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ABOUT PEOPLE'S SCIENCE INSTITUTE (PSI)

People's Science Institute (PSI) is registered as a society in New Delhi under the Societies Act (1860) and the Foreign Contributions Regulations Act (FCRA). Its stated mission is, "To help eradicate poverty through the empowerment of the poor and the productive, sustainable and equitable use of available human and natural resources." Operationally it provides technical and managerial support to communities and organizations that work with them, implements development programs and undertakes public interest research. The Institute is known in India's voluntary sector for its pioneering work in the fields of community-based natural resources and watershed management for improved livelihoods, geo-hydrology based springshed development, environmental quality monitoring, river conservation and dissemination of appropriate technologies.

PSI has active units for natural resources management, disaster mitigation and response, environmental quality monitoring and innovative projects. Each unit implements development projects, undertakes research and provides training as well as professional support. The Institute has a competent staff of socially conscious engineers, scientists and social workers to carry out these tasks. This annual report outlines the major activities of each group in 2018-19.

I. NATURAL RESOURCES MANAGEMENT

The Natural Resources Management (NRM) Group executes the Institute's natural resource management activities which strive to fulfil the basic needs of local communities in a sustainable, self-reliant, democratic and socially just manner. It is mainly involved in community-based micro-planning and development programs for promotion of water, food and livelihoods security, especially in marginalized areas. It also undertakes research in improved agricultural practices, hydrology and water technologies and NRM policies. The important activities undertaken in 2018-19 are described below.

I.1 Response to Uttarakhand Floods Disaster of 2013

During FY 18-19, the Participatory Livelihood Rehabilitation Program was extended for one more year in the villages of Madhu Ganga valley in Rudraprayag district and Revati valley in Bageshwar district. The program is financially supported by Star India besides donations received from hundreds of generous individuals and companies.

During the year the program focused on a phased withdrawal strategy along with addition of five new villages (3 in Madhu Ganga and 2 in Revati valley), especially for agro-based livelihood interventions and commencement of new initiatives like Community Based Tourism (CBT) and Cluster Resource Centres (CRCs). The year's major activities are summarized below.

I.1.A Community Mobilization, Capacity Building and Institution Building

a. Community Mobilization

In FY 18-19 meetings of village level institutions (VLIs) like *Aam Sabhas*, *Gram Swaraj Samitis* (GSSs), *Mahila Mangal Dals*, Savings and Credit Groups (SCGs) and Farmers' Interest Groups (FIGs) were organized regularly in all the villages of the two valleys. Progress of implementation of different livelihood activities and their impacts along with other village level issues were discussed in these meetings. Highlights of some of the community mobilization activities are as follows:

(i) World Soil Day: On 5th December 2018, the Krishi Vigyan Kendra (KVK) of VPKAS, an ICAR- supported institution organized a one day training-cum-awareness program at its Kafligair campus. Twenty women farmers from the Revati cluster attended it. Testing of soil samples was done by KVK and soil cards were distributed to the farmers. A stall of vegetables grown in Revati valley was put up by the Farmer Interest Groups (FIGs) got a very good response.

(ii) Celebration of Women's Day: At Sama village Women's Day was celebrated on 8th March in which about 250 women from the Revati cluster participated. Products prepared by different SHGs were displayed and sold. At the end of the program, the women decided to initiate a community-based tourism program in Liti and Sama villages.

A two-day community festival was organized with the women. A street play by the *Mahila Mandals* on women's rights, banning alcoholism and promotion of girl child education generated a lot of interest. The women enjoyed playing a life-sized snakes and ladders game aimed at generating awareness about injustices against girls and women in a local rural setup.



Celebration of Women's day in Revati valley

(iii) Workshop on Women's Rights:

In February 2019, a three-day workshop on women's rights was organised in Revati valley which was attended by participants from both Revati and Madhuganga valleys.

(iv) Awareness cum felicitation camp: One-day awareness-cum-felicitations camps were organized by cluster level federations in Madhuganga and Revati valleys to felicitate progressive farmers, institutions and individuals for their efforts in community mobilisation, institution building and livelihoods development. The participants were also informed about government schemes for the villagers.

(v) Celebration of Human Rights Day: A one day training of local women's groups was organized with the support of Hunger Project.

b. Capacity Building Activities

(i) Capacity building of PSI's Field Teams: PSI's Field Team members from Revati and Madhuganga valleys participated in a two-day capacity building program at PSI's campus on 24-25 November, 2018. A detailed review of institution building along with farm and off farm livelihood activities was done.

(ii) Training on preparation of organic pesticides: About 100 farmers, mostly women took part in training programs on preparation of organic pesticides like *Agniyastr*, *Neemastr*, *Lamit*, *Mathastr* etc., were organized in different villages of Revati and Madhuganga valleys. Vinod Niranjana from PSI's Bundelkhand team was the resource person.



Training on preparation of organic pesticides

(iii) Training on processing and packaging of local farm products: Training on processing of Burans (*Rhododendron*) flowers was organized for members of women groups from the Revati cluster. They were also trained in packaging of local farm products like pulses, spices, Burans squash and salt, under the brand name "Him Amrit". The packaged materials were displayed at local festivals, fairs and exhibitions. Marketing linkages of these self-help groups will be established under the Gramya project and the National Rural Livelihood Mission (NRLM).



Packaging of local farm products for market

(iv) Other Training:

a. Mushroom Cultivation: The Horticulture department, Kapkot organized training on mushroom cultivation and bee keeping for 10 farmers from Revati valley at Pantnagar.

b. Community based Tourism (CBT): Eighteen families (8 in Madhu Ganga and 10 in Revati valley) have started homestays while local youth have shown interest in working as tourist guide. Training was organized for the homestay owners on managing homestays, housekeeping, and cooking. The "Madhmaheshwar Paryatan Samooh" and the "Sarmool Paryatan Samooh" will manage the CBT activities in the Madhu Ganga and Revati valleys. The members of the Sarmool Paryatan Samooh visited Pawalgarh near Ramnagar for advanced training and exposure.

(v) Exposure Visits:

a. Women's Empowerment: In September 2018, 24 women members of community-based institutions of Revati valley visited Mati organization in Munsyari in Pithoragarh district. Their objective was to see forest conservation and community-based tourism activities. Mati and Himal Prakriti has developed a successful and sustainable model of Community Based Tourism (CBT) in Sarmoli village near Munsyari.



Exposure visit to Mati organization Munsayari

b. Alternate energy: In December 2018, representatives of community-based institutions of Revati valley visited Avani organization in Berinag, Pithoragarh district to see its alternate energy program. Avani has established a unit for making pine needle briquettes and generating electricity by burning them.

c. Exposure visit on Bee Keeping: About 25 farmers of Revati valley who have started bee keeping as an alternate livelihood option visited Corbett Park (Ramnagar) in February 2019 to see a bee-keeping project.

c. Institution Building

Each program village has at least a *Gram Swaraj Samiti* (GSS), a *Mahila Mangal Dal* (MMD)/ *Mahila Swaraj Sangathan* (MSS), Savings and Credit Groups (SCGs), Farmers Interest Groups (FGs), and User Groups (UGs), to lead its development and move towards *Gram Swaraj*. Formation and strengthening of *Gram Swaraj Sangathans* at valley level was the main focus of institution building. Valley wise number of these institutions and membership are given below.



Meeting of women's groups in Revati valley

Table 1a: Village Level Institutions in Madhu Ganga & Revati valleys

Valley (Villages)	Total House- holds	GSS Membership (at Village level)			MMD/MSS Membership (at Village level)		SCG Membership		
		Total	Female	BPPL	Total	BPPL	Number of SCGs	Total	BPPL
Madhu Ganga (8)	1,026	57	23	27	224	127	32	346	131
Revati (8)	1,101	60	32	34	168	92	38	331	240
Total (16)	2,127	117	55	61	412	219	70	677	371

BPPL = Below Perceived Poverty Line

Table 1b: Cluster Level Institutions

Valley (Villages)	(at Valley level)		
	Total Members	Female Members	BPPL Members
Madhu Ganga (8)	11	5	6
Revati (8)	24	9	15
Total (16)	35	14	21

I.1.B Livelihood Development Activities

Besides promoting common property resource based activities like household water supply, irrigation water works and fodder plantations PSI's team continued to promote household level farm and off-farm interventions through local institutions. These activities are outlined below.

a. Natural Resource Based Activities

(i) **Household Water Supply and Irrigation Water Works:** Upto March 2019 two drinking water and three irrigation schemes were completed in Revati valley. User groups were formed to manage proper distribution of irrigation/household water and maintain the schemes

Table 1c: Household Water Supply and Irrigation Water Works (April 2018-March 2019)

Schemes	Number	Irrigated Area (ha)	Beneficiary Households	BPPL Households
Irrigation Water	3	8	95	83
Household Water	2	-	75	45
Total	5	8	170	128

(ii) **Fodder Plantation:** For improving the availability of cattle feed plantation of fodder trees on community lands was done in the two valleys in July-August 2018. Seedlings were mostly purchased from the kisan nurseries raised by BPPL households and women's groups. Local institutions, particularly MMSs and SHGs led the plantation drive. Monitoring of tree plantations was done in winter of 2018. This will be followed by gap filling activities in the coming monsoon season.

**Fodder plantation in Revati valley**

Table 1d: Fodder trees and Napier Grass Plantations (April 2018-March 2019)

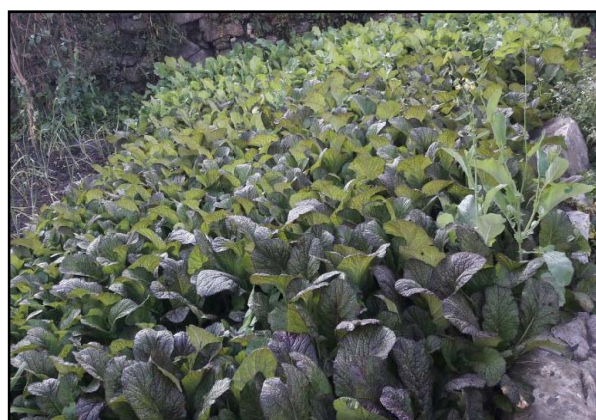
Valley	Community Fodder Tree Plantation		Individual Grass Plantation
	Trees Planted	Area Planted (ha)	Napier Grass Slips Planted
Madhu Ganga	3,000	3.0	4,600
Revati	3,500	3.5	23,993
Total	6,500	6.5	28,593



Napier Plantation on field bunds in Revati valley

b. Farm-based livelihood Activities

Under farm-based livelihood activities, more than 1,000 farmers from each of the two valleys undertook cultivation of vegetables and spices apart from growing cereals (paddy, maize, wheat) and pulses (kidney beans and lentils), based on Low External Input Sustainable Agricultural practices including system of crop intensification (SCI). The incremental SCI grain yields ranged from 13 to 43 per cent in the different crops across the two valleys.



Cultivation of vegetables in Revati valley

Farm production data shows annual crop yields ranging from about 4 tons/ha under SCI to 6-10 tons/ha under spices and vegetables respectively. The economic value of produce from vegetables and spices is to the tune of Rs. 1.20 lakhs per ha. But the net income per farmer is low, because of less land and labour availability. Production and economic details are given in Table 1e.

Table 1e: Farm-based Livelihood Activities

S. No.	Activity	No. of Farmers	BPPL Farmers	Area (in nalis)	Production (in Kgs)	Production Value (in Rs.)	Production Value per Farmer (in Rs.)	Farmers who Sold	Total Sale (in Kgs)	Income from Sale (in Rs.)	Income per Farmer (in Rs.)
1	Kharif 2018-19										
a)	Vegetable Cultivation	1,000	375	1,375	1,29,700	27,90,000	2,790	318	53,700	10,80,000	3,396
b)	Spice Cultivation	360	151	330	16,700	6,90,000	1,916	155	12,240	4,90,000	3,161
c)	SCI	1,667	670	1,150	46,000	27,60,000	1,655	300	3,000	3,00,000	1,000
2	Rabi 2018-19										
a)	Vegetable Cultivation	684	322	1,030	1,03,000	20,60,000	3,000	200	35,000	7,00,000	3,500
b)	Spice Cultivation	867	368	800	48,000	24,00,000	2,768	220	24,000	14,40,000	6,500
c)	SCI	1,296	520	1,140	45,000	27,00,000	2,000	100	1,000	1,00,000	1,000
	Total	-	-	5,825	388,400	13,400,000	-	-	1,28,940	41,10,000	-

Notes: 1 ha = 50 nalis

Kharif Vegetables = Tomato, Brinjal, Capsicum, Chilly and Cabbage

Rabi Vegetables = Pea, Onion and green vegetables

Kharif Spices = Turmeric and Ginger

Rabi Spices = Garlic

Kharif SCI Crops = Paddy (Direct sowing), Paddy (transplanted), Kidney beans, Maize

Rabi SCI Crops = Wheat, Lentil, Pea

c. Off-Farm Livelihood Activities

(i)Bee keeping: During 2018- 19, 30 new farmers were added in beekeeping group, taking the total number to 40 functional units in Revati valley. In addition to bee boxes, traditional improved bee hives were also promoted with these farmers. The bee keepers of Revati valley earned Rs.0.6 lakhs from the sale of honey during the year.

Table 1f: Status of Bee keeping Units in Revati valley (2018-19)

Villages	Total Units	BPPL Units	No. of boxes	Total Income (Rs. In Lakhs)
4	40	22	130	0.6

(ii) Community Based Tourism: Madhuganga Valley: Community Based Tourism (CBT) enterprise was initiated in Madhuganga and Revati valleys as an eco-travel initiative in five villages (Raolenk, Uniyana and Ransi of Madhuganga, and Sama and Liti of Revati) to work towards, social inclusion, environmental conservation and economic empowerment.

Madhuganga Valley: Madhuganga valley is home to the famous Madmaheshwar Temple, among the five most worshipped Shiv temples in the country. The temple sees a footfall of almost 40,000 tourists a year but the local people are unable to benefit much from it. In fact the ecological impact of the hotels, lodges, etc. mushrooming in the valley is a matter of great concern for the local people.

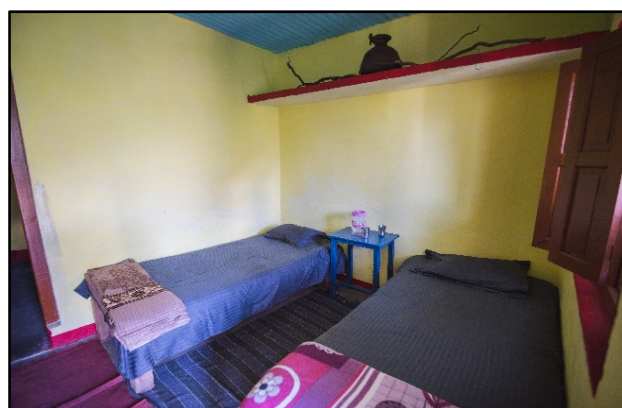
The CBT initiative in Madhuganga offers homestays, village walks, cooking classes, treks and local hikes. Selected households in the three villages are associated through these activities so that economic returns can be attained by maximum beneficiaries. Eleven households so far provide home stays, six youth in the trekking activity, three SHG groups in plantation and cultural activities.

