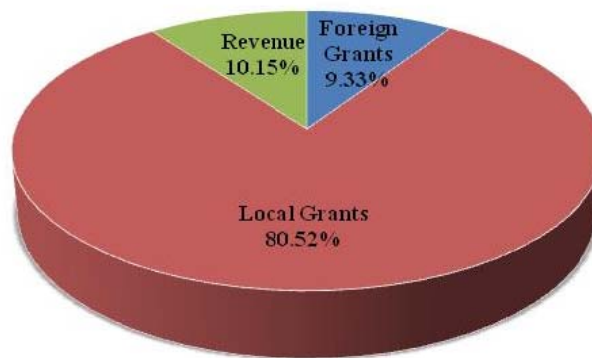
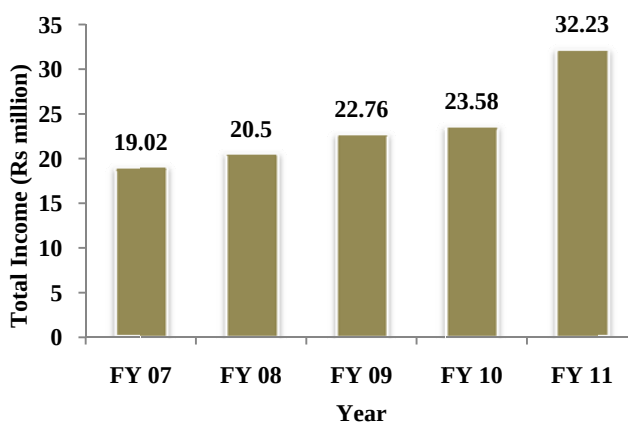
Major Funders

Indian

Sir Dorabji Tata Trust • Sir Ratan Tata Trust • Navajbai Ratan Tata Trust • Jamsetji Tata Trust • WWF-ICRISAT • Governments of Uttarakhand • DRDAs (H.P.) • NABARD • Planning Commission, GoI • Arghyam • Himmoththan Society • Envirotech Instruments Pvt. Ltd. • CTC Geotechnical Pvt. Ltd. • National Institute of Rural Development

Foreign

• International Service Society • India Friends Association • Indians for Collective Action • Winterline Foundation





EXECUTIVE BOARD 2010-11

Dr K.S.Chawla	Chairperson	Geotechnical Engineer
Mr A.K. Roy	Treasurer	Chemical Engineer
Dr B.K.Joshi	Hony. Dean of Research	Political Scientist
Ms Madhu Sarin	Member	Architect
Dr Leela Visaria	Member	Sociologist
Dr S.Jeejeebhoy	Member	Sociologist
Dr Ravi Chopra	Director (Ex-Officio)	Scientist

PSI STAFF 2010-11

S.No.	Name	Date of Joining	Date of Leaving
1	Shubhoshree Banerjee	15.07.10	
2	Basil Anthony	09.10.92	31-05-2010
3	Nidhi Barthwal	08.03.07	
4	Puran Bartwal	03.01.11	
5	Sunil Budhlakoti	03.01.11	28-02-2011
6	Rita Chandola	23.12.10	
7	Indrani Bordoloi	01.06.09	30-06-2010
8	Ravi Chopra	27.06.88	
9	Salil Das	21.02.90	
10	Akshay Das	27.07.09	
11	Shankar Datt	05.05.08	
12	D.N. Dwivedy	17.08.98	
13	Anil Kumar Gautam	01.03.02	
14	Mabel D. Gergan	25.08.08	30-06-2010
15	Saurindra Narayan Goswami	07.01.08	15-08-2010
16	Ajay Jairwan	01.05.08	
17	Lal Singh Jeena	23.08.10	30-11-2010
18	Anil Kumar Joshi	02.07.10	
19	Pushpa Juyal	21.12.92	
20	Pintu Kar	05.11.09	15-08-2010
21	Ramiz Khan	16.07.10	31-10-2010



22	Ajay Kumar	01.11.06	31-07-2010
23	Manoj Kumar	10.07.06	
24	Pravin Kumar	01.09.08	
25	Rajesh Kumar	01.04.88	
26	Shiv Kumar	17.03.08	30-11-2010
27	Arvind Kumar	02.08.10	
28	Harendra Kumar	02.08.10	
29	Heera LAL	01.04.02	
30	Mitthan Lal	26.07.10	
31	Chicu Lokgariwar	22.09.08	
32	Shreshtha Nand	01.10..08	30-11-2010
33	Deepak Negi	04.04.03	
34	Priya Pokhriya	01.04.10	15-10-2010
35	R.S. Prasad	01.11.94	
36	Desh Raj	21.04.08	31-10-2010
37	Mahendra Singh Rajwar	01.01.08	
38	Ramesh Singh Rawat	16.09.04	
39	Subhash S. Rawat	01.06.02	
40	Aloke K.Samaddar	16.12.09	30-06-2010
41	Devesh Semwal	01.11.08	
42	Debashish Sen	01.03.88	
43	Dinesh Sharma	02.10.97	
44	Rajesh K. Sharma	20.08.98	
45	Pavitra Singh	01.11.06	
46	Vijay Pal Singh	08.09.08	
47	Vikram Singh	01.02.00	
48	Yashpaul Singh	03.01.11	
49	Ramesh C. Tirpathi	03.11.04	30-09-2010
50	C. Tripathi	15.06.88	
51	Anil Tyagi	01.12.02	
52	Gayatri Darmwal	01.03.11	
53	Meena Yadav	07.11.08	

