

## **PROGRESS REPORT**

### **Access to clean and potable water through bio sand water filters in Thar Desert – Phase II**



**2016-2017**

**Implemented by**

**GRAVIS**

**Supported by**

**PPI, USA**

## 1. Background

Thar in India is a desert eco-system home to over 27 million people. Water is a critical challenge in the Thar Desert. In the rain-deprived region of Thar in Rajasthan, rural communities have to cope with minimal amounts of water leading to poor health and to an overall poor socio-economic status. Droughts are recurrent in Thar affecting the overall community development. Women and girls bear the brunt of water crisis and have to go through severe water-fetching drudgery affecting their health and education status.

Ground water and rain water (surface water) are the two water sources available in Thar. Ground water level are rapidly depleting as a result of depleting water as a result of over exploitation of ground reserves. Ground water also has problems with chemical contaminants such as fluoride and arsenic. Rain water stored in structures such as ponds and tanks is the other important sources. The issues with rainwater are that 1) rains are very limited and unpredictable and 2) rainwater has problems of contamination mainly of the biological form. Overall, lack of water and poor quality of the water have been the major obstacles for development in Thar.

GRAVIS is an NGO that works in remote and rural India for integrated community development. It was founded in 1983 by a group of Gandhian development activists in the Thar Desert of India. The organisation was formed in order to organise rural development activities in the remote parts of Thar Desert. The organisation has great faith in working on issues related to human rights, equality and rural development with active participation of rural communities of the region where in functions. In the beginning, it started its work in a cluster of 20 villages of Jodhpur district in Rajasthan. At present, GRAVIS works in more than 1,250 villages of 8 districts of the Thar Desert of Rajasthan, India, and in Uttarakhand and Uttar Pradesh States covering a population of about 1.3 million people.

GRAVIS realizes the issues related to water security and has taken up important interventions to address water and sanitation in Thar. Our key activities and accomplishments related to water and sanitation are:

- Construction of water harvesting tanks (*taankas*) to ensure water security at the household level. Till date, over 6,800 *taankas* have been constructed.
- Construction of percolation wells or *beries*. Till date, 599 *beries* have been constructed.
- Construction and renovation of over 270 village ponds.
- Introducing methods to keep the water clean in storage structures.
- Improving sanitation practices and health seeking behaviour through an outreach health education programme.
- Provision of outreach and hospital medical services to cater to people suffering with waterborne diseases and conditions arising due to lack of sanitation.
- Constructing low cost toilets.
- Organization of Water, Sanitation and Education (WASHED) programme in over 80 schools of Thar Desert.

After addressing the water quantity situation with good effect over the last three decades, GRAVIS had been concerned on addressing water quality. It is evident that in the rainwater, the biological contamination is quite common and leads to various health condition.

Keeping the above in view, PPI, USA and GRAVIS started a Bio-Sand Filters (BSFs) focused project in the Thar Desert in 2013, named “Nirmal”. The project focused on setting up 60 BSFs to be used in 2 remote villages of the Thar Desert. It was envisioned that 60 families will receive the newly assembled water filters to be used within their homes and the communities as well as GRAVIS team will be trained in assembling and using the filters.

The BSF is an innovation on traditional slow sand water filters. It allows for intermittent operation at a household level. The filter can be constructed locally anywhere because it is built using materials that are readily available. It is simply a concrete container, enclosing layers of sand and gravel whose purpose is to eliminate sediments, pathogens and other impurities from the water. The bio sand filter is proven to almost entirely remove the disease-causing organisms found in water. It removes 100% of parasites and over 95% of bacteria. It also removes nearly all suspended sediments, and is capable of removing significant amounts of organic and some inorganic compounds. The proposed project is the replication of previous year project and will demonstrate bio-sand filters in 10 needy villages of Jodhpur district.

As a follow up of the first project, PPI and GRAVIS planned another two years’ project for the years 2016 and 2017. **This report presents the progress of the phase 2 of the project.**

Along with the filters project, a study was also taken up on measuring the health impact of the filters and disseminating the technology. A separate report of that intervention will be prepared and shared.