A two-day hospitality, sanitation, waste management and food training was conducted for the home stay families with practical demonstrations. Communities in each village have formed '*Paryatan Samuhs*' (Tourism Groups) and a '*Madhmaheshwar Paryatan Samuh* (MPS)' at the cluster level.

In consultation with PSI they have devised a charter of rules and regulations for the *Samuhs*, tourists and themselves. Five per



Madmaheswar valley of Rudraprayag



Homestays in Madhuganga valley

cent of all the earnings through MPS will go to a community fund to be utilized for conservation and other activities in the villages. Each homestay is equipped with the necessary standards of clean bedsheets, blankets, towels, etc. to ensure the guests a comfortable stay.

MPS and PSI are currently marketing this initiative. PSI has created a short 2-minute film for the purpose. The front office of the initiative is well equipped with necessary information and pictures of the local landscape.

Since May, 2018 the participating households have earned approximately Rs. 2.79 lakhs.

Revati Valley: A similar CBT initiative was initiated in Liti & Sama villages of Revati valley. This initiative is entirely spearheaded by local women. Eight families are involved in homestays, 3 youth are engaged as local guides and 2 SHG groups are involved in making products such as juices, *pahaadhi namak* (local salt), etc. for the visitors to buy.



A scenic spot in Revati valley

Eight guests were hosted in the homestays during the 2-day community festival organized by the local women in March 2019. A village walk was organized around village Liti. Traditional food items cooked by *Paryatan Samooch* prepared from local farm produce were offered to the travelers. The travelers thoroughly enjoyed the rural experience and the local community had its first experience of hosting tourists.

d. Skills Development

(i) Development Professional Training (DPT): Rural youth usually receive poor quality school and college education. Hence they find it hard to compete in the formal job market. A ten months' certificate course initiated by PSI in 2016 is designed to meet the human resources needs of the non-profit sector and provide employment to rural youth after ten months of intensive training in the basic concepts and practice of rural development.

The course combines classroom lectures focusing on theory and analysis, using carefully selected case studies, group discussions, field visits, practical work and internships. The students undergo three month-long internships with different VOs to gain work experience under different situations.

Two students from the second batch of DPT which ended in May 2018, got placement in PSI.

A third DPT batch with 7 students from Uttarakhand (5), M.P. (1) and Bihar (1), began the course in August 2018.

In September - October, 2018 three students did their first internship at Sangitin (UP) while a second group went to MKSS (Bijawar, Rajasthan). The second internship in December'18 - January'19 was completed in the program areas of PSI in Rudraprayag, Bageshwar and Haridwar districts. Field visits for the practical PRA training were organized in Damta village near Kalsi in Dehradun district. Practical training in engineering was organized in Haridwar district. Exposure visits were organised to PSI's program villages in Rudraprayag, Bageshwar and Haridwar districts.



Students from the DPT batch III

(ii) Computer literacy training: Living in remote villages, the youths of Madhuganga and Revati valleys have limited access to computers and opportunities for computer education. Presently governments and corporate offices are trying to promote E-Commerce & E-Governance. It is therefore important for all citizens to maintain a minimum level of proficiency in using electronic gadgets like computers/laptops, mobile phones, etc., so that all the useful information can be viewed on their phone/PC by accessing the internet.

In December'18 - January'19, a 15-day computer training course was organized at PSI, Dehradun in which 14 participants (including 3 girls) from Madhuganga and Revati valley participated. They were trained to use desktop and laptop computers as well as the internet.



Computer Course at the PSI Campus

(iii) Sewing and Beautician Course: A one month sewing course was organized at Sama for women from Revati valley. It was attended by 15 women from Liti and Sama villages. After completing the course some of the trainees have started earnings from stitching work at home based on orders from other villagers.

I.2 Cluster-Based for Production, Processing and Marketing of Pulses for Livelihood Development

During the last 20 years demand for pulses has increased tremendously in the market but production has not kept pace. Some of the constraints in increasing the production of pulses are: lack of quality seeds, production technologies, processing and marketing facilities. Pulses are important for food, income and nutritional security. Increased production of pulses can reduce the malnutrition especially among mountain women and children.

Under the Integrated Livelihood Support Program (ILSP) of the Uttarakhand government, PSI started a two-year program in September 2017 to promote the production and marketing of pulses in 10 villages of Madhu Ganga valley. The main activities are: formation of farmers' institutions at the village and cluster levels, capacity building of progressive farmers, FIGs' formation, strengthening of farmers' cooperatives, demonstrations, extension of production, grading, processing, value addition and marketing of pulses. Activities completed from April 2018 to March 2019 are summarized below.

I.2.A Capacity Building

For the promotion of organic pesticides in pulse production, a three-day training program was organized in November 2018, for para technicians and FIGs in both the valleys. Forty participants (including 20 women) attended the training.

Later PSI's team organized training in each village on preparation of organic liquid manure (like *matkakhad*) with the para technicians and on production of *masoor dal* with the farmers. In November 2018, farmers' training on SCI-Peas was organized in the villages.

I.2.B Farm Demonstrations

Crop cutting exercises for lentils, were done in May 2018. The results showed 75 percent increment in crop produce through the SCI method compared to the conventional method.

In Kharif 2018, 598 farmers grew different pulse crops (*Rajma*, *Gahat*, *Urd* and *Toor*) through the SCI method on 22 ha.



Capacity building of Kissan Cooperative



Rajma Crop in village Uniyana

Due to excessive rains during flowering and fruiting, about 80 percent of the pulse crop was damaged, yet the farmers earned a cash income of Rs. 1.8 lakh from the sale of about 15 quintals of Rajma. In Rabi 2018 -19 participating farmers earned a cash income of Rs. 1.65 lakh.

Table 1g: Pulse production in 2018-19

S. No.	Activity	No. of Farmers	Area (nails)	Production (kg)	Sale Amount (kg)	Income (Rs.)
1.	Kharif	598	1088 (~ 22 ha)	~ 2000	~ 1500	~ 1,80,000
2.	Rabi	468	383 (7.6 ha)	~ 5268	~3625	~ 1,65,000

I.2.C Processing Unit and Market Outlet

A pulse processing unit and outlet was established in Mansuna (a central market place in the program area). About 300 kg *Rajma* were processed.

I.2.D Seed Bank

Seeds of Rajma were collected from Munsyari (Pithoragarh), Chakrata (Dehradun) and Muri (Uttarkashi) and tried out during the Kharif season. Best results were observed with Munsyari Rajma. About 50 progressive farmers (including 20 para technicians) were involved in the above trials. These farmers will be trained on production of seeds and development of seed banks in the concerned villages.



Market outlet at Mansuna

I.2.E Formation and Strengthening of Cooperative

In October 2018 representatives of all the project villages met and formed a committee of *Madhuganga Kisan Swayat Sahkarita*. Training programs were organized for strengthening the cooperative. A business plan for Rabi 2018-19 was developed.

I.3 Providing Safe and Sustainable Drinking Water and Sanitation

A program “Providing Safe and Sustainable Domestic Water and Sanitation” in ten selected hamlets of Bageshwar block Bageshwar district was started in November 2016 with the financial support of The Hans Foundation. During FY 2017-18, DPRs for these ten schemes were approved, water user groups (UWSSCs) were formed and execution of DPRs for drinking water and sanitation was started by the UWSSCs and local communities. From April 2018 to November 2018 the remaining work of execution of DPRs was completed. The progress of various program activities follows.

I.3.1 Strengthening of Users Water and Sanitation Sub Committees (UWSSCs)

Capacity building of UWSS Committees was done through several village level meetings and workshops. The objective was to prepare them for execution and monitoring of their own domestic water schemes. More than 65 percent of UWSSCs’ member are women.

Table 1h: Composition of UWSSCs

Village	Hamlets	Households (SC)	UWSSC Members			
			Total	Male	Female	SC
10	10	223 (38)	74	24	50	11

UWSSCs = Users Water and Sanitation Sub Committees

The UWSSCs organize monthly meetings in their respective hamlets to discuss issues related to implementation of DPRs, community contribution, water treatment and sanitation practices. In December 2018, a felicitation camp was organized for the committees that had done good work in implementation, monitoring, and operation and maintenance of schemes.

I.3.2 Execution of DPRs

a. Drinking water schemes

From April to November 2018, all the pipeline layouts, construction of silting chambers, and water storage tanks and provision of household connections were completed.

Table 1i: Type of Schemes and Beneficiaries

No.	Type of schemes	Covered Hamlets	Length of pipeline (m)	Beneficiary Households
1	Gravity schemes	7	14,700	173
2	Lift Schemes	3	6,000	74
	Total	10	20,700	247



Solar lift scheme in Village Matela



Beneficiaries of Drinking Water Schemes

b. Spring Recharge

Springs were recharged in three villages. After demarcation of the recharge zone by PSI's hydro-geologists, trenches (1m*0.45m*0.45m) were dug and vegetative cover was reinforced through plantation of trees and grasses in June-September 2018. The winter discharge data showed 20 percent increase in spring discharge in one year and 50 percent increase in discharge in two years.

Table 1j: Spring recharge work in different hamlets

S. No.	Village	Area Treated	No. of Trenches	No. of Plants Planted	Species	Survival in December 2018
1	Rupail	0.5 Ha	120	25	Mango, Malta and Lemon	25 (100%)
2	Amsarkote	2 Ha	300	120	Mango, Leechi, Pomegranate and Orange	110 (90%)
3	Paarkhet	0.5 Ha	50	Nil	-	-

c. Sanitation

Under the sanitation program, toilets with soak pits were constructed for 14 families. In addition, school children and village level institutions (UWSS Committees and women's groups) were sensitized on health and sanitation issues. They were motivated to organize regular cleaning of water sources and other places.

Solar Pump Lifts Water & Morale of Scheduled Caste Families

Scheduled Caste families (24) in Dubegarh hamlet of Matela village faced serious drinking water access problem. The existing piped water scheme in the village did not reach their homes. Women and girls from Dubegarh walked 1 km to a nearby stream to collect water. **“Walking half a kilometer down and half a kilometer up the mountain with a drum of 20 litres water is tiring. During the rainy season the path becomes slippery and increases the risk,”** says Parvati Devi (70). Her daughter in law, Radha Devi (30) said, **“We had to walk 8-10 rounds daily to collect water for drinking as well as other domestic purposes.”** Now both are very happy to have a water connection inside their home with PSI's help.



Beneficiary Parvati Devi (70) with her daughter in law Radha Devi

When PSI's team reached Dubegarh village, Pradhan Lalita Devi requested them to develop a water supply scheme for 24 SC families. Microplaning and a technical feasibility survey revealed that even after installing 2,500 m pipeline and one storage tank, the scheme would benefit only 17 families. To provide water to the remaining 7 families in the upper part of the hamlet a lift

scheme was required. PSI's engineers then designed a solar lift scheme of 1 horse power. HP Electrical and Solar Company was contacted to install a solar lift pump. The pump was successfully inaugurated by the local MLA on 19th November 2018.

The SC community has formed a *Pratibha Samooch* with 20 members. It has developed a fund of Rs.24000 and started a monthly saving of Rs.50 per member for the maintenance of the lift scheme. The credit for organizing the women's group goes to Bhagwati Pandey, PSI's Community Organizer and Prema, a village level facilitator. Bhagwati says "Earlier due to shortage



Solar Water Lift Scheme in village Matela

of water the women faced serious problem of health and sanitation during menstruation period. The school going girls are now much relieved to have water at their homes."

I.4 Providing Safe and Sustainable Drinking Water and Sanitation in selected remote villages of Pindar valley, district Bageshwar

Pinder valley is a remotely region in Bageshwar district. For providing safe and sustainable drinking water and sanitation eight villages were initially selected under the Integrated Village Development Program (IVDP) of The Hans Foundation. Detailed Project Reports (DPRs) of these villages were prepared by PSI in FY 17-18. In the subsequent year, through a process of community mobilization, capacity building and institution building in all the villages, implementation of DPR through communities was fully completed in village Khati whereas most of DPR execution work was completed in three other villages i.e. Badiyakot, Kalu and Sorag. The progress of various program activities undertaken up to March 2019 is as follows:

I.4.1 Strengthening of Users Water and Sanitation Sub Committees (UWSSCs)

Capacity building of UWSS Committees was done through village level meetings and workshops, to prepare them for implementation and monitoring of the domestic water schemes. Out of 50 UWSSCs members, more than 65 percent are women. The UWSSCs organize monthly meetings in their respective hamlets to discuss issues related to implementation of DPRs, community contribution, water treatment, and sanitation practices. In December 2018, a felicitation camp was organized for the committees who had done good work in implementation, monitoring, and operation and maintenance of the schemes.

I.4.2 Execution of DPRs

After completion of a water supply scheme in Khati village, the implementation work in other three villages started. Most of the work was completed by March 2019. Upto December 2018, all

the pipelines were laid from the source to habitation. Construction of silting chambers and storage tanks, and household connections were also completed in all the three villages. After discussions with the communities site specific changes were done in the DPRs. As a result the number of schemes increased from 34 to 39, while the length of the pipelines increased by 22 per cent. Since 10 percent work remained at March 2019 end, an extension of three months (April to June) was sought. Snowfall in the winters (January to March) was the reason behind the delay.



Water Supply from Completed Scheme

Table 1k: Village wise Schemes and Beneficiaries

S. No.	Village	No. of Schemes		Length of Pipeline (m)		Beneficiaries (households)	
		Proposed	Actual	Proposed	Actual	Total	SC
1	Badiyakot	9	10	15,100	20,100	112	36
2	Kalu	6	7	23,220	11,550	73	14
3	Sorag	19	22	9,950	27,310	185	21
Total	3	34	39	48,270	58,960	370	71

Household Water Supply Brings Smiles in Pinder Valley

Roshni, a student of class IX from Kalima hamlet of Sorag village is happy to have a water tap inside her home. Earlier, before and after school every day, she used to walk about 1 km to fetch water. Now she can use the time for her studies. Her grandmother, Panmati Devi (65 years old) also fetched water whenever it was required. Now she is also equally happy.



Kamla Devi of village Kalon

Kamla Devi (75 years old) lives with her daughter in Molada hamlet of

Kalon village, with no water connection in their house. They used to fetch water either from a stand post near the school or from a stream. At 75 years she was worn out fetching water from these source. A toilet constructed in her house remained unused due to lack of water. Now both the members of the family are happy to have a water connection inside the house and the toilet being used.



Panmati Devi (65) Kalima hamlet village Sorag is happy to save time in fetching water

Pati is an SC hamlet in Badiyakot village of Pindar valley. Earlier, there was no domestic water scheme in Pati as the pipeline passing through it was damaged. Under the IVDP project a separate domestic water scheme was designed and installed in the hamlet. Manvati Devi (60 years old) of Pati was happy. Before the construction of this scheme they used to bring water from a river for their daily water requirements. After the construction of the scheme, she got two connections - one in her house and a second in the toilet. She constructed her own stand post for sustainability of the scheme.



