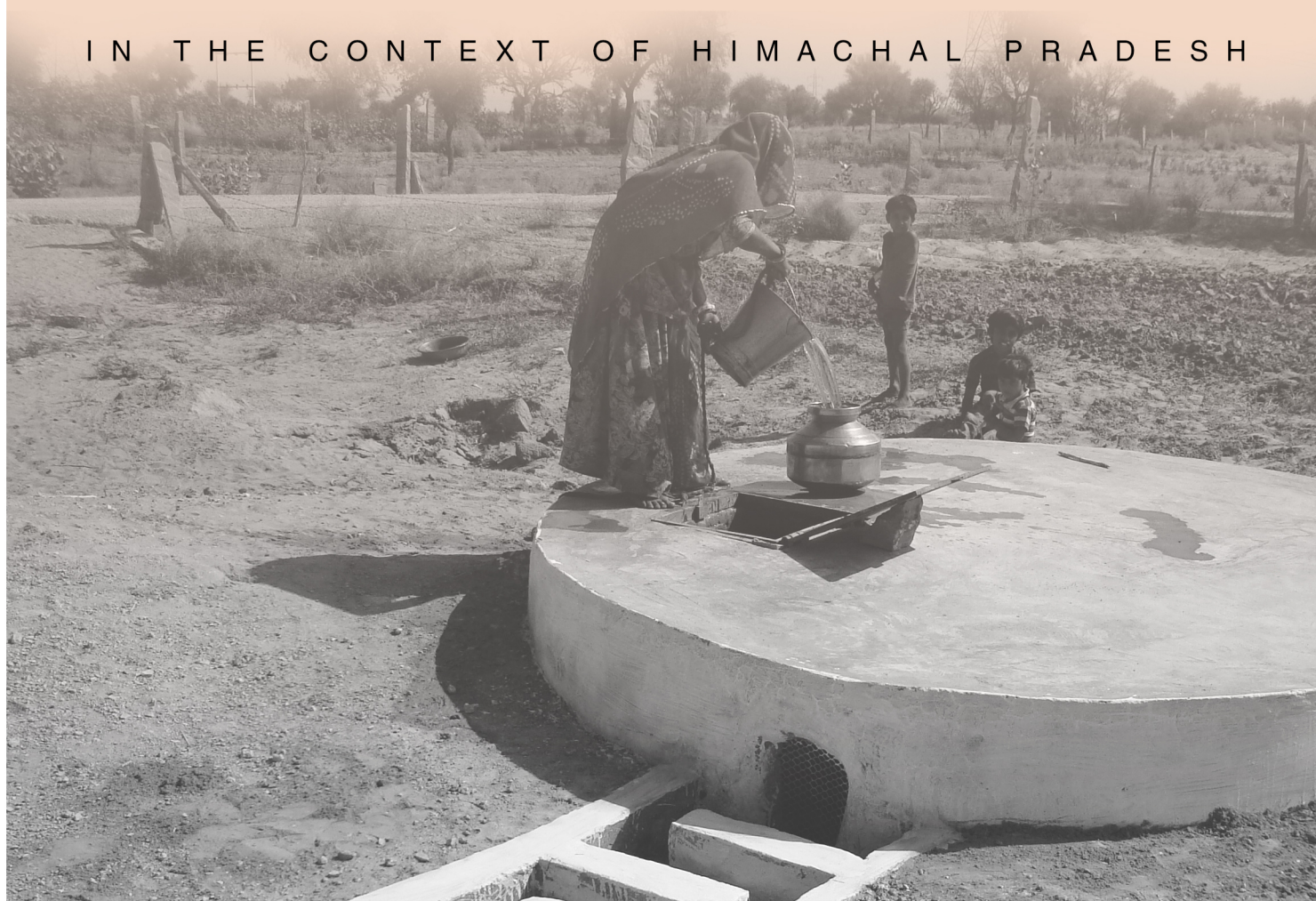


POLICY BRIEF

Traditional Water Harvesting Structures as an Adaptation Practice

IN THE CONTEXT OF HIMACHAL PRADESH



Ministry of Environment,
Forest and Climate Change
Government of India



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Background

The SAPCC states that **moderate to extreme drought conditions are to be expected in the state, with more than a 20% increase in places**, despite the overall increase in rainfall (*State Strategy & Action Plan on Climate Change, 2012*). Floods are set to become more common, posing a threat to human life, agriculture and the hydropower projects that form a major part of the state's economy.