## **2. The Project**

### **2.1 Objectives of the project**

Following were the objectives of the project as planned:

#### **Overall:**

The project would expand bio sand filter technology in the Thar Desert from the learning of the past phase and will contribute to replication and scale up of bio sand filters.

#### **Specifically:**

- Capacity building of members of the Community Based Organizations (CBOs) by providing training and awareness on water filtration and prevention of diseases.
- Reduce most common water borne diseases in Thar Desert
- Provide potable drinking water at low cost

- Capacitate people to have enough experience and practice bio-sand technology at household level
- To replicate BSF in the region thereby improve people participatory access to purified safe water
- Improve water management of available water resources

## 2.2 Duration and location

The project was implanted over a period of two years – January 2016 to December 2017. It was implemented in 10 remote villages of Phalodi Block, Jodhpur District, in the heart of the Thar Desert. Main source of drinking water in the project villages is rainwater with some bore wells with groundwater.

## 2.3 Implementation arrangements

GRAVIS' head office in Jodhpur City leads the project. At the ground level, GRAVIS Bap field centre will coordinate the project. The project team consisted of 1 part time project coordinator and 1 part time field worker. In addition, a program coordinator from GRAVIS head office helped in planning, monitoring and reporting of the project. GRAVIS senior team provided all necessary support and guidance.

The project was implemented in close collaboration with the local community and representatives of Village Development Committees (VDCs) and Self Help Groups (SHGs).

## 2.4 Activities implemented

### 2.4.1 Trainings on water management and water-borne diseases

These training focused on an overall orientation of water quality, principles of water good management and the value of safe drinking water in the context of nutrition, health and well-being. GRAVIS field team with the support of health supervisors and Village Health Workers (VHWs) organized these trainings. A total of 10 such trainings were organized in all 10 villages. The trainings were attended by 364 villagers.



*A training*

#### 2.4.2 Training on installation and maintenance of filters

These trainings aimed on enhancing the understanding of users on BSFs. Installation and maintenance were the two key areas of capacity building. GRAVIS team leader of the project with the support of a Programme Coordinator organized the trainings. All 200 households attended these trainings in 10 groups.



*Training*



*A BSF*

### 2.4.3 Installation of BSFs

BSFs were the main part of the project. Over the two years' time-frame, a total of 200 BSFs were installed in the identified households. The users were oriented on the use and were given training as already mentioned above.



#### *Assembling filters*

GRAVIS works with VDCs in all its project villages. The VDCs help us in selecting most needy beneficiaries based on the socio-economic conditions. VDCs led the selection process for the BSFs and supported the project team in installation of the filters.

#### 2.4.4 A block level seminar

A block level seminar on BSF was organized on 20<sup>th</sup> December, 2017. About 38 representatives of other NGOs of the region, from CBOs, school teachers and 1 Government representative took part in the seminar. The goal was to disseminate the BSF as a water filtration method and to invite the feedback of the communities. The seminar provided a good opportunity for an open discussion and exchange of views.

### **3. The impact**

- The overall acceptance of BSFs has been quite positive. Most of the 200 user households are using the filters regularly and with satisfaction. A study has been conducted, the report of which will provide the further details.
- Users report that the use of BSF water has been making a positive impact on their health and on their overall well-being.
- BSFs during the dissemination efforts have been received well by other organizations and individual. There is a scope of expanding the technology further in the Thar Desert.
- The BSFs have been particularly well received by the women and girls as their association with water is more direct.

### **4. Future vision**

GRAVIS has been keen on addressing the water quality concerns in the Thar Desert with a low cost and easy to manage technology. BSFs seem to work well and are well received by the community. Therefore, we would explore ways of expanding the technology through various modes including:

- Including them in our water related ;projects to be able to cover more households
- Seeking ways of setting up assembling units led by CBOs such as SHGs
- Exploring Government synergies on the technology
- Supporting other NGOs by training and capacity building

A survey/study report conducted by GRAVIS is almost ready and will be disseminated through a small event by the end of January, 2018. The main goal of the report dissemination will to encourage replication of BSFs in different regions of Thar and elsewhere.