Manmati Devi of village Badiyakot

I.5 Climate Resilient Farming in Bahdarabad block, district Haridwar

On the basis of a successful pilot project of 2017-18, ITC extended for one more year its program to recharge ground water and increase farm production in a cost effective manner. Ten villages were selected (6 old villages and 4 new villages) for program interventions during FY 18-19.

I.5.1 Mobilization

a. Net Planning

Capacity building of the field team was undertaken for sustainable agricultural planning. A database was created for all the ten program villages, through PRA and household surveys. The NET Planning process included:

- Village Profile: social and resource mapping, resource ownership, farm land use, cropping pattern, livestock population, wealth classification of families.
- Seasonal and Crop Calendars: Cropping pattern along with farm activity calendar (sowing, transplanting, weeding, manuring, irrigation, and harvesting).
- Documenting existing farming/agricultural systems: Agriculture practices, irrigation and marketing systems.
- Institutional Profile and Analysis: Various institutions (government, community based, others) and their relationship with villagers, accessibility, service efficiency, etc.



Planning for Sustainable Agriculture

b. Village Level Institutions

Various village level institutions like Farmers' Interest Groups (FIGs), Farmers' Field Schools (FFSs), Custom Hiring Centers (CHCs) and Self Help Groups (SHGs) were formed at different levels. One farmer field school in each new village was formed to demonstrate sustainable agricultural practices and extend development support to other farmers. Two CHCs were formed with the help of women farmers (31) for providing farm machinery to others on rent. Apart from the above, three SHGs were

formed by women (55) of poor households for undertaking savings and inter-lending. Seven water user groups were formed for operation and maintenance of water structures. A total of 62 farmers are members of these water user groups.



Meeting of Village level institutions



Meetings of village level institutions



Training on SSI and SRI

I.5.2Capacity Building

Regular meetings, training sessions and exposure visits were organized for members of different institutions. These included:

a. Training

Seven training workshops were organized on organic farming, soil and moisture conservation, System of Sugarcane Intensification (SSI), System of Rice Intensification (SRI), soil and water conservation and institution building. These were attended by 352 farmers, including 74 women.

b. Exposure Visits

An exposure visit was organized to an SSI activity MVDA project area at Saharanpur for generating awareness regarding farming of Sugarcane through SSI method. Forty two participants from all the ten villages attended the visit.

I.5.3 Sustainable Agriculture Practices

The following practices were introduced and promoted:

- (i) 16 NADEP pits were constructed for promotion of organic farming.
- (ii) 61 farmers were covered under kitchen gardening for vegetable production.
- (iii) Area covered under sustainable agriculture practices- SSI- 206 ha, SRI- 8 ha, SWI- 47 ha.



Exposure visit



Transplanting through SRI method



SSI demonstration



Production of Sugarcane by SSI Transplanting through SRI method

I.5.4 Soil and Water Conservation Activities

To reduce soil erosion and enhance ground water recharge various structures were built, through local communities, like gabions, dykes, recharge pits, farm ponds, field bunds, and renovation of community ponds.

- a. **Gabion and Dykes:** Twenty gabions and thirteen dykes were constructed on drainage lines in three villages to reduce soil erosion and increase infiltration.
- b. **Farm Ponds:** Four ponds were dug for rain water harvesting and providing protective irrigation.



Gabion Structure



Farm Ponds

- c. **Field bunds:** Field bunds were constructed in 56 farms benefiting 98 ha.



Field Bunds

- d. **Community Ponds:** Eight community ponds were renovated to increase their water storage capacity and recharge ground water.



Farm pond before and after renovation

The different soil and water conservation activities generated a total of 2,506 days of employment in all the 10 program villages.

3943 saplings were also planted in the program villages. All the plants were either of medicinal value or for soil conservation purpose.

I.6 Other Activities

During the year, PSI's NRM Group provided support to other organizations on NRM related issues, as well as attended various workshops and meetings. These are briefly described below.

1.6.1 Support to Organizations

At the request of Revitalizing Rainfed Areas Network (RRAN), PSI's NRM team organized a session on "Sustainable Crop Production Systems" at the National Convention of RRAN on 14th February, 2019 at New Delhi. The NRM Group also provided support to (i) Massachusetts Institute of Technology (MIT), USA for undertaking trials on low cost insulation material for housing purposes in the Madhu Ganga valley and (ii) University of Sussex, Brighton, UK for conducting a study on "Farmer organisations and the Resilience and Sustainability of Small Farms".

1.6.2 Meetings and Workshops

Members of the NRM group represented PSI at

- Plenary on civil society concerns on 7 April, 2018 at Delhi
- Workshop on "Research and Learning for Development" Supported by Australian Centre for International Agricultural Research and facilitated by PRADAN on 24 April, 2018 at Ranchi

- Consultation Meeting on proposed 'Dehradun Research and Academic Consortium' on 28 April, 2018 at Wildlife Institute of India, Dehradun
- Summit on Climate Resilient Mountain Agriculture organized by Watershed Management Directorate (WMD), Dehradun at FRI, Dehradun from 2-4 May, 2018
- Consultative meeting regarding possibilities of building RRA agenda and network of local organizations in Himachal on 18 June, 2018 organized by RRA N at Hyderabad
- Workshop on Clean energy organized by UREDA on 4 July 2018
- Round Table Meet on 'Understanding Mountain Peoples' Approach and Practices to Combating Climate Change in the Indian Himalayan Region: Research to Renewal and Reforms' organized by Sustainable Development Forum, Uttarakhand on 2 August, 2018 at Dehradun
- Water Practitioners Network meeting on 3 August, 2018 at Gurgaon
- Workshop on "Group Farming and Land Bank" held by Working Group for Women and Land Ownership (WGWLO) at Ahmedabad on 6-7 August, 2018
- National Conference on 'Inaugurating a New Policy Regime for Water in India' organized by Shiv Nadar University on 27 August, 2018 at India International Center, New Delhi
- Workshop on use of community radio on 10 September 2018 at Dehradun, by Disaster Mitigation and Management Centre (DMMC), Govt. of Uttarakhand
- Consultation on Sustainable Agriculture Systems for Bundelkhand on 28 September, 2018 at Bhopal, MP
- Uttarakhand Regional Consultation on "Securing Forest Rights : Developing A Roadmap for Action" on 24 - 25 October 2018 at Bhimtal, Uttarakhand
- Western Himalayan Vikalp Sangam on 11-14 November, 2018 at Sidhbari, Himachal Pradesh
- National Vikalp Sangam on 27-29 November, 2018, at Deccan Development Society, Telangana
- IWMI-Tata Meet on 4-6 December, 2018 at Anand
- Meeting of National Water Mission on 9 December, 2018 at Shimla
- Meeting of CSOs of HP organized by RRA N on 19-20 December, 2018 at Shimla
- Water Practitioners Network meeting on "Demand Management of Water in Agriculture" at Anand, Gujarat on 19-20 December, 2018
- Meeting of National Consortium on SRI on 29 December, 2018 at Delhi
- Livelihoods India Summit on January 28-29, 2018 at New Delhi, organized by Livelihoods India, ACCESS Development Services
- "National Seminar-cum-Monitoring & Evaluation (M&E) Workshop"-2019, from 4-7 February 2019 organized by GBPNIHESD, Kosi-Katarmal at Almora, Uttarakhand
- National Convention on Revitalising Rainfed Agriculture on February 14-15, 2019 at India International Centre, New Delhi
- North East CSR Forum on February 26, 2019 at Guwahati

1.6.3 Training

Members of the NRM group attended various training programs as under

1. Dasra Social Impact Accelerator Program from 10-13 April, 2018 at Mumbai.
2. Training on Climate Resilient Agriculture/Horticulture in Shimla, Himachal Pradesh on 24 April, 2018.
3. Training workshop on community based tourism conducted by Equations from 31 August to 3 September, 2018 at Sambhaavna, Himachal Pradesh
4. Workshop on Women Environment Leaders organized by Ripple Academy at Rishikesh from 14 -17 September 2018.
5. Training program on hydrology on December 19-20, 2018 organized by NIH, Roorkee

Dr. Debashish Sen made presentations on (i) System of Crop Intensification at the International Rice Congress organized by IRRI at Singapore on 15-17 October, 2018, and (ii) livelihoods in mountain regions at the "International Workshop on Water and Livelihoods" at AKRSP, Ahmedabad on March 18, 2019. Some of the other presentations made by the NRM Group include (i) "Springshed Development in the Himalayas at a meeting of the National Water Mission on 20 November, 2018 at Delhi, and (ii) "Reviving springs in Himachal Pradesh: Experience of PSI", at the IWMI-Tata Meet on 4-6 December, 2018 at Anand.

I.7 Remarks

In March 2019, the Participatory Livelihood Rehabilitation Program being undertaken in 10 villages of Madhu Ganga valley, (Rudraprayag district) and Revati valley (Bageshwar district) with the support of Star-India TV formally came to an end. During FY 18-19, the program's focus was on development of withdrawal strategy. Younger initiatives like Community Based Tourism (CBT) Cluster Resource Centers (CRC) were strengthened. The induction of local *Lok Sevak/Sevikas* proved to be quite effective in the implementation and sustainability of the program activities.

Compared to 2017-18, the number of farmers and area under vegetable and spice cultivation increased, especially in the Revati valley (with expansion of irrigation in 8 h (400 nalis), resulting in higher farm production and incomes. Villages in Madhuganga valley are 100 percent rain fed, more suitable for millets and pulses. In Madhuganga valley, therefore, PSI focused on promotion of pulses and millets. SCI here was more focused on pulses. About 75 percent of farmers and 70 percent area under SCI was for pulses. As compared to conventional farming, productivity under SCI method was 38 per cent in Kharif (Rajma) and 66 per cent in Rabi (Lentil).

For the support of marketing of vegetables and spices in Revati valley, on the request of the *Revati Kissan Maha Sangh* (a cluster level farmers' federation), PSI has issued a utility vehicle to the federation. An agreement has been signed with the federation, according to which they will return back 70 percent of the vehicle cost to PSI through monthly installments from the sale of

farm produce. Farmer Federations in both the clusters need further strengthening of supply chain of farm based livelihood activities and marketing of local produce.

Cluster Resource Centers (CRC) have been established in both the valleys. The CRC at Madhu Ganga has space for a computer center, a meeting hall, CBT's front office besides three rooms meant for PSI's field team and a model home stay set-up. In Madhu Ganga valley, considering the interest of local youth, the CRC has been equipped for starting computer courses. In Revati valley, an unused school building has been renovated by the MMDs to function as a CRC. Self-Help Groups have started processing spices and other income generation activities in the CRC.

In the last one decade, farmers of Madhu Ganga valley had almost given up cultivating Lentils (Masoor) due to low productivity. Following the successful introduction of VL-8 lentil variety and the SCi method for its cultivation, under the "Cluster Approach for production, processing and marketing of pulses" program in 2018-19, the area under Masoor increased by about 30 percent. Similarly, in Kharif 2019, the area under pulses increased by 57 per cent over the last year. Extension of area under pulses has been supported by the establishment of a processing and marketing outlet in the valley which is now moving in the direction of self-sufficiency in pulses and increased farm incomes.

Under the program "Providing Safe and Sustainable Domestic Water and Sanitation" in ten selected hamlets of Bageshwar block, the uncovered population, mostly SC families, now has access to safe drinking water in their homes. Impact assessment studies undertaken in five hamlets have revealed increased domestic water consumption while reduction in women's drudgery in collecting and carrying water to their homes. Till March 2019, four remote villages of Pindar valley have been added under the "Safe and Sustainable Drinking Water and Sanitation program". The area is quite challenging and becomes almost inaccessible during the rains as well as winter seasons. Due to the success of the program, The Hans Foundation has requested PSI to extend the program in three new villages.

Under the ITC supported Mission Sunhara Kal program of "Up-scaling Sustainable Agricultural Practices in Bahadrabad block of Haridwar district", ten villages have benefitted from the introduction of sustainable agricultural practices along with recharging of ground water and soil and water conservation measures. Farmers and area under the System of Sugarcane Intensification have been increasing over the seasons, due to increased crop production. Villagers are now thinking of initiating fisheries in the community ponds that have been revived. More soil & water conservation structures (including gabions, dykes and field bunds) along with plantation have to be promoted to check erosion of farm lands. ITC has now approached PSI to consider a watershed based approach for the area while also initiating a similar pilot program in the Baddi area of Solan district of Himachal Pradesh.

The DPT course for 2018-19 showed significantly improved results, The major factors were (i) recruitment of better students (ii) improvements in curriculum and curricular materials based on earlier years experiences and (iii) improved faculty. The year's activities have been regularly reviewed in order to further improve the course in the next year. Against only two students recruited by PSI from the 2017-18 batch, six of the seven 2018-19 are likely to be hired by PSI.

I.8 Financial Statement

NRM Group's Financial Statement (2018-19)

S. No.	Project	Funding Partner	Opening Balance (Rs.)	Income (Rs.)	Utilization (Rs.)	Balance (Rs.)
1	Uttarakhand Flood Disaster	Individual Donations	18,782,503.00		7,638,779.00	11,143,724.00
2	Uttarakhand Flood Disaster	Star India Pvt. Ltd.	7,943,038.00		7,943,038.00	-
3	WUR	RRA-Hivos, ICCO, WU & OXFAM	93,498.00		93,498.00	-
4	Jal Dhara Bageshwar (JDB)	The Hans Foundation	566,522.00	792,800.00	1,487,268.00	(127,946.00)
5	Implementation of 10 DPRs of Jal Dhara Bageshwar (JDB-DPR)	The Hans Foundation	(424,637.00)	5,469,919.00	5,045,282.00	-
6	Integrated Village Development Plan (IVDP)	The Hans Foundation	(157,000.00)	1,763,580.00	1,517,225.00	89,355.00
7	Implementation of IVDP-DPR Khati	The Hans Foundation	(288,638.00)	1,321,824.00	1,033,186.00	-
8	Implementation of IVDP-DPR BKS	The Hans Foundation		16,002,331.00	15,263,450.00	738,881.00
9	Mission SunehraKal (MSK) in Bahadarabad block, Haridwar	ITC Limited	165,053.00	9,943,382.00	9,357,503.00	750,932.00
10	ILSP -Pulse project	Uttarakhand Gramya Vikas Samiti	313,068.00	1,414,775.00	987,948.00	739,895.00
	Total		26,993,407.00	36,708,611.00	50,367,177.00	13,334,841.00

II. ENVIRONMENTAL QUALITY MONITORING

PSI's Environmental Quality Monitoring Group (EQMG) monitors environmental quality, pollution levels and their impacts. It builds the capacities of VOs and communities to gather and interpret pollution data and plan for mitigating pollution-related problems. It also assesses the environmental impact of developmental projects. It operates a well-equipped laboratory in Dehradun. In 2018-19, EQMG was engaged in promoting community-based springshed development activities in the Himalayan region, either directly or by providing technical support to other organizations. It also completed its second phase of the Participatory Ground Water Management program. The Group moved into a fifth phase of its fluorosis mitigation program in Dhar district of Madhya Pradesh. Activities carried out during the year are highlighted below.

