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Kamlesh Gururani
Reliance Foundation, India, kamleshgururani@gmail.com

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Community Effort for Drinking Water Management near India- China border at Jamak Village district Uttarkashi, Uttarakhand, India

Abstract

In Uttarakhand, drinking water is a major problem and a burning issue for the last decade. Many natural springs that dotted the hillside have been damaged due to the climate conditions and other unplanned or illegal activities such as deforestation and human-made forest fires have affected spring catchments, resulting in reduced discharge from springs. To tackle this major problem of drinking water security, the community of mountain village Jamak, district Uttarkashi came together for community-led drinking water supply by adopting participatory planning and ownership. The village community's participation and ownership improved the village's drinking water situation, and villagers are now getting 70 liter of water per person per day. The supplied water is safe for drinking; this has reduced women's struggle, minimized water-borne diseases, and increased the village community's level of attention to revive mountain water spring. The genuine participation in critical stages of water supply and ownership of the Water Management Committee in the management of water supply is most significant, and this is also gaining pace for proper functioning of the water supply system.

Keywords

safe drinking water, Reliance Foundation, emergency response

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Kamlesh Gururani

Reliance Foundation, India

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CORRESPONDING AUTHOR

Kamlesh Gururani:
kamleshgururani@gmail.com

ABSTRACT

In Uttarakhand, drinking water is a major problem and a burning issue for the last decade. Many natural springs that dotted the hillside have been damaged due to the climate conditions and other unplanned or illegal activities such as deforestation and human-made forest fires have affected spring

catchments, resulting in reduced discharge from springs. To tackle this major problem of drinking water security, the community of mountain village Jamak, district Uttarkashi came together for community-led drinking water supply by adopting participatory planning and ownership. The village community's participation and ownership improved the village's drinking water situation, and villagers are now getting 70 liter of water per person per day. The supplied water is safe for drinking; this has reduced women's struggle, minimized water-borne diseases, and increased the village community's level of attention to revive mountain water spring. The genuine participation in critical stages of water supply and ownership of the Water Management Committee in the management of water supply is most significant, and this is also gaining pace for proper functioning of the water supply system.

World Water Day 2018



1 INTRODUCTION

Uttarkashi district shares boundaries with China. The village Jamak comes under Bhatwari block and the China border is approximately 120 kilometers. Jamak is a small village located in the Gangotri region of Uttarkashi district comprised of 75 households in the Bhatwari development block. The village has a population of around 400.

Discussion during World Water Day



Drinking water was one of the major concerns in the village for so many years. Before the Reliance Foundation's intervention, the villagers were used to fetch water from the river. The women were spending most of their time walking a long distance of 1 km to collect water for drinking and domestic use. Reliance Foundation has brought potable water right to their doorstep.

400 people of some 75 households have benefitted from the water supply system that the Reliance Foundation was undertaken in the Jamak village. The objective of the intervention was to develop water self-sufficiency and drinking water facility to the villagers. The villagers were able to obtain piped water connection to each household at their doorstep, have a nutrition garden, and install individual toilet unit. The water was sourced from natural springs tapped through gravity-flow, stored in tanks and supplied to homes as tap water.

2 BACKGROUND OF THE PROBLEM

The Bhatwari block of Uttarkashi is a part of an environmentally sensitive zone that receives heavy rainfall every year. Heavy rainfall and flash floods in June 2013 wreaked havoc, wiped out settlements and decimated lives.

In 1991 the Jamak village also got high-intensity earthquake shock (also known as the Garhwal earthquake) leading to the death of 74 people, destroyed 100 homes along with water storage tank of 10,000 liter capacity and supply pipeline.

Since then, the pipeline water supply system got completely disrupted, which caused inconvenience to all. Every year, before the monsoon, the villagers made efforts to revive the water storage tank and pipeline. They channelized the storage tank through 3.5 kilometer pipeline with either the river source or sometimes from the canal. However, the problem could not be resolved. The 10,000 liter water storage tank which was built around two decades ago by Government department for water supply was serving no purpose. Most of the time it was disconnected with the water source, or the tank would be dried up. In every monsoon the pipeline washed away and the struggles remained same for years.