We believe BSFs are effective technology to treat rainwater and biological contamination and make an important contribution towards good health and well-being. The use of BSFS in long-term in the communities will bring positive socio-economic impacts.

## APPENDIX - 1

### List of beneficiaries

S. N.	Name	Village
1	Hanifo	Badi Dhani
2	Dariya Khatu	Badi Dhani
3	Hurmat	Badi Dhani
4	Salma	Badi Dhani
5	Saybo	Badi Dhani
6	Sumri	Badi Dhani
7	Amri	Badi Dhani
8	Amiyat	Badi Dhani
9	Julfa	Badi Dhani
10	Jubeda	Badi Dhani
11	Chandkhatu	Badi Dhani
12	Bhikho Khatu	Badi Dhani
13	Jinnat	Badi Dhani
14	Khatijo	Badi Dhani
15	Noor Khatu	Badi Dhani
16	Aarbi	Badi Dhani
17	Rehmant	Badi Dhani
18	Surma	Badi Dhani
19	Ajmat	Badi Dhani
20	Nemat	Badi Dhani
21	Bhom Singh	Rahada
22	Laxman Singh	Rahada
23	Prem Kanawar	Rahada
24	Amar Singh	Rahada
25	Mahendra Singh	Rahada
26	Hari Singh	Rahada
27	Kalyan Singh	Rahada
28	Bheru Singh	Rahada
29	Babu Singh	Rahada
30	Ram Singh	Rahada
31	Raiso	Rahada
32	Padam Singh	Rahada
33	Imarti	Rahada
34	Balvant Ram	Rahada
35	Indar Singh	Rahada
36	Devi Singh	Rahada
37	Gero Kanwar	Rahada
38	Ganga Singh	Rahada
39	Vidhya Devi	Rahada
40	Ugam Kanwar	Rahada
41	Ridmal Ram	Shivpura
42	Haringa Ram	Shivpura
43	Ramnarayan	Shivpura
44	Amra Ram	Shivpura



45	Mangi	Shivpura
46	Kavru Ram	Shivpura
47	Sawan Ram	Shivpura
48	Gordhan Ram	Shivpura
49	Sukha Ram	Shivpura
50	Bhajana Ram	Shivpura
51	Jagmal Ram	Shivpura
52	Faglu Ram	Shivpura
53	Sukha Ram	Shivpura
54	Sant Ram	Shivpura
55	Heat Ram	Shivpura
56	Jagdish	Shivpura
57	Dana Ram	Shivpura
58	Raja Ram	Shivpura
59	Shivlal	Shivpura
60	Naru Ram	Shivpura
61	Gokal Devi	Benghti
62	Pappu Ram	Benghti
63	Mohan Kanwar	Benghti
64	Achu Devi	Benghti
65	Bhanwar Singh	Benghti
66	Lichu Kanwar	Benghti
67	Annop Singh	Benghti
68	Kan Giri	Benghti
69	Prayag Singh	Benghti
70	Nenu Kanwar	Benghti
71	Amchu Kanwar	Benghti
72	Chandra Kanwar	Benghti
73	Kan Singh	Benghti
74	Babu Singh	Benghti
75	Sumer Singh	Benghti
76	Rewat Singh	Benghti
77	Asha Kanwar	Benghti
78	Prem Singh	Benghti
79	Punraj Singh	Benghti
80	Dhapu Kanwar	Benghti
81	Amrat Ram	Sanwarij
82	Fusa Ram	Sanwarij
83	Manak Ram	Sanwarij
84	Madan Lal	Sanwarij
85	Dungar Ram	Sanwarij
86	Prakash	Sanwarij
87	Dev Chand	Sanwarij
88	Nakhata Ram	Sanwarij
89	Dungar Ram	Sanwarij
90	Nimbu Ram	Sanwarij
91	Nena Ram	Sanwarij
92	Ratna Ram	Sanwarij