II.1 Community Based Springshed Development in the Indian Himalayan Region (IHR)

Springs are the primary source of water for most rural households in the IHR. However, a vast majority of these springs are becoming seasonal or have dried up due to anthropogenic activities and climate changes. This causes severe water shortages especially during summers. In order to mitigate this problem, PSI is working on community-based springshed management in the IHR for more than a one decade. In order to scale-up the work, in 2018-19, it extended its technical expertise in springshed management to concerned government departments and other agencies.

II.1A Water Security Planning in the Indian Himalayan Region (IHR)

Water security planning in the IHR through hydro-geology based and community driven springshed development is a three years' project initiated in January 2018 under the National Mission for Himalayan Studies (NMHS) supported by MoEF & CC. The project is being led by PSI with IIT-Roorkee; Department of Land Resources (DoLR), Nagaland; WWF-India; and Arghyam, Bengaluru as partners. The hypothesis for this project is that working at a watershed scale will result in a holistic approach to managing water resources as each watershed is a hydrologically defined unit with its own physiography, ecology, climate, water bodies and land use.



Figure 1: Field facilitation in Arunachal Pradesh

Six headwater watersheds have been selected in extremely water-scarce zones of districts – Phek & Zunheboto in Nagaland; Almora & Pauri Garhwal in Uttarakhand and Tawang & West Kameng in Arunachal Pradesh. The focus is on increasing spring discharge and promoting sustainable and equitable use of the augmented groundwater. The methodology used includes inventorization of springs, hydrological modeling, community mobilization, capacity building and participatory monitoring and evaluation. The demonstration sites for spring recharge pilots and hydrological modeling are located in selected watersheds of Almora and Pauri Garhwal districts in Uttarakhand.

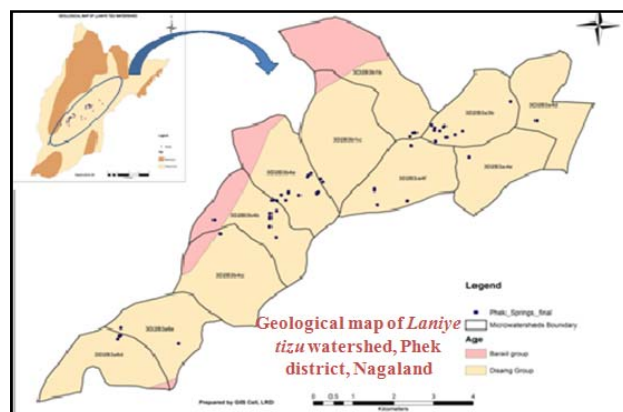


Figure 2: Geological mapping in Nagaland

a. Spring Inventory and Identification of Critical Springs

Field training for springs' inventory was provided to WWF and DoLR staff from 31May to 1June, 2018, followed by field support. During the year, an inventory of 300 springs (50 springs in each of the six selected watersheds) has been prepared. A GIS based MIS for these springs has been created for further planning and action (Fig 3). In Nagaland and Arunachal Pradesh, the DoLR and WWF teams were given technical support for geological mapping. Thirteen critical springs (6 in Almora and 7 in Pauri Garhwal) have been identified for treatment in the selected watersheds of Uttarakhand. Spring recharge zones have been demarcated based on hydrogeological field surveys.

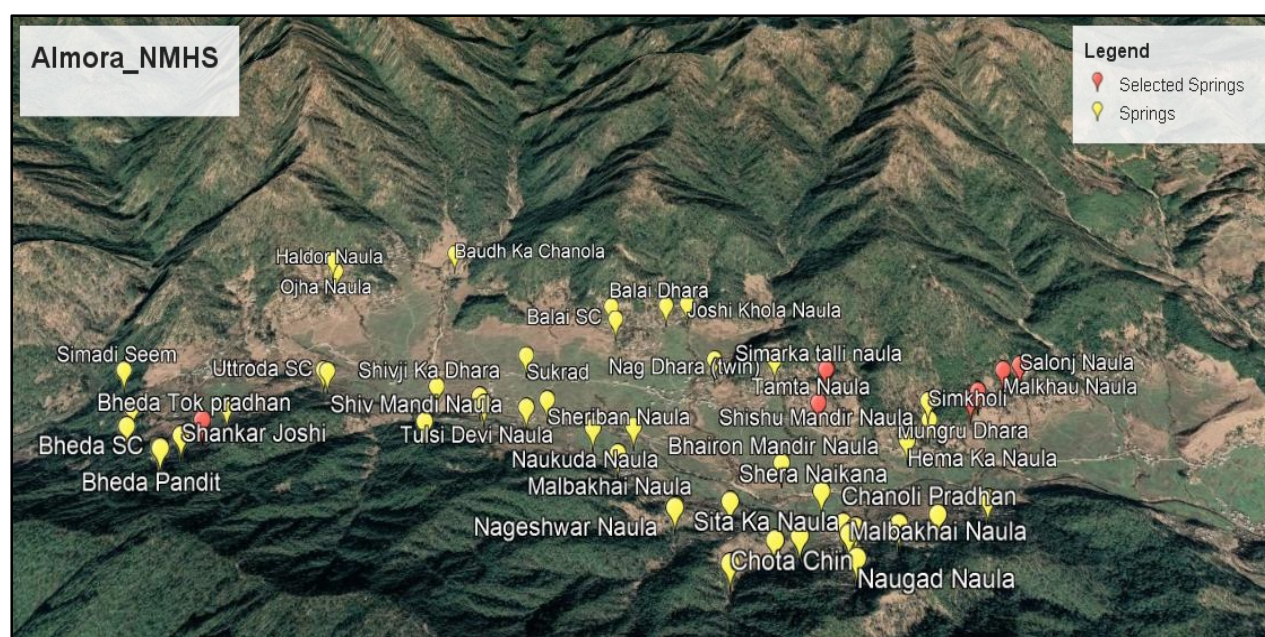


Figure 3: GIS based MIS of springs identified in Almora district, Uttarakhand

b. Water Budgeting

Training on water budgeting was provided to WWF-India and DoLR Nagaland, in January 2019. The process of estimating water demand (including domestic and agricultural needs) and supply gap at the village and watershed levels have been initiated for all the six watersheds. This will help in the development of village level water security plans including designing and estimates of recharge interventions for critical springs. Water Users Groups formed for each selected spring will be responsible for regular monitoring of rainfall, discharge and water quality of springs in all the watershed villages.

c. High resolution Monitoring

In the Uttarakahnd watersheds, instruments (including automatic weather stations, soil moisture meters, H flumes, etc.) have been installed for continuously gathering hydrological data for the selected sites (Fig 4). High resolution data collected with appropriate instrumentation is helping to monitor and analyze springs and first order stream discharge. The initial data generated so far suggests a high lag in spring response compared to stream discharge (Fig 5). The data being collected will help to derive protocols for best water management practices for the concerned watersheds. In addition, stream flow data collected from the selected sites will help to understand the effect of land use/land cover on stream flow in the watershed. Training of PSI staff and communities in hydrological monitoring was done by IIT-R in December 2018 at Almora.



Figure 4: Instruments installed in the watershed of Almora

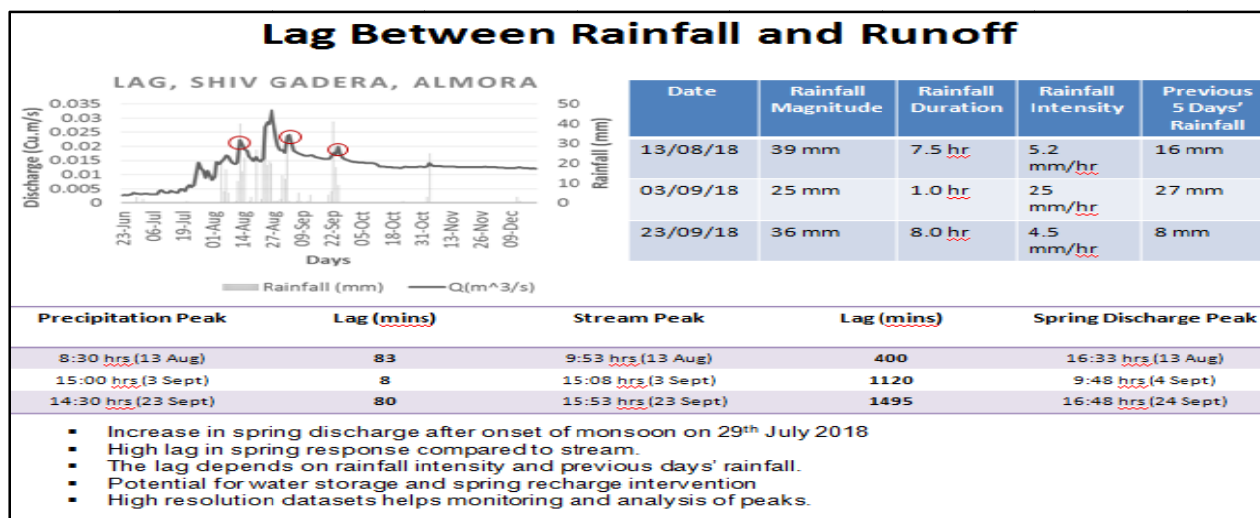


Figure 5: Lag between rainfall and runoff at Shiv Gadera, Almora

Source: IIT-R

The expected outcomes from this project are state level policy recommendations for spring rejuvenation and good groundwater management practices; water governance; climate resilience; tech-based data monitoring and management system and a holistic approach to managing water resources at a watershed level.

II.1.B Reviving Springs in Uttarakhand

Increasing instances of extreme rainfall are leading to less infiltration of rainwater into the ground leading to lower discharges in the springs. Many people face acute water shortages during summers and the major burden falls on mountain women who have to walk several kilometers daily on steep slopes to fetch water. PSI is helping such rural communities to revive 50 critical springs in water scarce area of five districts – Almora, Pauri Garhwal, Dehradun, Nainital and Pithoragarh with the support of Bajaj Auto Limited. This 3 years' program initiated in 2017 is expected to benefit about 1000 rural households in terms of increased availability of water, better irrigation, and sanitary protection of spring recharge areas.

During the year, an inventory of 272 springs was prepared out of which 45 critical springs were identified in 26 villages in the 5 selected districts of Uttarakhand based on community demand and feasibility studies. Water User groups around the critical springs have been formed and their capacities have been built for regular monitoring of rainfall, spring discharge and water quality. Implementation of treatment measures for the critical springs will be initiated in the summer of next year FY' 20.

II.1.C Springshed Development for Water Security in 100 Villages of Nagaland

The North East Initiative Development Agency (NEIDA) initiated a multi stakeholder program in October 2018 to provide water security in 100 villages of Nagaland by combining hydrogeology and community organization for sustainable springshed management.

PSI is a technical partner in this program along with ACWADAM. The aim is to build the capacity of district level officials from the Department of Land Resources and the Department of

Rural Development for promoting participatory springshed development in Nagaland. The major components are training, action research, implementation and policy advocacy. As a pilot, nine villages across 5 districts (Kohima, Peren, Kiphri, Longleng and Tuensang) of Nagaland have been selected.

Through intensive classroom and field training, the staff of NEIDA and DoLR were trained in primary data collection, spring inventorisation, hydrogeological assessment, treatment measures, water quality, preparation of water security plans and regular monitoring for rainfall, spring discharge and water quality. Thereafter, through field facilitation provided by PSI and ACWADAM, extensive field visits were carried out by the trained officials in the selected villages to conduct feasibility studies.

Thirteen critical springs were identified by the team based on household dependency, decreased spring discharge, social and technical feasibility (Fig 6).

Spring rejuvenation plans were prepared and implemented by involving the local communities. The work will be scaled up to 100 villages by DoLR and NEIDA in the next 3 years.

II.1.D Meghalaya Participatory Springshed Management

The state of Meghalaya is predominantly agrarian with almost 79 per cent of the total population living in the rural areas. They depend on springs as their main source of water for household and irrigation purposes. But the springs are rapidly drying up due to developmental activities and climate change, leading to acute water shortages, especially during summers. With a view to develop a



Figure 6: Location of 13 critical springs selected for rejuvenation

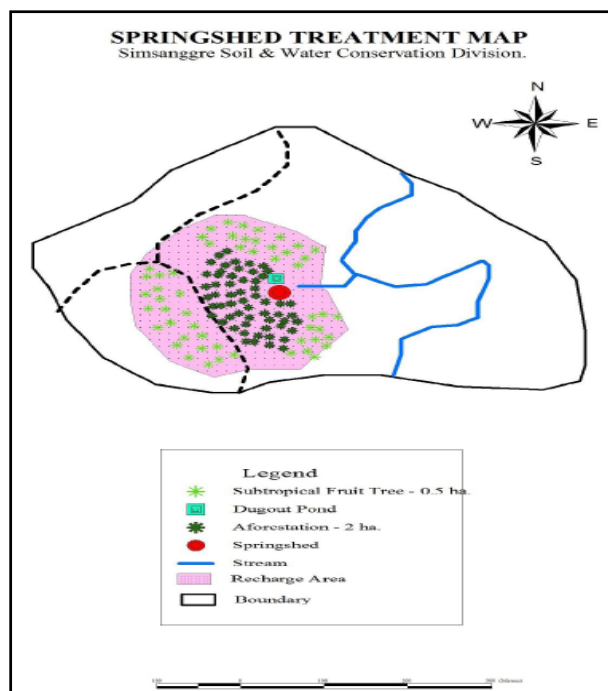


Figure 7: Springshed treatment map created for one of the sites by the SWCD

comprehensive program on springshed management in Meghalaya, the Soil and Water Conservation Department of Meghalaya (SWCD) requested PSI to provide technical support through training and field facilitation.

As a pilot, an action plan was prepared for the revival of 20 critical springs in 11 districts of Meghalaya. Training was conducted in Garo, Khasi and Jaintia hill divisions to develop master trainers and a cadre of resource persons at various levels within SWCD and the Meghalaya Basin Development Authority (MBDA) for community based springshed management. Field facilitation was provided in hydrogeological mapping, water quality monitoring and recharge area treatment during the implementation of springshed management plans. SWCD has prepared DPRs for revival of critical springs in all the 11 districts for a state level program on springshed management (Fig 7).

II.1. E Capacity Building and Field Support for Springshed Management in Darjeeling and Kalimpong Districts of West Bengal

PSI provided technical support to WWF-India for a pilot programme on springshed development in Darjeeling and Kalimpong districts of West Bengal. As a pilot, 13 springs were selected in 5 villages of the two districts. The selection of springs was based on dependency of households, reduced spring discharge, community participation and feasibility studies based on hydrogeological surveys (Fig 9).

