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AN INTERNATIONAL BILINGUAL PEER REVIEWED REFEREED RESEARCH JOURNAL

RESTORATION AND PRESERVATION OF TRADITIONAL WATER SOURCES IN UTTARAKHAND

❐ Dr. Gopal Singh Gauniya*

ABSTRACT

Water is the soul of living beings. Nothing on this earth can flourish without water. In the Himalayan regions of Uttarakhand, traditional water sources, which were once the lifeline of the Himalayan population are depleting at an alarming rate. Without these natural water sources; life cannot progress in the right direction in these hilly areas of Uttarakhand. Traditional water sources used to cater for drinking, cooking, washing, irrigation, animals and all other sorts of daily needs. Scarcity of water is increasing all over the world including the Himalayan region. Attempts should be made to safeguard these age-old natural water sources so that our forthcoming generations do not have to struggle for potable water in the near future.

Keywords : Natural water sources, Naula, Dhara, and Rainwater Harvesting.

Introduction :

Water is the most essential element for sustaining life. 'Earth' as we all know is the only planet so far which has the ability of sustaining life of all sorts. This is possible only because of the presence of water on this planet. Each and every organism whether single celled or multi-cellular is able to grow and develop with the help of water. It can be rightly said that 'if there is no water, there is no life.' Water has a very important place in the Indian tradition. It is treated as a sacred thing in our society. No religious sacraments can be completed without water. This message of importance of water in our various sacred texts lead the society to think that water should be kept pure and motivated our ancestors to keep the water in its purest form and to use this pure water not only in our religious activities but also for drinking and cooking.

Today, it is a well-known fact that our earth has only about 2.7% of the total water available, which is potable (drinking and cooking purposes). It becomes our moral responsibility to use pure water for cooking and drinking in a judicious manner and also to transfer the same legacy to our future generations. The constraints of population explosion, pollution, industrial waste, etc., have resulted in lesser availability of potable water. The use of impure water is highly dangerous for us, as it may cause many water-borne diseases like typhoid, dysentery, cholera, lead poisoning, dengue, malnutrition, hepatitis encephalitis and other intestinal disorders, etc. It thus becomes our duty to provide pure water to women especially the pregnant ones, because studies have showed that unhygienic water consumption may lead to various diseases to the mother as well as their children. Today, the amount of potable water is depleting at a very alarming rate. Many factors like deforestation, wastage of water, improper storage of water, etc is adding to the scarcity of water throughout the world. The shortage of water throughout the world today is growing due to increasing;

i. Droughts,
ii. Irrigation demand,
iii. Industrial demand,
iv. Pollution,
v. Reducing usability of water and wastage, and
vi. Irresponsible attitude towards water.

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In the case of our country, due to variation of latitude, different rainfall patterns, topography, geographical differences, water is not equally distributed. Due to different geographical conditions, we have a long dry period in our country. During dry period, our demand for water is fulfilled through the water stored in lakes, reservoirs and underground water.

The main sources of freshwater available in India are the rivers, lakes and groundwater. Purest form of potable water is either directly collected from natural sources as in most of the rural areas or is supplied water by different authorities like municipal departments or public health departments after treatment of the water available to them in urban areas. Most of the water today requires treatment before it can be used as potable water. The water available naturally whether groundwater or water available from natural springs are the purest form of water that are free from any microbes or bacteria or any other suspended solids particles that are harmful for drinking. The water from natural sources are free from any of the harmful elements as it passes through the soil and natural filtration makes it potable. We need to conserve the water for the present and for the future generations. For this, we need to seriously act on water conservation and apply different methods of water harvesting.

Natural Water Sources in Uttarakhand :

The sources of natural water are little different in the Himalayan region for example, in the state of Uttarakhand. Uttarakhand was carved out comprising of the himalayan districts of Uttar Pradesh on 9th of November, 2000 and became the 27th state of the Indian union. Uttarakhand has a total area of 53,483 km^2 of which 86% is mountainous. Freshwater are deposited in the himalayan region in the form of ice caps, glaciers, rivers, and groundwater. Water sources in hill areas are drying up or depleting. There may be many reasons for this catastrophe. Soil erosion in the hill regions occur at an alarming rate. In 88% area of the state, the rate of soil erosion is 10 MT per year per hectare. It is high time that we learn from our forefathers to keep ourselves in close proximity with nature and follow our traditions regarding water conservation. The hilly areas of the state have different type of natural water sources, which needs to be restored and conserved to fight the water scarcity in the hilly regions that is faced by the population especially during summer months. People have been using these natural water sources in a judicious manner since time immemorial. Conserving these traditional sources of water will surely be able to keep a check on the depletion of the water in these hilly areas.

Uttarakhand is bestowed with different types of natural water sources, which are still used for various daily water needs. The names of these conventional water sources may be different but purpose is the same, availability of clean water to the population of the hill areas and conservation of water. The prevalent water sources found in Uttarakhand Himalayan regions; both Kumaon and Garhwal regions are presented in the following table;

Natural Water Sources in Uttarakhand

S.No	Name	Source	Used For
1.	Srot (Naula, Dhara, etc)	Natural water sources	Drinking, Domestic, Animals, Irrigation
2.	Gadhera	Stream	Drinking, Irrigation
3.	Gaad	River	Drinking, Domestic, Animals, Irrigation, Water Power
4.	Ghuls	Waterfall	Irrigation
5.	Dyo	Rainfall	Rainwater harvesting
6.	Tal or Khal or Pokhar or Simar	Ponds and Lakes	For Animals

