Sustainable Development and Management of Clean & Safe Drinking Water Supply in Garhwal Himalaya – An Innovative Approach

Ram Bhushan Singh, Rakesh Bahuguna

Himalaya Sewa Sangh (HSS) & Himalayan Consortium for Himalaya Conservation (HIMCON),
16, Rajghat Colony, Gandhi Smarak Nidhi Complex, New Delhi -110002

Water is a prime natural resource, a basic human need, and a precious natural asset. Water ranks high among the priorities of any human settlement. Access to clean and safe drinking water has a direct bearing on both quality and prosperity of human life. Actual availability and easy access to clean and safe water and sanitation are among the most important determinants of health of individual human beings. In the Himalaya, the precious water resources are under threat due to various natural and manmade environmental problems. Despite being endowed with adequate rainfall, most parts of the Himalaya are considered water-stressed for both agricultural and domestic purposes. This is mainly due to the seasonality of precipitation which is concentrated to the monsoon months, while the climate remains arid for the rest of the year. The water stress situation in the hills has limited growth and development and is also leading to severe ecological degradation. The dying of water supply sources now poses severe drinking water crisis in many part of the Uttarakhand Himalaya. Per capita water availability status in some parts of Uttarakhand is likely to move from marginally vulnerable down to water scarcity. Practically, this means that the distance to water sources has increased 10 fold (from 200 meters to more than 2 km) in the past two decades (Singh, et al. 2002). This increase can be attributed to changes (mostly human interventions) in the natural springs' recharge zones. In fact, the acute water scarcity in the whole fragile Himalayan terrain can be explained by a number of human interventions and the natural processes that are quietly taking their toll. The result is that a large number of water resources have either been lost or are becoming vulnerable. In particular, the low availability of water in the Kimsar region of Pauri Garhwal is causing immense stress on the health and nutrition of women (Singh et al, 2010).

If the drinking water requirements of the people living in the remote rural hilly terrain are to be met in a cost effective, eco-friendly way which is aimed at reducing the dependence on external inputs, a strategy to conserve existing water sources and revive the drying springs and small streams (locally called gadhera) has to be made. Such a strategy, when implemented successfully, shall solve some of the water associated

problems of the people permanently. Till now, no serious attempts have been taken in a planned way to regenerate these vital natural sources of drinking water in the whole of the Himalayan region. Instead, mammoth schemes of centralized pipe water supply systems have been launched, but they failed to meet the requirement of the local people. Their failure is primarily due to faulty planning, poor maintenance, and the lack of people's participation in management. Recently World Bank added the SWAJAL Programme which has been initiated in a number of areas in Uttarakhand for improving rural water supply and sanitation. However, it also failed to meet the local water requirements.

Throughout the Himalayan region, people are recognizing the value in reviving and enhancing the water yield of traditional water sources. This can be done to meet the water demand of rural people. Taking advantage of the abundant monsoon rainfall in the Himalayan hills will allow the inhabitants to have plentiful water year round. As it is, the inhabitants of this region do not have easy access to water for drinking and other allied domestic needs. The following initiatives have been undertaken for sustainable water resource conservation, development, and management. This makes access to water easy both at home as also in the fields.

1. Spring Rejuvenation Program:

The Spring Rejuvenation Program appears to be on the right track and is a very viable solution to reducing water scarcity in the rural Himalaya. A combination of traditional knowledge and advanced technologies, such as planting saplings and grasses as well as building recharge pits, are being applied in the recharge zone to save the springs. A decentralized system of water management, developed under various programmes, allows people to be in charge of their own water resources. At the same time, local people were given adequate training and information to manage their own sources effectively. The Spring Rejuvenation Program is ideal because it is a form of decentralized water management. Therefore, if the village level water governance is not doing its job properly, the whole system does not function. This program needs a long gestation period in order to solve any associated issues. As the program grows, more people will be trained, more villagers will know about it, and the local water governance facilities will start to function as they are designed. HIMCON initiated this programme through a multipronged strategy that attempts at making the best use of the available resource.

2. Recharge zone management:

Learning from the past, HIMCON is one of the few organizations in the state that employs the intricacies of the hydrological cycle to give adequate

attention to structural and vegetative treatment in the recharge zones of the water supply sources. HIMCON has built *chaals*, water recharge pits, to enhance water availability in the region. *Chaals* represent the understanding of the groundwater regime and response of the local populations to rejuvenating spring discharge. These measures have significantly improved the water yields in the region.

3. Harvesting of Waste Flowing Water:

There are a large number of natural seepages in the hills which allowed many habitations to thrive on the discharge of these springs. Although inhabitants are facing an acute shortage of water, the discharge of these seepages is not being optimally tapped. Most of the discharge is wasted without any use. Alternatively, collecting and storing this water can allow it to be used for household and irrigation purposes. HIMCON from the very beginning has been advocating the conservation of such water through creation of appropriate and low-cost water storage tanks. These are installed at the site of the seepage and designated as 'Spring Rejuvenation Tanks'. Although the storage capacity of these tanks varies on spring discharge, the stored water fulfills both the domestic need of the people as well as promotes the successful growth of planted saplings.

5. Innovation in Clean & Safe Drinking Water Supply in the Rural Himalaya

Slow Sand Filter (Samudayeek Mand Baloo Chhanna)

At present a large number of water filters developed in India and abroad have been developed for the community water supply. However, the technological aspects of many of these filters are both highly complex. Also, they often require electricity and experienced manpower to operate. Without proper power sources and training, they have failed in the hilly region. A specially-designed community water filter suitable to the Himalayan hills was designed under the joint efforts of HIMCON and NEERI in 2005, and it was first installed at Chhati village serving more than 50 families. This innovation in the development of low-cost and user-friendly 'Community Drinking Water Filter' is suitable to the Himalayan terrain and provides clean and safe drinking water throughout the year. With constant trial and research to make this water filter more cost-effective and user-friendly, HIMCON and NEERI succeeded in developing '**Mand Baloo Chhanna'** as a drinking water solution for villages of 10 to 20 families. HIMCON installed twelve such Community Drinking Water Filters in the

villages of Henwal River Valley and Been River Valley of Uttarakhand. For proper maintenance and handling of the filter, villagers were trained with technical know-how. Efficiency of filter has been regularly monitored, so that community continues to have clean, safe drinking water.

6. Innovative Approach Adopted For Community Mobilization

a. Awareness Drive: *Ensuring People's Participation*

Awareness is the most crucial aspect of the success of any program, and HIMCON is putting a major thrust upon this in all its programs. The essentials of any program undertaken by HIMCON are discussed in an open forum in the community along with the projected benefits. All aspects of the project are discussed openly so that local requirements can be considered and included into the project plan. HIMCON also utilizes these forums to share information with communities about government welfare schemes and encourage communities to take advantage of the benefits.

b. Community Mobilization & Social Engineering: - *Bringing Forth Cohesion in the Society*

The purpose of Community Mobilization and Social Engineering aimed to improve the cohesion in the community, muster people's participation in HIMCON projects, and encourage other development and social initiatives. Networking at the village organizational level i.e., MMD in Tehri and Mahila Samities in Pauri district have proven crucial in the initial phase of each project, so that active involvement of the local community could be assured.

c. Capacity Building Measures: *Through Training, Demonstration, and Others*

Any intervention cannot be sustained with outside support alone. Therefore, the communities in which initiatives are undertaken are imparted with vital technical knowledge on managing the introduced interventions, so that they could sustain the operations on their own.