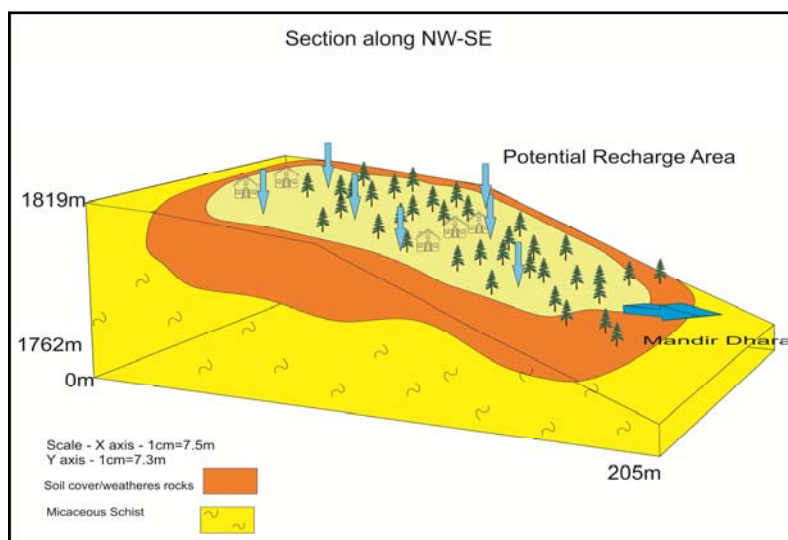


Figure 9: Cross section of MandirDhara, Lebong Cant, Darjeeling

The WWF team was trained through orientation and capacity building workshops. This one year pilot program will help WWF to scale up the springshed development work in these two water scarce hilly districts of West Bengal.

II.2 Community-based Fluorosis Mitigation in Dhar district, Madhya Pradesh

Dhar district is located in the southern tribal belt of Madhya Pradesh. It is a drought prone area which not only routinely suffers from water scarcity but also has high geogenic concentration of fluoride in its groundwater. For consumption purposes, people mostly depend on deeper groundwater sources like handpumps and tubewells which have presence of high levels of fluoride. Consumption of fluoride levels much higher than the permissible limit of 1.5 mg/l (Bureau of Indian Standards), causes serious health problems in the form of dental, skeletal and

non-skeletal fluorosis. There is no treatment for fluorosis but the disease can be prevented by consuming fluoride safe water.

Since 2013 PSI has been working on community-based safe drinking water supply with the support of FRANK Water, UK, benefitting more than 7000 people in 13 fluoride affected villages. The interventions are based on studying the local hydrogeological conditions, groundwater and urinary fluoride monitoring, sanitation & hygiene education and community mobilization for operation and maintenance. It has resulted in increased availability of safe drinking water, sharing of groundwater resources by the communities, health improvements, reduction in drudgery of women to collect safe drinking water, awareness about fluorosis and behavioral changes for cleanliness and personal hygiene. The initiative has set a successful example of decentralized management of groundwater resources and promises a sustainable and cost effective solution to fluorosis without the use of defluoridation techniques or filtration units.

In 2018-19, the work was extended to 10 more villages based on the Integrated Water Resources Management (IWRM) approach with the support of FRANK Water and Arup, UK. This integrated approach will help in groundwater recharging, source sustainability, crop water budgeting and improved livelihoods for the fluorosis affected communities. As a pilot, the approach was implemented in 3 out of 10 villages and plans were prepared for the remaining villages.



Figure 10: A weir constructed in Jamniamota village, Dhar

II.3 Participatory Groundwater Management Under BRLF Program

It is estimated that in our country, over 80 per cent of rural water supply get sourced from groundwater resources. The over extraction of groundwater is causing rapid decline of groundwater tables in several areas. This is resulting in severe drinking water shortages and is also affecting livelihoods of the people. In order to mitigate this problem, Bharat Rural Livelihoods Foundation (BRLF) is supporting pilots on participatory groundwater management in several water scarce districts through its partner organizations. The aim is to integrate supply

augmentation and demand management of groundwater by involving the local communities (Fig 11). The key components of these pilots include aquifer mapping, community participation, groundwater recharge measures, crop water management, water quality and sustainable utilization of groundwater. PSI is providing technical support to two BRLF partners Parhit Consortium and FES for piloting PGWM in seven villages of Shivpuri and Sheopur districts in M.P.; Udaipur district in Rajasthan and Yavatmal district in Maharashtra.



Figure 11: Training of villagers in water quality monitoring in Dheemdi village, Udaipur

During this multi-year program beginning from March 2015, PSI trained the project staff. Based on the estimated gap between water demand and supply, recharge structures have been proposed. Field facilitation was provided to carry out ground work. Activities during 2018-19, resulted in successful preparation and implementation of groundwater recharge plans as per the needs of the people. The villagers were engaged in the entire process of planning, decision making and implementation.

II.4 Studies on Groundwater Sanitation Nexus in Almora and Pauri

The IHR is going through rapid urbanization. Several mountainous peri-urban areas are converting into unplanned urban areas impacting the local water resources in terms of quantity and quality. More than 80 per cent of the population in such areas depends on local groundwater sources like *naulas* and *dharas* for drinking and domestic water needs. These sources of water are not only becoming seasonal or drying up due to disturbances in their recharge areas but they are also getting contaminated due to improper sanitary practices.

In 2017-18, PSI carried out a year-long research study in Almora, a rapidly growing town in Uttarakhand, to assess the status of groundwater quality with respect to the sanitary practices. The aim was to identify transport pathways of microbial contaminants in *dharas* and *naulas*. After a preliminary survey of 52 springs, 17 *naulas* were selected for further studies which included hydrogeological investigations, seasonal water quality monitoring and household surveys. The study showed that sewage disposal practices bring about contamination of groundwater sources and that fractures in the rocks aid in movement of sewage water from the source (drain, septic tanks, and soak pits) to the groundwater sources (*dharas* and *naulas*). It was also found that contamination levels depended on population density in the waste watershed.

Most of Almora having a similar geology, the latter was not much of a determining factor unless there was higher occurrence of secondary porosity.

In continuation to the above findings, in 2018-19, through the support of Bajaj Auto Limited under the “Rejuvenating Springs of Uttarakhand” program, PSI continued seasonal water quality monitoring of the 17 spring sites of Almora town as well as initiated a similar study in Pauri city with 16 spring sites. Though Pauri is also growing fast, people here are mostly dependent on springs for their domestic and livelihood needs. These sites are close to settlements. There are garbage and sewage dumps in the springs’ catchment area.

As per the water testing results, there is high level of fecal coliform (FC) contamination in spring waters (Figures 12 & 13). The level at most of the sites is much higher than the BIS standard of 0 CFU/100 ml. This indicates that groundwater quality is unfit for human consumption without prior treatment.

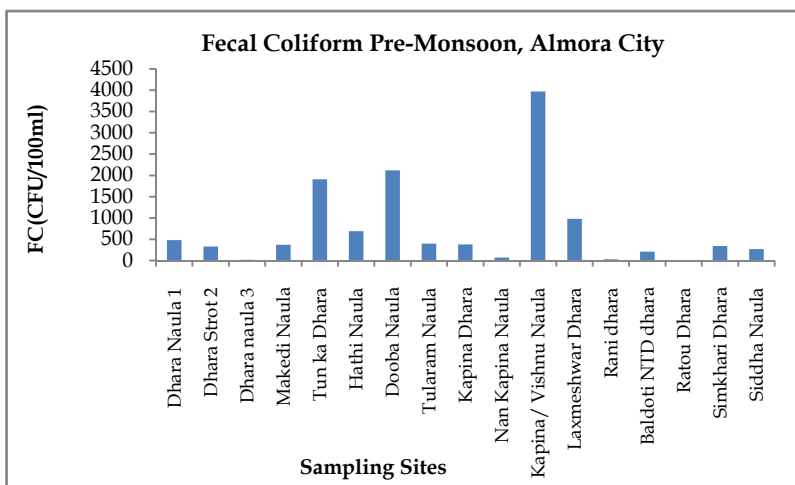


Figure 12: Fecal coliform at 17 spring sites in Almora

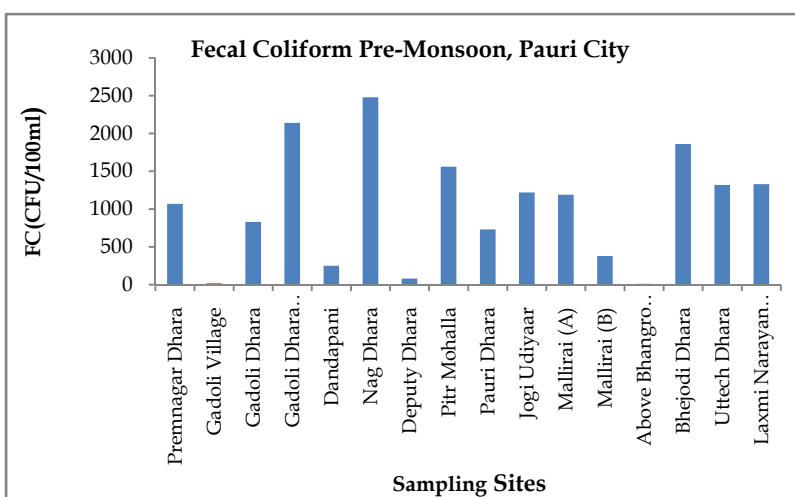


Figure 13: Fecal coliform at 16 spring sites in Pauri

II.5 Building capacities for Participatory Groundwater Management in India

After supporting pilots on Participatory Groundwater Management (PGWM) in several parts of India during 2012-18, Arghyam launched “Societal Platform” in July 2018 to scale up the lessons and to bridge the gap between available resources and the need for extensive groundwater management. The Societal Platform includes online or technology-based Learning Management System and Knowledge/Data Platform. It also includes offline processes like networking with experts, advocacy, data collection and communication.

PSI proposed to work on data collection and its management, development of training materials, organizing training workshops and advocacy in four of its ongoing programs – springshed management in the northeastern states; fluorosis mitigation in Madhya Pradesh; PGWM initiatives under the BRLF program and pollution monitoring in Sonbhadra and Chitrakoot districts of Uttar Pradesh. The overall program design included various stakeholders – government and advisory bodies, civil society organizations, researchers/academicians, project managerial and field staff, communities and village level institutions. The major objectives were training of stakeholders, development of training modules for various stages of program activities and knowledge transfer.

II.6 Water Quality Status of River Ganga During Ardh Kumbh Mela 2019

An EQMG team conducted a study of the Ganga river WQ during the 2019 Ardh Kumbh with the support of WWF-India. The Ardh Kumbh festival season began on January 15, 2019 and ended on March 4, 2019. During this period, mass bathing took place in the Ganga at Haridwar and Allahabad. Sampling was carried out at 10 sites on specific bathing dates and at specific locations (Fig 14) to test the major river water quality parameters and benthic macro-invertebrates. The study included one site on W. Ramganga-before its merger with R. Ganga and drain Allahabad.

The results obtained indicate that the water quality in Ganga during Kumbh was below the standards set by CPCB for bathing water. The BOD values were found to be much higher than 3mg/l at all the sites except for Haridwar and Rishikesh. Faecal coliform concentration was also found to be very high at all the sampling sites (Fig 15). The concentration increased in February 2019 indicating that the discharge from the sources that had been blocked earlier may have been released towards the end of the Mela. The BMWP scores for benthic macro-invertebrates ranged from 1.5 to 6 which are below the desired level. It indicates decrease in the number of sensitive species and dominance of pollution tolerant species



Figure 14: Location map of sampling sites on R. Ganga during Ardh Kumbh

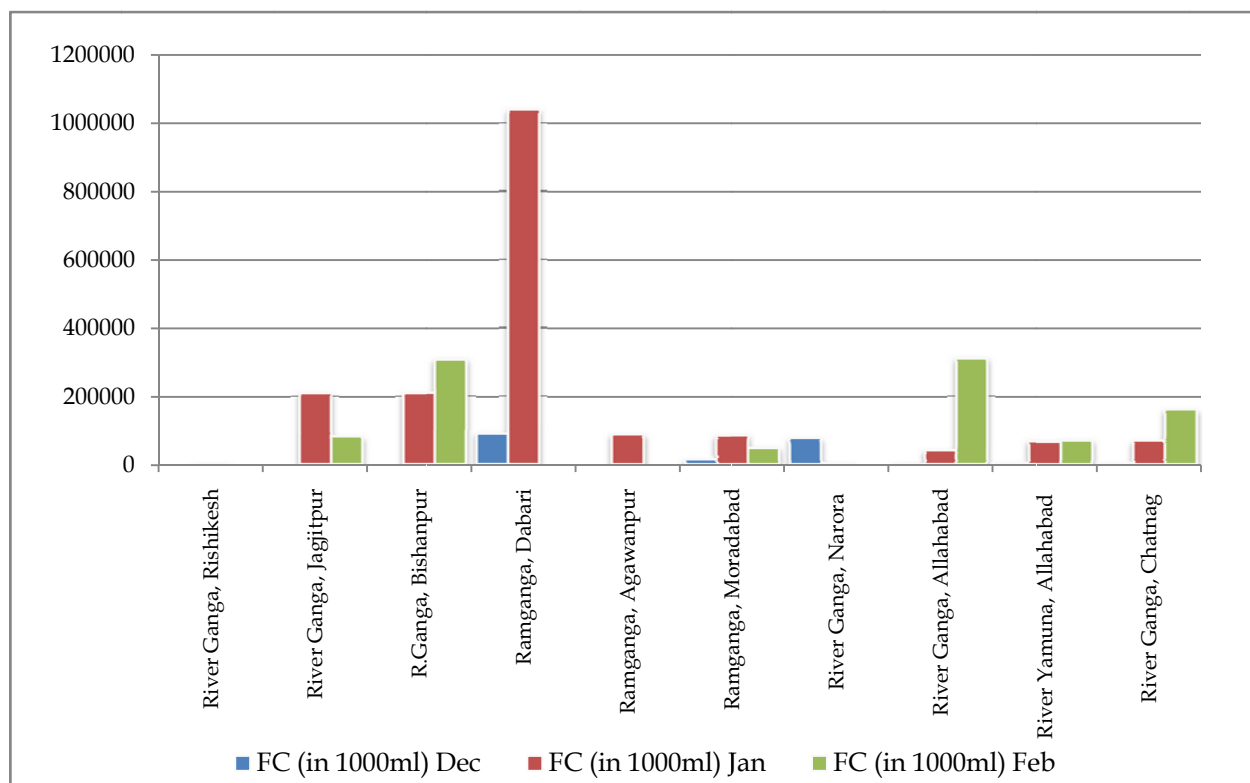


Figure 15: Fecal coliform at different sites

II.7 Other Activities

II.7.A Springshed management in collaboration with the Forest Department, Uttarakhand

In view of the growing concern for springshed management in Uttarakhand, a consortium has been formed involving the Forest Department and local organizations having experience in springshed management. Detailed Project Reports for rejuvenation of 57 critical springs in 9 districts are being prepared by the consortium members. PSI is also one of the members and has been assigned the responsibility of preparing springshed management plans for 19 springs in 3 districts – Pauri Garhwal, Dehradun and Rudraprayag. The objective is to submit these reports to the *Jal Shakti Mantralay* for reviving the selected springs and then scaling up the program.