PEOPLES' SCIENCE INSTITUTE
E-57, PANCHSHEEL PARK
NEW DELHI- 110016

BALANCE SHEET AS AT 31st MARCH, 2011

S.NO.	PARTICULARS	SCHEDULE	FOREIGN GRANTS	LOCAL GRANTS	REVENUES	TOTAL AS AT 31.03.2011	TOTAL AS AT 31.03.2010
I	SOURCES OF FUNDS						
	A. ENDOWMENT FUND		597,837.00	-	-	597,837.00	597,837.00
	B. REVOLVING FUND						
	Opening Balance		1,514,000.00	128,500.00	-	2,042,500.00	2,042,500.00
	Less: Transfer to Capital Fund		200,000.00	-	-	200,000.00	200,000.00
	Less: Transfer to Other Organisations		1,714,000.00	128,500.00	-	1,842,500.00	1,842,500.00
	Closing Balance		-	-	-	-	2,042,500.00
	C. CAMPUS FUND		6,085,133.00	1,452,000.00	-	7,537,133.00	6,126,603.00
	D. CAPITAL FUND						
	Opening Balance		851,961.56	1,918,804.34	66,004.18	2,834,770.08	2,836,365.19
	Add: Transfer from Revolving Fund		200,000.00	-	-	200,000.00	200,000.00
	Add: Excess of Income over expenditure		40,932.86	(38,139.00)	95,819.52	98,613.38	8,404.89
	Closing Balance		1,092,894.42	1,878,665.34	161,823.70	3,133,383.46	2,834,770.08
	E. GRANTS (to the extent unutilised)		308,845.89	7,491,968.35	-	7,800,814.24	2,296,206.24
	TOTAL		8,084,710.31	10,822,633.69	161,823.70	19,069,167.70	13,897,916.32
II	APPLICATION OF FUNDS						
	F. FIXED ASSETS (at cost)	I	3,693,824.00	831,778.00	17,928.00	4,543,530.00	4,756,388.00
	less Depreciation						
	G. INVESTMENTS	II	4,131,128.00	2,581,250.00	-	6,712,378.00	6,279,086.00
	H. NET CURRENT ASSETS	III	251,258.31	7,594,445.69	517,114.70	8,372,818.70	3,879,779.32
	Current Assets, Loans & Advances		1,500.00	184,840.00	373,219.00	559,559.00	1,017,537.00
	Less: Current Liabilities & Provisions	IV	259,758.31	7,409,605.69	143,895.70	7,813,259.70	2,862,242.32
	NOTES TO THE ACCOUNTS						
	TOTAL		8,084,710.31	10,822,633.69	161,823.70	19,069,167.70	13,897,916.32

"As per our separate report of even date attached herewith"

For S.M. VARMA & CO.

Chartered Accountants

New Delhi

Date: Place: New Delhi

SUDHIR VARMA
FCA, CIA (USA)