93	Shankar Ram	Sanwarij
94	Luna Ram	Sanwarij
95	Surja Ram	Sanwarij
96	Omprakash	Sanwarij
97	Jhumar Ram	Sanwarij
98	School	Sanwarij
99	Baba Ram Dev Temple	Sanwarij
100	Kana Ram	Sanwarij
101	Bhera Ram	Hopardi
102	Hukma Ram	Hopardi
103	Bhanwar Lal	Hopardi
104	Puna Ram	Hopardi
105	Labhu Ram	Hopardi
106	Bhura Ram	Hopardi
107	Khivraj	Hopardi
108	Champalal	Hopardi
109	Fusa Ram	Hopardi
110	Pukh Raj	Hopardi
111	Madha Ram	Hopardi
112	Hema Ram	Hopardi
113	Bhoma Ram	Hopardi
114	Bhanwar Lal	Hopardi
115	Biram Datt	Hopardi
116	Bijal Ram	Hopardi
117	Mansukh	Hopardi
118	Omprakash	Hopardi
119	Vishna Ram	Hopardi
120	Pushkar	Hopardi
121	Basir Khan	Kalro
122	Kamla Khan	Kalro
123	Govt School	Kalro
124	Gulam Rasul	Kalro
125	Salim Khan	Kalro
126	Elyas Khan	Kalro
127	Manak Ram	Kalro
128	Harchand Ram	Kalro
129	Majid Haji	Kalro
130	Haji Usman	Kalro
131	Haji Sultan	Kalro
132	Kasam Khan	Kalro
133	Salim Khan	Kalro
134	Basir KHan	Kalro
135	Elyas Khan	Kalro
136	Umardin Khan	Kalro
137	Jabbar Khan	Kalro
138	Pathan Khan	Kalro
139	Najir Khan	Kalro
140	Sadik Khan	Kalro

141	Nathu Khan	Ugras
142	Rafique	Ugras
143	Barkat	Ugras
144	Parma Ram	Ugras
145	Gordhan Ram	Ugras
146	Ganesh Lal	Ugras
147	Bheru Lal	Ugras
148	Bhanvru Ram	Ugras
149	Bhikha Ram	Ugras
150	Shera Ram	Ugras
151	Padma Ram	Ugras
152	Jetha Ram	Ugras
153	Fusa Ram	Ugras
154	Pema Ram	Ugras
155	Bhanvru Ram	Ugras
156	Baga Ram	Ugras
157	Anil	Ugras
158	Bhaga Ram	Ugras
159	Oma Ram	Ugras
160	Jagdish	Ugras
161	Shaitan Singh	Nagnecha Nagar
162	Kirta Ram	Nagnecha Nagar
163	Mohan Ram	Nagnecha Nagar
164	Fusa Ram	Nagnecha Nagar
165	Chanda Ram	Nagnecha Nagar
166	Sura Ram	Nagnecha Nagar
167	Tola Ram	Nagnecha Nagar
168	Raju Ram	Nagnecha Nagar
169	Kana Ram	Nagnecha Nagar
170	Sumer Singh	Nagnecha Nagar
171	Devi Singh	Nagnecha Nagar
172	Kalyan Singh	Nagnecha Nagar
173	Manohar Singh	Nagnecha Nagar
174	Khap Singh	Nagnecha Nagar
175	Lal Singh	Nagnecha Nagar
176	Asha Ram	Nagnecha Nagar
177	Ramu Ram	Nagnecha Nagar
178	Navla Ram	Nagnecha Nagar
179	Hari Ram	Nagnecha Nagar
180	School	Nagnecha Nagar
181	Gyan Singh	Dhadhu
182	Mag Singh	Dhadhu
183	Manohar Singh	Dhadhu
184	Gop Singh	Dhadhu
185	Bhoma Ram	Dhadhu
186	Hari Ram	Dhadhu
187	Jethu Singh	Dhadhu
188	Tola Ram	Dhadhu

189	Pep Singh	Dhadhu
190	Puna Ram	Dhadhu
191	Shree Ram	Dhadhu
192	Jalam Singh	Dhadhu
193	Bhom Singh	Dhadhu
194	Gaje Singh	Dhadhu
195	Sagat Singh	Dhadhu
196	Bhanwar Singh	Dhadhu
197	Ganga Ram	Dhadhu
198	Magha Ram	Dhadhu
199	Jitendra Singh	Dhadhu
200	Indra Singh	Dhadhu