II.7.B Laboratory experiment to study the rate of degradation of fecal matter

An experiment was conducted in PSI's laboratory to study the rate of biodegradation of human fecal matter under the action of microorganism in natural conditions. The parameters studied were pH, temperature, moisture content in the feces, soil moisture content, dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, fecal coliform, and total solid content with respect to time. The results indicate that the fecal matter does not cause increase in the number of bacteria under natural conditions (Fig.16). It rather degrades completely within 10 to 15 days which suggests that dry decomposition of fecal matter is faster than wet decomposition

in modern toilets. This study highlights that design of toilets should consider these factors for faster decomposition of fecal matter. However, the study needs to be repeated under different temperature and soil conditions to draw further conclusions for any recommendations.

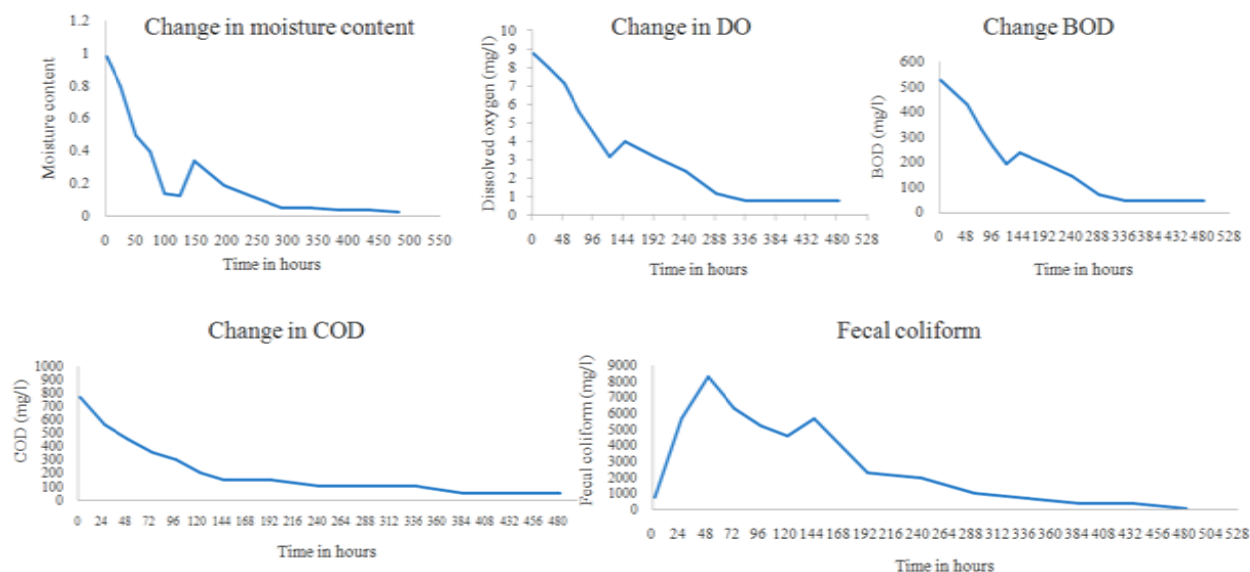


Figure 16: Different parameters showing rate of degradation of fecal matter

II.7.C Air Quality Monitoring in Dehradun

Dehradun's air quality is rapidly deteriorating mainly due to vehicular pollution and construction activities. PSI monitored the quality of air for PM10 and PM2.5 particulate matter at three different sites during the winter and summer seasons. The selected sites represented a residential area (Indira Nagar), vehicular congestion area (Ballupur) and construction activity site (Seema Dwar). The following results were obtained:

- PM10 is within the permissible limit ($100\mu\text{g}/\text{m}^3$) as per the national ambient air quality standards for residential areas in both winter and summer season (Fig 17).
- The residential area (Indira Nagar) has PM2.5 above the permissible limit of $60\mu\text{g}/\text{m}^3$ in both the seasons probably because finer particles remain suspended in air and tend to travel to other nearby areas (Fig 18).
- At the other sites, both PM10 and PM2.5 are above the permissible limits in both the winter and summer seasons.
- The concentration of PM10 and PM2.5 are higher in winter as compared to summer season
- PM10 particles are more in concentration in vehicular congestion area (Ballupur) whereas the finer particles PM2.5 are more in concentration in construction activity site (SeemaDwar).

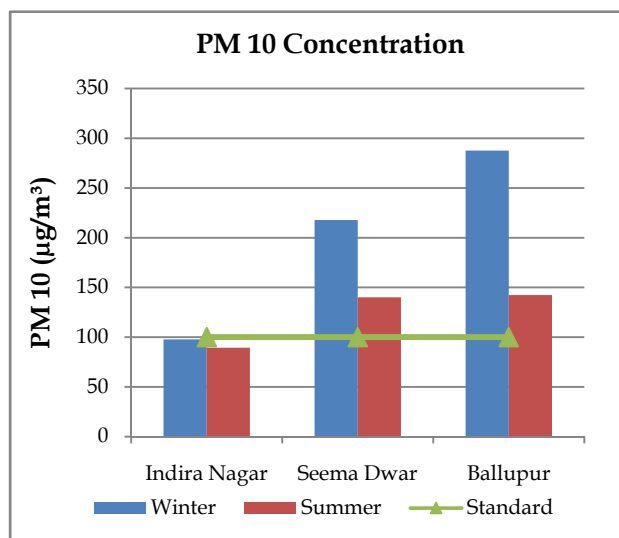


Figure 17: Pm10 conc. at different sites

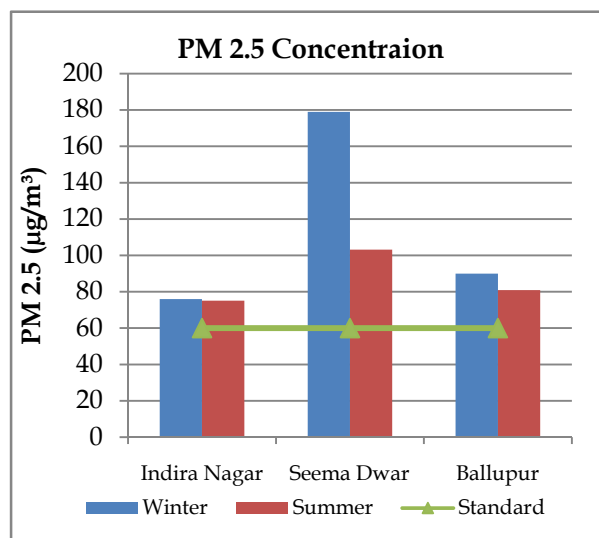


Figure 18: PM2.5 conc. at different sites

Data comparisons were also done with Respirable Dust Sampler (RDS) and an Airveda handy air sampler. The results obtained from both the devices were comparable suggesting that the handy air sampler can also be used for routine air quality monitoring. More detailed and regular studies are required at different sites to compare the results and draw further conclusions.

II.7.D Water Quality Testing Kits and Monitoring

PSI's EQM laboratory in Dehradun tests water samples and also produces low cost water testing kits which are purchased by various organizations all over the country. In 2018-19, 325 water samples were tested in the lab. Most of the drinking water samples were from PSI's project sites, Doon School, CEDAR, Lal Bahadur Shastri National Academy of Administration etc. The group sold 31 water testing kits and 60 refills.

II.7.E Jal Choupal and PGWM workshop

A Jal Choupal and PGWM workshop was organized by PSI and Water Aid on 28-29 December, 2018 at Chitrakoot University. The workshop was attended by 90 participants who included heads of civil society organizations, leaders and experts from academic institutions and universities, social workers, public sector workers, representatives of Panchayat Raj Institutions, Jal Nigam, Jal Sansthan, Ground water Department, research scholars and faculty of Chitrakoot University (Fig 19).



Figure 19: Participants at the Jal Choupal, Dec. 2018

The objectives of the workshop were to:

- reflect upon mission Ganga led by Prof G.D. Agrawal and set key recommendations to work on Ganga and other major rivers of India
- discuss the significance of local rivers, ponds and wells in ensuring water security for Bundhelkhand region
- forge a one year action plan to organize Jal Choupals at gram panchayat and village levels

II.7.F Meetings and Workshops

Members of the EQM Group represented PSI at (i) National Workshop on Water Issues organized by APS University Rewa, M.P on the occasion of World Environment Day on 5 June, 2018, (ii) National Workshop on 'Aquifers and Communities' on 6 June, 2018 organized by ACWADAM at Pune, (iii) Conference on "Multi-stakeholder Initiative to Provide Drinking Water Security through Springshed Management in 100 villages in Rural Areas of Nagaland" organized by NEIDA on 11 July, 2018 at Kohima, (iv) Workshop on "Rejuvenation of springs and spring-fed streams in Mid-Himalayan Basins" on 14 August, 2018 at IISWC, Dehradun, (v) Workshop on Springshed Management on 30 August in Srinagar, J&K, (vi) IHCAP Seminar on "Climate Change: Impact, Adaptation & Response in the Eastern Himalayas" on 1-2 November, 2018 at Aizawl, Mizoram, (vii) National Workshop on Springs on 27 November, 2018 organized by ACWADAM at Delhi.

An innovation and start-up summit was organized by the district administration, Banda, Uttar Pradesh, January 28-30, 2019. Dr. Anil Gautam delivered a lecture on the PGWM approach to tackle the water crisis in India. After this summit, the district administration launched a district wide *Kunwa Bachao Abhiyan* (wells and ponds protection campaign) in Banda. PSI along with Water Aid and Akhil Bhartiya Samaj Sewa Sangh conducted block level training in well rejuvenation for government officials and PRI members.

II.8 Remarks

During the year, the EQM Group continued extending community-based springshed development in the IHR. Most of the year, the Group was basically engaged in providing training and field facilitation to staff of the concerned government departments and other institutions in different Himalayan states to carry out pilots on community based springshed development. PSI along with ACWADAM has now emerged as a leading technical support organization for this kind of work in the IHR. Efforts are now on to identify and train community level persons as para hydro-geologists not only to undertake regular monitoring of spring discharge and quality in their own villages but also to extend the springshed development works in neighbouring villages.

Discussions are on with the Forest Department, Arunachal Pradesh for a 3 year program on springshed development in the Papum-Poma river catchment area in Papumpare district. The overall objective of this program is to build the capacity of the concerned forest department

officials and village communities and implement village water security plans for 7 villages. For the remaining 21 villages in the catchment area, PSI will provide field facilitation and the forest department will prepare and implement the plans. Similar dialogues are on with the Meghalaya Basin Development Authority and Soil Conservation Department of Meghalaya for another springshed development program in the state which is likely to begin next year.

The groundwater sanitation nexus study being carried out in Almora and Pauri towns will help identify transport pathways of microbial contaminants in groundwater sources. The faecal decomposition study under natural conditions will further help in conceptualizing designing of environmentally friendly toilets in the near future.

The idea of using technology-enabled learning management system for water security is the need of the hour as India's groundwater crisis needs urgent management which is not possible without promptly transferring appropriate knowledge to the concerned stakeholders. The technology driven Hub and Spoke model can help in delivering training through a large network of centers. PSI is planning to adopt this training and capacity building model for springshed management in the northeastern region with the support of Arghyam. It will hopefully benefit a large number of stakeholders and help in achieving water security.

For the community based fluorosis mitigation program in Dhar, PSI has been successful in incorporating Integrated Water Resources Management (IWRM) and WASH to a large extent, helping to strengthen the program and work better towards the goal of providing safe drinking water to the fluorosis affected marginalized communities and also sustaining the safe groundwater resources. Additional efforts need to be made so that the work can be scaled up to a block level covering about 100 villages in new areas of Dhar and other fluorosis areas.

For understanding the impacts of urbanization in the Himalayan region, more scientific evidences will be collected through rigorous air and water quality monitoring in different parts of cities like Dehradun and the information will be used to create citizen's awareness. The Group is in the process of initiating a training program on water quality monitoring for CSOs in the coming year. This will help in generating large scale scientific data on the status of water quality for different parts of India.

The concept of E-flows is gaining significance all over the world both as a decision making tool and as a tool to assess the health of river ecosystems. In this context, WWF-India will be initiating a 2 year program on E-flows assessment of 8 rivers – Ganga, Ghagra, Rapti, Gomti, Sharda, Gandak, Yamuna and Sone in Uttar Pradesh. PSI will most likely be engaged in the socio-cultural aspect of E-flows assessment. The program is likely to begin from October 2019.

For the Sonbhadra region, the scientific data collected through air and water quality monitoring over the years need to be properly analyzed and the information will be used to create awareness and design training programs for possible non-regulatory initiatives and pollution risk reduction strategies. Informed communities will also be able to work as a pressure groups to get the local authorities take necessary actions to curb the growing menace of pollution in that area.

II.9 Financial Statement

EQM Group's Financial Statement (2018-19)

S. No.	Project	Funding Partner	Opening Balance (Rs.)	Income (Rs.)	Utilization (Rs.)	Balance (Rs.)
1	Community Based Springshed Development	G.B. P NIHESD	7,485,740.00	166,596.00	5,608,486.00	2,043,850.00
2	PGWM-III	ARGHYAM	11,292.00	2,718,818.00	2,279,821.00	450,289.00
3	Reviving Spring in Uttarakhand	Bajaj Auto Limited	5,317,858.00	3,904,175.00	6,924,660.00	2,297,373.00
4	PGWM-BRLF	ACWADAM	(46,442.00)	783,941.00	827,541.00	(90,042.00)
5	Participatory Springshed Management	SWCD, Meghalaya	695,102.00	1,010,276.00	634,751.00	1,070,627.00
6	Air Quality Monitoring	European Climate Foundation	(177,526.00)	296,690.00	119,164.00	-
7	Fluorosis Mitigation	Frank water	(619,354.00)	5,341,348.00	3,229,101.00	1,492,893.00
8	Ganga Water Quality Monitoring	WWF-India		748,500.00	604,774.00	143,726.00
9	Springshed Development in Darjeeling & Kalimpong	WWF-India			110,558.00	(110,558.00)
10	Mizoram Springshed Development	GIZ	931,394.00	22,758.00	1,231,605.00	(277,453.00)
	Total		13,598,064.00	14,993,102.00	21,570,461.00	7,020,705.00

III. INNOVATIVE PROJECT GROUP

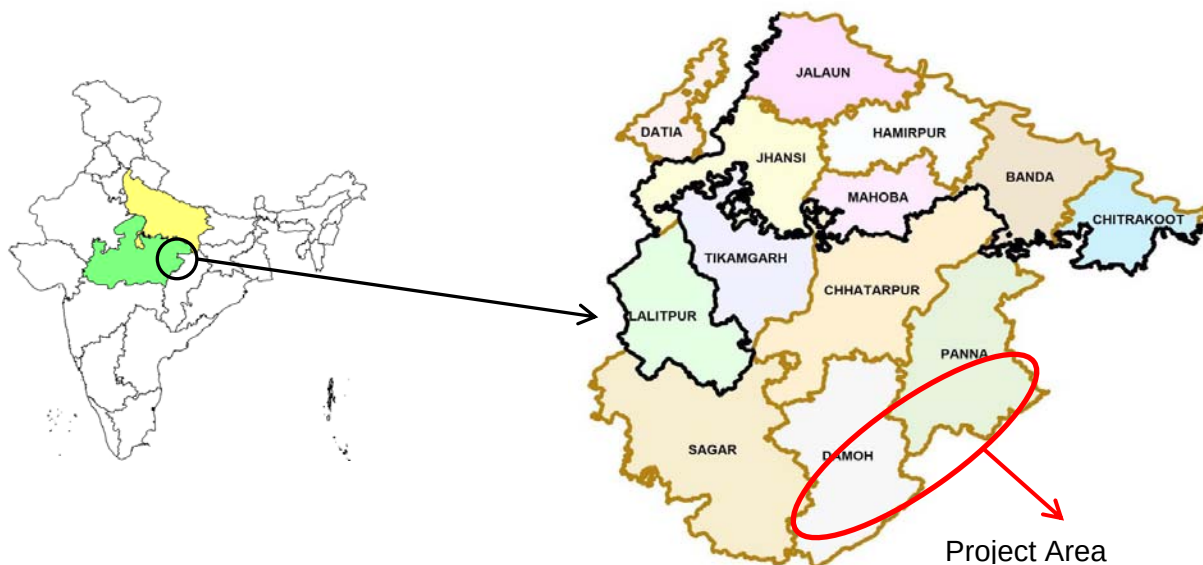
PSI has been implementing its “Gram Swaraj Abhiyan” in Bundelkhand since 2017. Apart from achieving livelihood goals in the past, the tribal communities in Panna district have united to demand appropriate development like water harvesting, MGNREGA wage labor, forest rights, MSP for agriculture etc. from the candidates seeking elections. This is indicative of the growing strength of the tribal communities in the work region.