For PEOPLES' SCIENCE INSTITUTE

Ravi Chopra
RAVI CHOPRA
Director

Kanwarjit S. Chawla
KANWARJIT S. CHAWLA
President

A.K. Roy
Board Member



PEOPLES' SCIENCE INSTITUTE

CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD ENDED 31st MARCH, 2011

PARTICULARS	FC AMOUNT AS AT 31-3-2011	LG AMOUNT AS AT 31-3-2011	REVENUE AMOUNT AS AT 31-3-2011	TOTAL AMOUNT AS AT 31-3-2011	TOTAL AMOUNT AS AT 31-3-2010
INCOME					
REVENUE:-					
Grants Unutilised C/I	704,022.89	1,592,183.35	-	2,296,206.24	1,609,356.24
Bank Interest	28,897.00	67,823.00	2,724.00	99,444.00	69,018.00
Consultancy Receipts	-	-	1,803,264.52	1,803,264.52	4,470,978.00
Donations Received	104,153.00	82,202.00	-	186,355.00	71,751.00
Grants received	480,272.00	24,856,273.00	-	25,338,545.00	15,680,312.00
Miscellaneous Receipts	-	172,633.00	80,409.00	253,042.00	193,384.00
Publications, Posters & Maps Receipts	-	-	216,504.00	216,504.00	332,107.00
Return on Investments	305,405.86	267,072.00	-	572,477.86	524,474.01
Water Sampling & Kits	-	-	829,583.00	829,583.00	695,642.00
Projects Closed	504,656.00	76,420.00	-	581,076.00	71,178.00
Overheads transferred to General Fund	-	141,287.00	-	141,287.00	91,700.00
TOTAL (A)	2,127,406.75	27,257,893.35	2,932,484.52	32,317,784.62	23,809,900.25
EXPENDITURE					
Advertisement Expenses	-	-	-	-	11,189.00
Audit Fees	-	34,923.00	-	34,923.00	58,427.00
Bank Charges	1,118.00	4,156.00	1,487.00	6,761.00	14,592.00
Board & Lodging	2,768.00	7,095.00	66,484.00	76,347.00	58,227.00
Books, Periodicals & Data CDs	2,811.00	9,754.00	21,678.00	34,243.00	32,296.00
Computer Consumables	6,205.00	47,608.00	9,834.00	63,647.00	102,097.00
Depreciation	85,526.00	294,069.00	14,007.00	393,602.00	450,960.00
EPF Contribution	14,976.00	298,457.00	55,792.00	367,225.00	401,948.00
Fellowships	48,000.00	-	-	48,000.00	80,000.00
General Expenses	-	6,095.00	-	6,095.00	10,000.00
Grants to Other Organisations	244,822.00	7,431,637.00	-	7,676,459.00	6,084,390.00



Ravi Chopra



PARTICULARS	FC AMOUNT AS AT 31-3-2011	LC AMOUNT AS AT 31-3-2011	REVENUE AMOUNT AS AT 31-3-2011	TOTAL AMOUNT AS AT 31-3-2011	TOTAL AMOUNT AS AT 31-3-2010
Honaria/Consultancies	72,310.00	162,750.00	141,000.00	376,060.00	414,955.00
Hospitality Expenses	-	5,066.00	849.00	5,855.00	14,895.00
Insurance Charges	-	-	7,339.00	7,339.00	27,435.00
Laboratory Expenses	1,027.00	-	-	1,027.00	225,261.00
Local Conveyance	639.00	7,058.00	7,688.00	15,385.00	17,650.00
Meetings/ Conferences/ Workshops	2,385.00	401,446.00	2,839.00	406,670.00	300,757.00
Office Maintenance	953.00	22,124.00	64,503.00	87,580.00	80,640.00
Postage & Courier	206.00	10,814.00	79,034.00	90,054.00	81,581.00
Printing & Stationery	3,119.00	30,346.00	36,008.00	69,473.00	94,700.00
Professional Charges	15,474.00	42,585.00	3,500.00	61,559.00	57,986.00
Publications Expenses	-	193,450.00	-	193,450.00	138,850.00
Relief & Community Development Works	-	1,865,207.00	-	1,865,207.00	192,586.00
Rent	154,000.00	468,624.00	206,000.00	828,624.00	732,448.00
Repair & Maintenance	10,602.00	40,084.00	9,775.00	60,461.00	102,838.00
Salaries	367,528.00	5,234,071.00	903,663.00	6,505,262.00	6,775,851.00
Service Tax	-	-	155,189.00	155,189.00	409,987.00
Server & Website Expenses	-	119,704.00	-	119,704.00	300,535.12
Staff Welfare	4,665.00	31,105.00	41,363.00	161,067.00	50,976.00
Telephone & Fax	17,036.00	89,998.00	21,491.00	57,261.00	196,727.00
Training Expenses	-	524,763.00	19,805.00	126,839.00	950,860.00
Travelling	202,987.00	1,699,273.00	373,189.00	2,275,449.00	2,416,691.00
Vehicle Running & Maintenance	13,035.00	28,045.00	95,483.00	620,246.00	277,195.00
Water & Electricity Charges	780.00	77,070.00	195,358.00	236,438.00	119,982.00
Water Kite Production Expenses	-	-	30,760.00	108,610.00	56,899.00
Projects Closed	504,656.00	76,420.00	272,547.00	581,076.00	71,178.00
Overheads transferred to General Fund	-	141,287.00	-	141,287.00	91,700.00
TOTAL (B)	1,777,628.00	19,403,024.00	2,836,665.00	23,982,394.00	21,505,289.12
Net Surplus (A-B)	349,778.75	7,854,869.35	95,819.52	8,335,390.62	2,304,611.13
Less : Grant Refunded	-	201,040.00	-	201,040.00	-
Unutilised Grants Carried Forward to Balance Sheet	308,845.89	7,491,968.35	-	7,800,814.24	2,296,206.24
Transferred to Campus Fund	-	200,000.00	-	200,000.00	-
Surplus transferred to Capital Fund	40,932.86	(38,139.00)	95,819.52	133,536.38	8,404.89

For S.M. VARMA & CO.
Chartered Accountants

For PEOPLES' SCIENCE INSTITUTE

Date: 01 SEP 2011
Place: New Delhi

SIDHIR VARMA
FCA, CIA (USA)

Ravi Chopra
RAVI CHOPRA
Director

Kanwarjit S. Chawla
KANWARJIT S. CHAWLA
President

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