At a district scale, the trends vary, but **Shimla, Sirmour** and **Solan** in particular have witnessed a decrease in rainfall of **13.3%**, **16.6%** and **8.7%** respectively in the past 25 years. In districts which will see an increase in average annual rainfall, this translates to more intense rainfall. These districts are Kangra, Kullu, Chamba and Una (*State Strategy & Action Plan on Climate Change, 2012*). Broadly, the key changes that are occurring that have been identified by the State Action Plan are an average 2-4 degree temperature increase,

snow and glacial field loss and associated events such as GLOFs and doubled frequency of extreme events. It is also projected that south-eastern parts may see drought-like conditions in coming decades.

The key changes predicted in the water sector are an increased frequency of heavy precipitation, increase in extreme rainfall intensity, increased variability in rainfall patterns, increased likelihood of water shortages/droughts, reduced levels of snow precipitation, loss of glacial volumes, premature snow melt and increased temperatures. The likelihood of these changes taking place have been rated as very high. The likely impacts on water resources that have been identified are increased runoff and higher sediment load, reduced groundwater recharge, increased flood flows, reduced dry season flows, drying up of minor tributaries and springs and loss of perennial sources.

This has raised question about water security in the state, especially in rural areas, which is where **nearly 90% of the state's population** resides.

2-4° C

Increased
Temperature

Traditional water harvesting structures in Himachal Pradesh, such as the **chapri**, or *kaccha ponds* for storing water for irrigation and livestock, the **baoris** for household usage, the **naun** for non-drinking household uses such as washing clothes and the **panihar** for bathing and drinking, have been in use for centuries in these areas and are community-managed structures that collect underground seepage or rainwater and store it for later use. These structures follow specific construction patterns that have been passed down over generations and all of them have a certain set of cultural practice and rituals associated with them whose intricacies are unique to every region.



This study aimed at understanding the state of traditional water resources in the state and how their usage has changed over the years.

Approach

The study involved reviewing secondary literature and conducting stakeholder interviews in Sirmour, Kangra and Kullu, and consulting the concerned departments and subject matter experts, we were able to create a picture of the state of traditional water resources in the state and to understand how their use has changed over the years. Through our findings, we were also able to **give suggestions as to how these sources can be developed** to allow this traditional adaptation technique to prevail.

Findings

These structures are a part of the rich cultural heritage of Himachal Pradesh and are already being used as supplementary sources of water during times of scarcity, but figures showing the decline of these structures are alarming. The State Action Plan also recognises the importance of these structures and admits that a startling number of them are drying up. Studies have also found that most of them, due to **poor maintenance**, supply water that is unfit for drinking purposes.

A survey conducted by the State Council for Science technology and Environment has uncovered disturbing statistics;

30.41%

In the 169 Panchayats that were surveyed across 7 districts, only 30.41% of the traditional water sources were found to be in good condition structurally and recharging water all year round. This figure was a mere 1% for Chamba district. A study conducted in Hamirpur and Bilaspur district found that 23% and 5.2% respectively of the baoris in these districts were not in use anymore. However, the results also showed that 55% of the baoris and 33% of the khatris had water that was unfit for drinking. The same study also points out, however, that many of the households in the area are forced to use water from these sources, polluted or not, during dry seasons (*Singh et al., 2010b*).

A similar, more detailed study carried out in the same area found **the pH values of 44% of the baoris were above acceptable levels and the water in 55% of them was unfit for consumption** (*Sharma, 2008*).



Recommendations

- In order to develop these structures as a viable adaptation option then, **it is necessary that the state take steps towards their revival.** Treating the catchment area of the sources housed in these structures may help revive discharge.
- **Greater scrutiny** also needs to be directed towards the activities being carried out in this catchment area, for example the construction of roads, tunnels or poorly designed and executed toilets.
- Despite the persisting belief that water from these sources is always clean, studies have unfortunately shown that this is not true for a great number of the water sources. Panchayats and local water user groups **need to be trained to be able to carry out rudimentary water quality monitoring and maintaining water quality** according to standard procedure using the equipment/chemicals provided to them by the state departments.
- Steps also need to be taken to **preserve traditional knowledge and artisanship**, such as the masonry skills required to build traditional



structures. The form of these sources follows a certain function and it may perhaps be that by **introducing modern aesthetic elements into the structures** themselves, the very function of the structures is being meddled with. Encouragement and support extended towards Panchayats to build more of these structures, especially in areas that have been identified by the State as being vulnerable to droughts in the future, could go a great length in ensuring drinking water security in these areas.

- The sustainability of traditional water harvesting structures depends heavily

on the **community's willingness to contribute to their upkeep**. It has been suggested that in order to effectively revive these structures, it would be necessary to maintain informal rules for the sustenance of these water sources. These rules ensure that **cleanliness is maintained** at and close to the source. Prayers and rituals that are offered at the sources also contribute to their cleanliness. The responsibility of maintaining the source is shared by the communities, and repair work is either funded by the Panchayat or done through contributions.



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