In April 2018 the IP group began a 3-year programme with the financial support from BRLF for ensuring sustainable livelihoods for tribal communities through watershed development and Forest Rights Act implementation in Panna and Damoh districts.

The GIS lab continued to provide a wide range of information relating to demography, infrastructure and natural resources in visual and data form to various projects at PSI.

III.1 Ensuring Sustainable Livelihood for Tribal Communities through Forest Rights Act and Watershed-Based Development in Bundelkhand Region of Madhya Pradesh

The program is being executed in 36 Gram Panchayats (85 villages) in three tribal blocks of Damoh and Panna districts targeting about 10,000 households out of which 66 per cent are tribal families. The implementation is in a consortium mode, named “Bundelkhand Development Alliance” which is a partnership of Manav Jivan Vikas Samiti in Tendekheda block, Bundelkhand Sewa Sansthan in Jaberia block and People’s Science Institute in Shahnagar block. PSI is extending capacity building support for engineering and technological innovations to the partners, in addition to implementing project activities in Shahnagar block of Panna district.



Location map of the project area

The project objectives are:

Primary Objectives	Other Objectives
• Enable and Empower drought-stricken tribal communities • Sustainable livelihood (food, nutrition, natural resources, increasing productions) • Access to rights & entitlements of marginalized tribal communities	• Capacity building of communities and organizing local youth • Access FRA & government development schemes • Build village institutions to sustain self-reliant development and good governance • Economic development & watershed development

The major outputs and expected outcomes are:

- Settling 5000 individual farmers claim under FRA and community forest rights for 50 villages.
- Village Development Plans formulated by Gram Sabhas in all villages and their incorporation in the Block Development Plan.
- Covering 2500 households under new agronomic practices (SCI, organic, NPM, etc) and 5000 households under land development programmes.
- 6500 ha area covered under watershed development to provide secured irrigation to 25% of the targeted households.
- To try and achieve annual income enhancement of Rs 15,000 per household.

The annual progress during the period of April 2018 to March 2019 for the consortium and PSI is briefly summarized below.

Components	Processes	Major Achievement
Land rights and entitlements under FRA and government schemes	Padyatra, Jan Sunvayee, village meetings, awareness-raising through communication materials like posters, booklet, trainings, state level consultation.	• 2546 forest rights applications filed (target 3300) • 49 applications settled (target 1100) • Approximately 49 acres FRA claims settled • CFRs have been settled in 3 villages (target 25) • Women's land joint ownership rights advocacy
Strong Village Level Institutions (VLIs) to sustain self-reliant development and good governance	Village meetings, Focus on Aam Sabha and Gram Sabha, existing SHGs, training, continuous dialogue, identification of need-based institutions, training on Government schemes	• Aam Sabha (village unit) meeting conducted in all 85 villages (target 85) • Gram Sabha on 15 Aug, 2 Oct, 26 Jan in all G.Ps • Converging SHGs into MMD in 24 villages (target 50) • Mobilizing Van Adhikar Samitis in 25 villages (target 25) • Towards long term development goal -

Components	Processes	Major Achievement
		village wise identification of livelihoods' interventions
Natural resource management through watershed development	Identification of work by communities through process of PRA VDPs, Approval of VDPs in Gram Sabha, PGWM training, engineering training	• VDPs prepared in 68 villages (target 95) • Irrigation security 79 households (target 150) • PGWM planning in 2 village in process (target 4) • Convergence achieve to the tune of Rs. 178 lakhs for watershed, irrigation and land development activities • Community contribution Rs. 6.4 lakhs • Three watershed development proposals for total of 2000 ha are under consideration (Rs. 3 crores)
Agronomic interventions to increase productivity	Seasonal training, farmers field demonstration of SCI, Azola, organic practices, NPM, Field level hand-holding, equipment supply, preparation of communication materials for farmers, exposures trips, crop cutting analysis with communities, setting up village level Technology Resource Centres (TRCs)	• Agronomic practices 1176 HH (target 660 hh) • NPM demonstrations in 61 villages (target 50 villages) • Azola pits - 71 household(target 0) • Community based Technology Resource Centre for scaling up NPM efforts - 13 villages (6 are functional) (target 0) • Convergence to the tune of Rs. 2 lakhs • Community contribution Rs. 7.3 lakhs • Co-finance proposed to APPI, THF, MPVS, JNUKVV

Snippets

Bonded labour in Fuler village, Tendukhera got land rights over 6 acres of land. Produced 82 Q of cereals and pulses in 2018-19



First ever *Gram Sabhas* for FRA rights and VDPs in almost all GPs despite push for PMAY and SBM. Strong demand for reconstitution of *Van Adhikar Samiti/Van Suraksha Samiti*



Villagers in Kathai have saved their only drinking water source, a natural spring from wrongly proposed construction of a Stop-Dam under IWMP. PGWM being considered



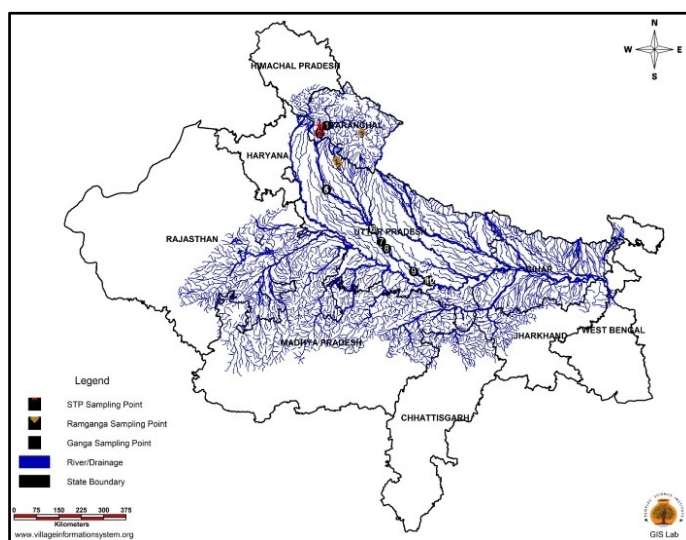
Widowed Mrs. Uma Rani, mother of 4 children and migratory labourer, from Kathai village (Panna) practiced SRI on 0.5 acre, SWI on 1 acre. Achieved food sufficiency, stopped migration and now trains other villagers on SRI/SWI, *Matkakhad* etc.



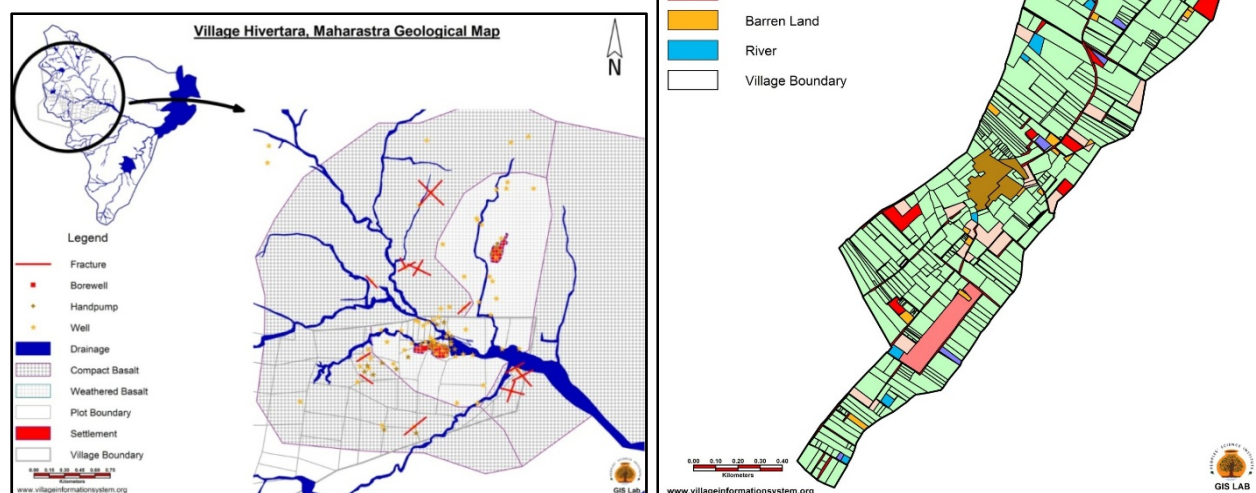
III.2 GIS

In 2018-19 the GIS lab facilitated the work related to ongoing projects at PSI by preparing various maps. Given below are some examples of maps prepared by PSI's GIS team.

1. Watershed maps under NMHS, BRLF, and MKS programs
2. Geological maps of watersheds selected under springshed development programs
3. Location maps of hydro power projects for Himachal Pradesh
4. Location map of water quality testing sites in Ganga river
5. Thematic maps of villages of Bhadrabad block, Haridwar district for sustainable agricultural planning



6. Air and Water Quality maps for Sonbhadra district.
7. Location maps for critical springs of Uttarakhand, Arunachal Pradesh and Nagaland



III.3 Remarks

Based on the experiences of the BRLF supported Bundelkhand program, the following activities have been identified which are likely to be followed up in the next financial year:

- Livestock : Need for training and health services has been identified for goatry
- FPO: Possibility of Agri based FPO for dehusking, pulse processing, millets revival, aggregation of NPM based produces etc. (one each in Damoh, one in Panna)
- Millet revival programme: PSI will lead this in collaboration with MPVS
- NTFP based FPO/Company in tie with Dabur Limited initiated by MJVS
- Shramdan campaign in Damoh for repair of ponds, whereas strengthening political campaign in Panna for demanding ponds and collaborations with other *Jan Sangthan*

A proposal was submitted to APPI in 2017-18 for scaling up livelihood security programme in 30 villages of Panna district. The program worth Rs. 3.5 crore has already been sanctioned for a years' period from January 2020 to December 2023.

III.4 Financial Statement

Financial Statement (2018-2019)

S. No.	Project	Funding Partner	Opening Balance (Rs.)	Income (Rs.) in 2018-19	Utilization (Rs.) in 2018-19	Balance (Rs.)
1	Sustainable Development in Bundelkhand region of M.P.	MJVS-BRLF		1,620,531.00	1,570,592.00	49,939.00

IV. OTHER PROJECTS AND ACTIVITIES

IV.1 RRAN National Convention: Session on Innovation Crop Production Systems for Livelihood Security of Rainfed Farmers

Keeping in view the need for sustainable development of rainfed agriculture and bringing these areas into the growth path, the RRA Network involving several collaborating organizations organized a National Convention on Revitalizing Rainfed Agriculture to discuss issues, challenges and opportunities for rainfed agriculture. Policy makers from the Union Government and State Governments, representatives of Farmers Groups, CSOs, researchers, and academicians participated in this two-day National Convention organized in February 2019 at New Delhi. Major expectation of this convention was to build a consensus on the need for specific policies and programs to address the agrarian crisis of rainfed areas.



As a part of this convention the PSI-anchored National Consortium on SRI (NCS) led the thematic session on “Innovative Crop Production System (ICPS) for Livelihood Security of Rainfed farmers” on 14th February 2019. This session at the RRAN convention was organized to highlight lessons from the fields on how to bring about systemic changes in government policies through local research, community extension systems and learning alliances at the district, state and national levels and scale-up low-cost, sustainable crop production systems (like SCI)).

Around 50 participants from various agro-climatic zones of India participated in the session. Based on experiences of several stakeholders, policy recommendation on three fronts - research, policy implementation and institutional changes were discussed. Policy recommendations proposed were based on principles of “Innovation, Inclusion, Institutions and Investment”

Policy Issues: SCI in paddy has already proven reduction of water consumption by 30 per cent. It can be instrumental in achieving “More per drop”. Such innovation need to be made part of water policies in the rainfed context. The current policies recognize the importance of ICPS, but there are no mechanisms in major policies to implement and scale up ICPS such as SCI. SRI was featured as an innovation to be up scaled in the 12th Five Year Plan. It has also found a place recently in SAGY, NFSM, NRLM and Niti Aayog’s policy paper on doubling farmers income as one of the techniques to improve crop production. But lack of local context specific machinery,

knowledge and extension systems and trained human resource have hindered its implementation through government schemes. Upscaling and investments policy will require considerable changes in extension systems and approaches.

IV.2 Strengthening Science, Practice and Policy for scaling up SCI in Rainfed Regions of India

Based on the above recommendations and the Rabi (2017-18) experience of SCI inception, it is now envisioned **to investigate the policy processes involved in adopting SCI and then initiate a policy dialogue to implement major schemes for scaling-up SCI based on more scientific and farmers' friendly approaches.** It has policy implications for larger schemes like NFSM, RKVY and PMKVY, etc. where strategy has to be designed for developing climate smart pro-poor agriculture production systems **for doubling farmers' income particularly in rainfed areas**, which are left out of the high-input high-output approach of mainstream schemes.

Hence a proposal was submitted to RRAN for second phase of SCI work for Strengthening Science, Practice and Policy to scale up SCI in Rainfed Regions of India. A two years goal is *"to come out with policy level strategic interventions for SCI implementation under major schemes like NFSM, PMKVY, NRLM etc. by identifying the policy gaps, piloting a cluster level approach through NRLM/NFSM and scientific validation of SCI results in crops other than wheat and paddy, for 3 selected states in a 2 years' time horizon."*

The program will most likely be piloted in 3 states - Chhattisgarh/Odisha, Uttarakhand/Himachal Pradesh and Madhya Pradesh.

The project for one year has been sanctioned by RRAN from March 2019- February 2020 with a financial outlay of Rs. 23.25 lakhs.

IV.3 Assessing Benefits Sharing from Hydropower Projects in H.P.