The piped water supply was virtually non-existent. Sometimes, there was water once in 10 or 15 days after the efforts of villagers. The challenge was not to get any contaminated water during the monsoon season because either the water source was a river or canal, while in winter or summer villagers were used to collect water from Bhagirathi river. Long walks on hilly terrain also made women develop muscle, joint problems, and water-borne diseases. Though there is no study to ascertain the extent of the problem, almost all women complained of back pain, knee problems and diarrhea while interacting with them during the village's community work.

Village Sarpanch: "This is the first time since 2013 that water has reached all households. Earlier, villagers would have to go at least 1000 meters to get water from a river."

So, an alternative arrangement was done by the village community of Jamak. Community planned to resolve the water supply and finally construct a new 20,000 liter water storage tank along with the maintenance of existing 10,000 liter water storage tank to develop overall 30,000 liter water storage availability. They laid a new separate 3.5 kilometer pipeline with Reliance Foundation's help to meet 75 liter per person per day water requirement.

With an intention of transforming villages into self-reliant and sustainable ones, Reliance Foundation, in 2014, started working with the communities in 12 villages of Bhatwari region in Uttarkashi district, which is the most vulnerable region. The Foundation has been working with the villagers in Jamak, Raithal, Natin, Dwari, Gorsal, Pahi, Pala, Jakhol, Natin, Sainj, Saura and Bandrani villages in Bhatwari block. The Foundation has mobilized farmers to get organized as Village Associations (VA), and empowered them to take up development initiatives. Reliance Foundation mobilizes, organizes and strengthens the capacity of communities by adopting participatory processes. These interventions promote collective ownership, decision-making and catalyze collective action for sustainable development.

3 METHODS

In 2017, Reliance Foundation (RF) supported the villagers to get organized as VA and empowered to take up developmental initiatives. The RF team organized a number of meetings with the community to gain their confidence in partnering with the RF team to improve its resources, capacities, and livelihoods. During this initial interaction, the community studied the work of the Foundation in other locations to gain an insight into possible solutions to their problem. In 2017, 75 families came together to form “Mata Rajrajeshwari Gram Samiti (VA)”. In the formation of VA it was taken care that women have strong participation because women suffered the most because of the water scarcity in the village. The women were in the lead role as office bearers, the association included seven women on the board out of nine members.

Tank construction



The RF carried out an intensive situation analysis of the village to understand the developmental needs and long-term solutions with the participation of the VA. A participatory rural appraisal (PRA) and problem prioritization exercise helped to understand the village development needs. The foundation developed a three-year perspective plan in the first year to identify critical pain points and Identified drinking water issue as the key issue that needs to be resolved first. The drinking water issues were given utmost priority since the village community of Jamak was facing a severe water crisis and struggled to fetch drinking water.

A case study was also conducted by Dr. Suneet Naithani, Dr. Asit Charabarti, Dr. Manjulata Jain, A. Carmalin Sophia, Dr. Sunil Garg, and Dr. Debabrata Majumd at Jamak village to assess efforts and environmental dimensions with Participatory Learning Action and need Assessment report revealed the weightage preferences to water. (Reference- Page No. 36; Science for Shocked Jamak; A Case study from Uttarkashi, India)

The VA members identified a perennial spring at hilltop, 3.5 kilometer from the village as a drinking water source. The

VA members validated the water flow, they removed bushes around the spring and made it accessible. This was the only water source which was perennial, however, it was on the stream that was below than village's altitude. This was a major concern as the village was at a considerable height from the stream and would need pumping mechanisms to move water upwards which is expensive. Water would have to be brought from great distances through gravity in order to have the necessary head up to the village and save cost. The RF technical person suggested constructing a Ferrocement water storage tank near the spring and laid a 3.5 kilometer pipeline to bring the water at doorstep. Meanwhile, the VA members were trained on the Ferrocement technology to construct water storage tank at the hill top. Following these activities, the Reliance Foundation did a water quality testing.