Naula (Little Depression Aquifers)–Naula is a naturally-occurring water aquifer. It is commonly found in many parts of Kumaon and some parts of Garhwal region. Water from these Naulas is used primarily for drinking purpose. Naulas are generally the most common source of natural seepage of drinking water, which is normally a rectangular or square shaped with stairs in all the sides. The water comes from the springs that are regenerated by the percolation of surface water through the soil. Some Naulas may be decorated with different types of natural scenes combined with idols of deities while others are undecorated or simple. Some Naulas are built like a temple from outside probably with the aim of keeping the Naula clean and to prevent it from polluting. Some of the examples of ancient Naulas may be recalled such as Joshiyara Naula in Almora, Siddhi ka Naula in Almora city, Badrinath Ji ka Naula in Bageshwar, Panthyurh Naula in Syunrakot village in Almora, Jahnvi Naula in Gangolihat village in Pithoragarh, Baleshwar Naula in Champawat, Ek Hathiya Naula in Dhaknaa village in Champawat, Tularameshwar Naula in Almora, Khanka Naula in Pithoragarh, Bahkund in Narayankoti village in Rudraprayag.

Dhara (Springs)–Dharas of the region are being utilized since long time for domestic and drinking purposes. Most of the villages of this region still depend on Dharas for a secure supply of water. Dharas are usually not covered but are protected by constructing boundary walls.These Dharas provide drinking water and also for irrigation purpose as it provides water for Ghuls or canals. Some of the well-known Dharas are available in Devalthal, Berinag, Chopata, Thal, Naini, Jainti, Tharkot, Tehri Garhwal, Pauri Garhwal, Dwarahat, Garampani etc. Some of the renowned Dharas are; Katyuri Dhara in Baijnath, Sipahi Dhara and Parda Dhara in Nainital, Ganga-Yamuna Dhara in Guptkashi, Panch Dharas in Badrinath, Shiv Dhara in Uttarkashi, Kalinag Dhara in Uttarkashi, etc.

Ghuls (Irrigation Canals)–These are more of a system to divert and supply water rather than to store water. Ghuls are small channels that originate from a source (usually groundwater) and then they are diverted to fields or wherever needed. Nowadays, Ghuls are a permanent feature and usually built from stone masonry works or they can be made by simply digging by hand and plastered by cement and these channels helps to channelize water primarily for supply into agricultural fields. Ghuls are not only used for irrigation purposes but also used for drinking purposes and running water mills (Gharats).

Conserving the Traditional Water Sources :

The Naulas and Dharas today are depleting at a very fast rate. Deforestation, environmental disorders, ecological activities, industrial constraints, increased population, etc., are mainly responsible for the destruction of these natural water sources. These water sources are the lifelines for the people of the hill regions of Uttarakhand. One cannot imagine how scarce will be the water if measures are not undertaken to replenish these springs or natural water sources. The following steps may help in conservation of these age-old traditional natural water sources;

1. **Chaal/Khaal** (Trenches)-Chaals or Khaals are made to recharge depleting springs. Trenches are made in the hills where runoff water during raining seasons gets collected. The depressions in the mountainous areas of Uttarakhand are used for rainwater harvesting. The rainwater is collected in these Chaals/Khaals, which otherwise should go waste. This water slowly percolates down the soil and helps in keeping the natural springs alive.
2. **Plantation**– Deforestation can be seen all around us. This ultimately results in drying up of natural water sources and springs. Plantation of broad leaf trees like oak (baanj), rhododendron (buransh), kaafal, etc., helps in increasing moisture level of the soil. The roots of these trees have a great ability for retention of water. If the health of our forests is improved then it will result in improvement of the springs and water will increase in the natural water sources.
3. **Check Dams**–A Check Dam is a small, temporary or permanent dam constructed across a drainage ditch, swale, or channel to reduce the speed of concentrated flows and checking runoff velocity of water in steep and broad depressions on the

hills. Check Dams are made using dry stone or loose rocks. It serves mainly two purposes; the first is to provide direct irrigation when rain falls, and the second is to facilitate the recharging surrounding wells through percolation of water. Due to the Check Dams, there has been improvement in the water table of the wells, intensity of irrigation and yield rate of some major crops and cropping areas.

4. **Rainwater Harvesting**–The concept of Rainwater Harvesting involves 'tapping the rainwater where it falls.' A major portion of rainwater that falls on the earth's surface runs off into streams and rivers and finally into the sea. The technique of Rainwater Harvesting involves collecting the rainwater from localized catchment surfaces such as roofs, plain/sloping surfaces, etc., either for direct use or to augment the groundwater sources depending on local conditions.

5. **Rooftop Rainwater Harvesting**–Rainwater from the roof is collected in a storage vessel or tank for use during periods of scarcity. Such systems are usually designed to support the drinking and cooking needs of the family.

Conclusion :

Despite many advantages of the traditional water sources, it is heartening to see that these traditional water sources are being openly discouraged. In the ancient times when the technology was no so advanced, people used to cover miles to fetch the potable water. At that time, these traditional sources used to be a boon for the people of the hilly areas. Today, due to technological advancements, everybody is becoming dependent on technologies like hand pump, taps, water pump, etc. These facilities at our footsteps have made us lethargic and we are not willing to walk even a short distance for fetching potable water from these traditional water sources. This further aggravates the misery of depleting traditional water sources. These natural water sources are mostly used during dry seasons when shortage of water happens in the hill regions. If the traditional water sources gets neglected in the same manner, then as a long-term result, all the natural water sources will get dried up, which ultimately will result in severe scarcity of water in the hill regions. Sincere efforts needs to be made to revive and conserve these natural water sources through their proper maintenance and use. It is the duty of the society as a whole to look back into the traditions of our past and learn to restore the relationships with nature in all forms of life. We need to come forward and take a lead in conserving water, using mixture of traditional and modern techniques.

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