In 2015-2016 ICIMOD, Nepal carried out a study on benefit sharing from hydropower projects in Nepal and Uttarakhand. In 2017 it sought to replicate the study in Pakistan, Himachal Pradesh, Arunachal Pradesh and Sikkim. PSI was responsible for designing and executing the year-long research project in Himachal Pradesh.

Hydropower is seen as being central to the economic growth of Himachal



Giri Project, downstream of diversion

Pradesh by its state governments. This is reflected in the shift of its development trajectory towards the maximum utilization of the state's hydropower potential, the second highest amongst Indian states. In 2006, the state introduced a landmark hydropower policy that sought to balance the concessions given to potential hydropower investors with the rights of the locally affected people over their resources and to entitle the local community to a share of the profits derived from the use of their resources. Other states are seeking to imitate Himachal's earlier example to make hydropower development more acceptable to their people and investors. In this scenario, it is critical to examine these policies and point out the scope for improvement.

Ten hydropower projects of different sizes, year of commissioning, location and nature of ownership, were selected. Over the course of six months, field work was carried out at these ten sites by a team of researchers and interns, using PRA tools, interviews with multiple stakeholders, backed by thorough secondary research.

Benefit sharing in the ten projects revealed that while the 2006 policy proposed a marked improvement in the sharing of benefits in terms of quantity and quality, implementation has been patchy and problematic. Key provisions of the policy have failed to materialize and are still in the experimentation stage, such as direct 1 per cent profit sharing and free electricity in the affected area. The impact of others, such as the creation of the Local Area Development Fund (LADF) has been mixed. Meanwhile, the policy has been used by some of the newer projects to gain approval and social sanction from the locally affected community, even though the benefits generally tend to materialize too little too late. Several reasons have been identified involving all three key stakeholders i.e. the state, the project developers and the local communities. The larger lessons gleaned from this study can be incorporated into new policies by other states to ensure that state-scale economic growth is accompanied by sustainable local-area development.



Group discussion in Palampur, Neugal HEP



Damaged kuhls, Maniyana village, Dharamshala (Gaj II)

IV.4 Internships at PSI

Each year, PSI hosts a large number of interns. Our internship program generates valuable benefits for both the interns and us. It not only provides the interns an opportunity to develop new skills and gain exposure to field work but also provides us short-term human resources. Their fresh outlook about our ongoing projects leads to new ideas and more creative solutions. Hosting interns thus is a good way to prepare a new generation of socially concerned people.

This year PSI hosted 45 interns from reputed institutes like Ambedkar University, Delhi; Delhi University, New Delhi; Doon University, Dehra Dun; Govind Ballab Pant University, Allahabad; International College for Girls, Jaipur; Institute of Rural Management Anand (IRMA), Gujarat, S. P. Jain Institute of Management and Research, Mumbai; Xavier Institute of Social Service, Ranchi (XISSL, Ranchi).

IV.5 Financial Statement

Financial Statement (2018-2019)

S. No.	Project	Funding Partner	Opening Balance (Rs.)	Income (Rs.) in 2018-19	Utilization (Rs.) in 2018-19	Balance (Rs.)
1	SCI-RRAN-I	Friends of WWB India	(609,758.00)	1,200,870.00	591,112.00	-
2	Benefits Sharing in Hydropower Projects of H.P.	ICIMOD	214,365.00	277,070.00	491,435.00	-
	Total		(395,393.00)	1,477,940.00	1,082,547.00	-

V. CAMPUS BUILDING

PSI had initiated the construction of its campus building in March 2016, under the supervision of Dr. K.S. Chawla, heading CTC Pvt. Ltd., a construction company based in New Delhi. PSI's team moved into the main building with its completion in August 2018. The building has three floors with a total area of 1425 sq.m. At present, two floors of the building have been occupied to accommodate upto 60 persons apart from space for an environmental quality testing lab, GIS lab, a library, a conference room, a training room, and two dormitories for interns and trainees. The third floor has been left vacant considering future expansion.



The cost of building construction has worked out to be Rs 2.99 cr as against the estimated cost of Rs. 4.02 cr, excluding the construction of second block/shed which is yet to be initiated. Some of the other pending construction works include landscaping, fire fighting, recycling of waste water, external electrical works including solar devices, and car parking, which are likely to be completed in next year.

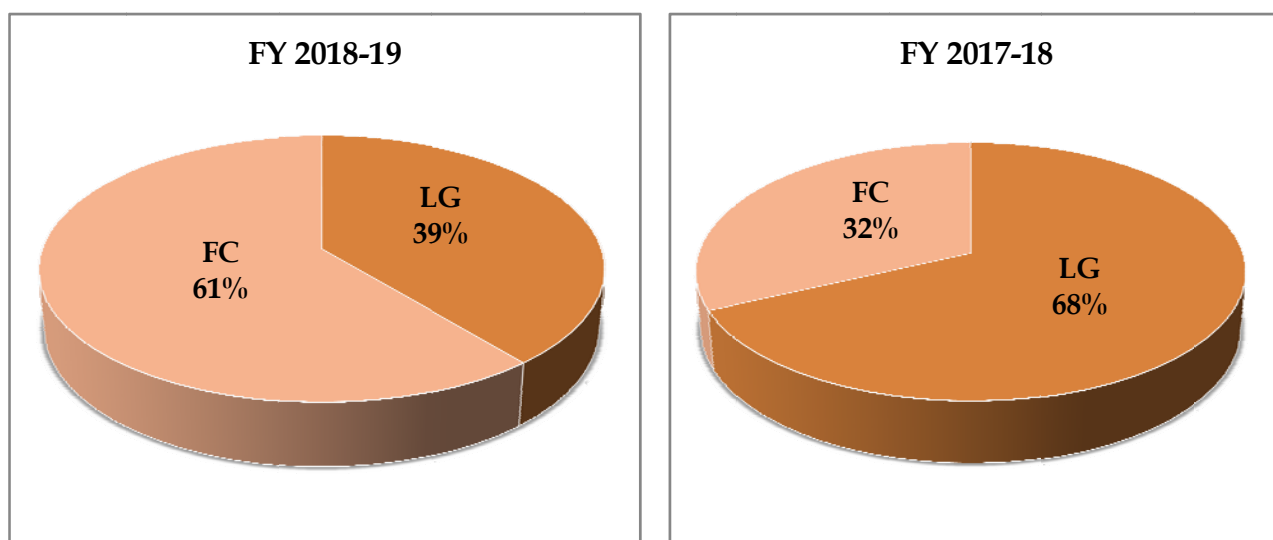


VI. FINANCIAL REPORT

PSI's balance sheet and consolidated income and expenditure account for 2018-2019, ending March 31, 2019 are attached as Annexures 1a and 1b.

During the year the Institute generated grants worth Rs. 4,06,47,173 and donations worth Rs.1,40,61,296. Other receipts from bank interest, sale of land, consultancies, sale of products and publications amounted to Rs.59,04,525. Adding the opening balance and other incomes the total income for 2018-2019 amounted to Rs.10,08,09,072. The Institute spent Rs.7,46,31,578 leaving a balance of Rs. 2,61,77,493. Unutilized grants carried forward amounting to Rs. 2,04,05,485 and the surplus transferred to the capital fund is Rs. 52,72,009.

The pie-charts below show the sourcing of income from local grants & donations and foreign grants & donations for 2018-2019 & the previous year.



The main donors for local and foreign grants are listed below. PSI is thankful to all of them for their support.

Indian: Star India Pvt. Ltd., Arghyam, ITC Ltd., ACWADAM, MJVS, Soil & Water Conservation Department of Meghalaya, Bajaj Auto Limited, G.B. Pant National Institute of Himalayan Environment & Sustainable Development, UGVs, NEIDA.

Foreign: The Hans Foundation, Frank Water, GIZ, ICIMOD, WWF India, European Climate Foundation and Friends of WWB India.

VII. EXECUTIVE BOARD 2018-19

Dr. Kshama Metre	Chairperson	Medical Practitioner
Dr. Navin Juyal	Treasurer	Scientist
Prof. Janki Andharia	Member	Disaster Management
Dr. V. C. Goyal	Member	Hydrologist
Dr. Nivedita Narain	Member	Social Scientist
Prof. Shambu Prasad	Member	Rural Management
Dr. Debashish Sen	Director (Ex-Officio)	Scientist

VIII. PSI STAFF 2018-19

S. No.	Name	Date of Joining	Date of Leaving
1	Sana Anjum	16.10.17	31.10.18
2	Vargish Bamola	04.01.16	
3	Puran Bartwal	03.01.11	
4	Sandhya Chaudhary	17.04.17	
5	D.N. Dwivedy	17.08.98	
6	Ashish Gaur	24.08.18	
7	Anil Kumar Gautam	01.03.02	
8	Aman Gupta	01.11.18	
9	Naveen Gusain	02.04.18	
10	Sandeep Gusain	02.04.18	
11	Akansha Joshi	01.05.18	20.08.18
12	Pushpa Juyal	21.12.92	
13	Surendra Kaintura	01.10.12	
14	Vikram Kaushal	01.02.17	29.04.18
15	Deepa Kaushalam	01.08.18	
16	Chetan Kawley	16.01.17	07.09.18
17	Manoj Kumar	10.07.06	
18	Rajesh Kumar	01.04.18	
19	Ravinder Kumar	17.08.18	
20	Vijay Kumar	01.08.18	
21	Darshan Lal	01.06.13	
22	Richa Minocha	10.04.17	30.04.18

S. No.	Name	Date of Joining	Date of Leaving
23	Raman Mishra	01.10.15	11.05.18
24	Prem Narayan	01.11.18	
25	Priyanka Negi	01.11.16	
26	Vinod Negi	01.02.18	29.05.18
27	Arvind Nigam	06.06.17	
28	Ravi Niranjan	17.07.18	
29	Vinod Niranjan	15.01.14	
30	Bhagwati Pandey	20.03.17	
31	Kamal Kant Pandey	19.06.17	19.05.18
32	Vishal Patel	18.11.15	
33	Amit Petwal	01.11.16	
34	R.S. Prasad	01.11.94	
35	Mahendra Singh Rajwar	01.01.08	
36	Nitin Rana	19.09.16	
37	Roshan Rathod	15.03.18	
38	Dinesh Chandra Raturi	15.04.15	30.11.18
39	Seema Ravandale	01.04.17	
40	Akhilesh Rawat	02.02.18	
41	Milan Rawat	12.12.18	
42	Prem Singh Rawat	01.09.18	
43	Ramesh Singh Rawat	16.09.04	
44	Subhash S. Rawat	01.06.02	
45	Debashish Sen	01.03.88	
46	Anita Sharma	02.07.12	
47	Chaitan Sharma	16.11.18	
48	Dinesh Sharma	02.10.97	
49	Adarsh Shukla	01.08.18	
50	Aprajita Singh	01.10.16	
51	Makan Singh	01.07.17	
52	Neha Singh	19.09.18	31.12.18
53	Vikram Singh	01.02.00	
54	C. Tripathi	15.06.88	
55	Sanjay Uniyal	01.11.17	
56	Kunal Upasani	01.03.18	
57	Kuldeep Prasad Uniyal	09.03.15	30.11.18
58	Sharad Yadav	01.05.17	
59	Sunita	14.06.17	30.05.18

PEOPLES SCIENCE INSTITUTE					
B-57 Second Floor, New Rajender Nagar, New Delhi-110060					
BALANCE SHEET AS AT 31st MARCH 2019					
Amount in Rs.					
CORPUS / CAPITAL FUND AND LIABILITIES	SCH.	2018-19			2017-18
		LG	FC	Total	Total
(a) Endowment Fund	A	-	597,837	597,837	597,837
(b) Campus Fund	B	7,823,689	30,498,750	38,322,439	37,670,750
(c) Reserve & Surplus	C	7,912,612	2,239,320	10,151,932	4,879,923
(d) Grant (to the extent Unutilised)	D	18,456,587	1,948,898	20,405,485	40,196,078
Receivable/ Unutilised (net)					
(e) Current Liabilities	E	2,651,233	1,776,161	4,427,394	5,351,363
Total (Rs.)		36,844,121	37,060,966	73,905,087	88,695,951
Assets					
(a) Non Current Assets					
Fixed Assets	F	11,094,346	28,408,099	39,502,445	25,116,323
(b) Current Assets					
Cash and Cash Equivalents	H	5,424,244	28,377	5,452,621	19,735,484
Other Current Assets	I	3,257,039	7,987,165	11,244,204	11,631,285
Investments	G	17,068,492	637,325	17,705,817	32,212,859
TOTAL (Rs.)		36,844,121	37,060,966	73,905,087	88,695,951
Significant Accounting Policies	j				
Contingent Liabilities & Notes to Accounts	k				
As per our report of even dated attached					
For Singh Satish & Associates			For People's Science Institute		
Chartered Accountants					
FRN: 032138N					
Satish K. Singh			Dr. Debashish Sen	Dr. Kshama Metre	Dr.Naveen Juyal
FCA; BCOM(H)			Director	President	Treasurer
Membership No. 526351					
Place: New Delhi					
Date:23rd Sep 2019					
UDIN:-					

PEOPLES SCIENCE INSTITUTE					
B-57 Second Floor, New Rajender Nagar, New Delhi-110060					
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 2019					
Amount in Rs.					
INCOME	Sch.	2018-19			2017-18
		LG	FC	Total	Total
Donations & Project Grants	L	21,230,934	33,477,535	54,708,469	43,982,654
Interest Income	M	1,339,897	488,195	1,828,092	2,994,429
Gain on sale of Land		-	-	-	16,834,252
Other Income	N	1,433,683	-	1,433,683	865,285
Environment Education and Services Receipts	O	2,522,750	120,000	2,642,750	306,500
Profit on Mutual funds		-	-	-	104,628
TOTAL		26,527,264	34,085,730	60,612,994	65,087,748
Grant Unutilised C/f		32,712,072	7,484,006	40,196,078	40,305,129
Total		59,239,336	41,569,736	100,809,072	105,392,877
EXPENDITURE					
Expenditure					
Program Expenses	P	22,242,034	30,299,532	52,541,566	26,384,102
Human Resource Expenses	Q	11,052,602	7,028,549	18,081,151	16,965,584
Administrative Expenses	R	1,589,306	1,240,239	2,829,545	3,389,858
Depreciation	F	821,225	358,092	1,179,317	678,482
Total		35,705,167	38,926,411	74,631,578	47,418,026
Transfer to Unutilised Grant		18,456,587	1,948,898	20,405,485	40,196,078
Transfer to Campus Fund		500,000	-	500,000	18,117,011
Excess of Income over Expenditure		4,577,582	694,427	5,272,009	(338,238)
TOTAL		23,534,169	2,643,325	26,177,493	57,974,851
Significant Accounting Policies	S				
Contingent Liabilities & Notes to Accounts	T				
As per our report of even date attached					
For Singh Satish & Associates			For People's Science Institute		
Chartered Accountants					
FRN: 032138N					
Satish K. Singh			Dr. Debashish Sen	Dr. Kshama Metre	Dr. Naveen Juyal
FCA; BCOM(H)			Director	President	Treasurer
Membership No. 526351					
Place: New Delhi					
Date: 23rd Sep 2019					