20,000 liter water storage tank after construction



The VA facilitated to form a water management committee (Jal Samiti) to deploy water supply work and water storage tank on a priority basis. The water management committee identified the site for tank construction and estimated required materials with the help of the RF. The VA member Mr. Dalev Singh Rana was trained as a technical person to maintain regular water supply by with the help of the RF. Every VA member volunteered (Shramdaan) for construction of a 20,000 liter ferrocement water storage tank. The VA members carried The required materials such as the wire mesh, cement and sand to the construction. The women members of VA levelled the tank site, and built the stone structure to construct water storage tank. The VA did not stop at this, and turned to repair one more 10,000 liter defective water storage tank. The Reliance Foundation boreed only material and mason cost while all the labour work was done voluntarily by all the VA members. The VA members including women fully supported the initiative, and lend a helping hand to the each other to successfully create 30,000 liter water storage capacity and laid down 3.5 kilometre pipeline. Thus, the VA initiative resolved the ongoing water crisis. Each VA member (75 households) pays for the opera-

tion and maintenance of the water supply system to the water management committee under the aegis of VA.

4 IMPACTS

Ferro-cement- Low Cost Technology A circular shape 20,000 liter water storage capacity Ferro-cement tank was constructed. The tank was built quickly within 12 days by Mr. Rajendra Lal with the voluntary contribution from the VA members. This well-built ferro-cement tank is known to have long lifetime in comparison to the old structure. This tank is being used to store and supply potable water since March 2018 to 75 households.

- The Reliance Foundation initiative increased the stake of community as decentralized service delivery responsibilities empowered the community in planning, implementation and maintaining the water supply system. Reliance Foundation facilitated the formation of village-level committee (Jal Samiti), fully responsible for schemes at the village level, while the village institution (Mata Rajrajeshwari Gram Samiti) is responsible for overall functioning of Jal Samiti and improving the technical and financial performance of the Jal Samiti.

World Environment Day 2018



- The Reliance Foundation, with its village institution partner Mata Raj Rajeshwari Gram Samiti, Jamak completed construction work of 20, 000 liter water storage tank in the month of March 2017. The VA with the support of RF deployed a network of pipelines cost of ₹230,000 to provide tap water to households. The tank capacity can supply tap water to 75 households. Currently, the operation and maintenance of the tank and the water supply is being looked after by the Jal Samiti. Every household pays ₹500 as a one-time service fee and ₹30 as a monthly water bill to the Jal Samiti. The Jal Samiti also appointed a community resource person to ensure proper supply and maintenance of water. The Jal Samiti is solely a service-oriented delivery functional committee, which is getting ₹. 1000 per month for supplying the water to the community by the water users.

Nutrition garden



- On World Environment Day 2018, the VA, in collaboration with Forest Department undertook intensive plantation in the area where the water source is available. The purpose of the plantation was to strengthen the landscape from landslides and conservation of water resources.
- Around 25 Members initiated garlic and onion cultivation due to water availability after an intervention by the Tata Relief Committee. In 2019, one these 25 members was able to secure their nutrition need for approximately three months with the help of income from selling these vegetables, and around ten families earned an average of ₹. 2000 by selling in a nearby market. On the brighter side, the cultivation area of garlic and onion has continued to increase since then. Approximately 90%of the households are inclined towards vegetable cultivation and can harvest vegetables for about six to seven months in a year from their nutrition garden.

Water for all



A summary of impacts

- Adequate safe water for all **75 households** which is in compliance with the international standard of **70 liter water per person per day.**

4 TESTIMONY

- 75 households water connections benefitted from construction of 20,000 liter water storage capacity by ferro-cement technique
- **20,000 liter Ferro-cement tank** constructed by **shramdaan** (a voluntary contribution involving physical effort) of the village community
- **30,000 liter** (construction of 20, 000 liter Ferro-cement tank, and repair of 10,000 liter old water structure) water storage capacity activated in the village for supply of adequate water
- **Approximately 9000** cubic meter water harvesting in a year by the water storage tank.
- Adequate water available for **nutrition garden** (vegetable garden)
- **Decentralized** water distribution and governance is being done by Jal Samiti. Improved uses of **latrines and coverage of sanitation**. Regular water supply helped villagers to use already constructed toilet and 2 new toilets constructed with the support of Reliance Foundation. The women's privacy and dignity and psychological stressors decreased as shared these women at the VA members meetings
- Village community adopted **improved hygiene and sanitation practices**
- 3-km High Density Polyethylene (HDPE) coil pipe line was deployed with the shramdaan of community reflect the **collectiveness of thought**.
- Women **drudgery reduced**- earlier women were carrying water from 1 km away from their house. They used to carry pots, possibly with a child or two in tow, to the river—regularly repeating the journey up to two to three times a day. Now with a tap water supply at doorstep reduced the women drudgery and improved their physical and mental health.
- Adequate water is available for **construction of new houses, toilets and soak pits**.
- **Women participation** and stake in water distribution and governance is increased.
- **Community owned and managed** water supply system.
- **₹4.89 per litre tank construction cost** of ferro-cement tank observed in the village. This accounts to as little as US \$1340 (in 2021 dollars) for the construction of the 20,000 liter storage tank. This is a very low cost and community friendly technology that can be implemented elsewhere in the world.



Smt. Amra Devi Chairperson

Chairperson Mata Raj Rajeshwari Gram Krishak Samiti, Smt. Amara Devi: “Women took the lead role in all the pipeline deployment and the consequences all household get drinking water at their door step. It reduce women drudgery and also minimise the open defecation.”



Smt. Devendri Devi- Progressive Farmer

Smt. Devendri Devi: “Due to water availability we are able to grow our own vegetables to ensure the household nutrition security. Besides, cultivation of onion and garlic help household to get some income also. I have earned approx. Rs. 6000 from onion and garlic by selling in nearby market in year 2017.

Women villagers lay water pipeline without govt help in Uttarkashi

Vipin Negi
letters@hindustantimes.com

UTTARKASHI: Struggling for over 20 years for adequate water supply, women villagers of Jaamak in Uttarkashi district laid down a 3km water pipeline without government support.

The village with an estimated population of over 1,000 people, was yearning for portable water supply and with the help of a private foundation, the women folk managed to lay down the much awaited pipeline.

"We had to walk at least three kilometers in the forest to fetch water. Besides, there was constant threat of wild animal attack near the water sources," 50-year-old Purni Devi of Jaamak village said.

The women villagers approached a private foundation for logistic help and worked day and night on voluntary basis to lay the water pipeline in their village that would channel water from the source three kilometre away.

At least 20 women villagers



■ Women of Jaamak village at work.

HT PHOTO

joined hands for the cause.

Devendri Rana (50), said, "We had been demanding a proper drinking water supply in our village over the last 20 years. Seeing that nothing was being

done, the women took the matter in their hand."

The village water committee chairman, Amara Devi said, "A Jal Sammiti (water committee) was formed a year back which

now collects R 30 per family as water usage charge.

"The money is used in maintenance and repair of the pipe-line."

Kamlesh Gururani of the foundation said they provided the material for the pipeline construction only after understanding the severity of the problem.

"The villagers facing water crisis approached the foundation in 2017.

"Subsequently, a water committee was formed and the villagers came forward for the voluntary service to lay the pipe-line which was completed in two months," he said.

The villagers from Jaamak village have set an example with this rare feat and have shown no help is greater than self-help.

Meanwhile, the United Nations Development Program (UNDP) has asked the foundation to provide a report of this experiment as a case study which could be replicated and extended in other parts of the country, Gururani added.