POLICY BRIEF

Climate proofing of spring sheds in Meghalaya

Ministry of Environment, Forest and Climate Change
Government of India

GBPNIHESD

teri

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Background:

It has become a regular phenomenon to hear about springs drying up or incidents of reduced discharge in Meghalaya owing to anthropogenic stress and a combination of factors ranging from erratic rainfall pattern, seismic activity and ecological degradation associated with land use change for infrastructural development causing pressures on mountain aquifer systems (MBDA, 2015). Many of the springs and water sources have dried up or have become seasonal resulting into waters shortages for domestic usage (MoST, 2017). The dependency of large proportion of the population on spring water suggests that with varying climatic conditions and rainfall pattern, a large number of villages are facing potential drinking water shortage (Pandey, 2018). The ignorance of springs in the larger context of rivers, watersheds and aquifers is also a reason for great concern as such unawareness has led to gaps in practice and policy in developing any strategic national response to spring water management in India (Shrestha & Nepal, 2015). Besides, depletion, of late, there has been increasing concern about the quality of spring water. There is a crucial need to address these issues in a holistic and scientific manner given that spring water is important for people living in the mountains.

Figure 1. Mr. Bor Borshemlang Saiborne of NERCoRMP explaining how a spring tapped chamber has been constructed to tap the underground springs and help prevent sedimentation making it more hygienic for domestic use.

Figure 2. Artificial created reservoir at the lower level of Langlewvillage, Mawthaidraishan, WKH; there is a pipe connected to a generator which pumps out water from this spring tapped chamber to the elevated sections of the nearby villages.

Approach:

A case study approach was undertaken to document the climate proofing activities for spring shedsin Mawphanlur and Mawthaidraishan villages of West Khasi Hills (WKH) district, Meghalaya in August 2018 and December 2018 -January 2019. The study started of with an intensive review of secondary literature and peer reviewed research articles. Participatory rural appraisal tools like semi-structured key person interviews and focussed group discussions were undertaken with the practitioners of spring shed management i.e. farmers, cultivators, village folk and village headman (See Figure 3). Discussions were also made with relevant stakeholders at village, district and state level including subject matter

Figure 3. Conducting Focussed Group Discussions with current headman, previous headman and locals including women.

experts including officials and experts from State Soil & water conservation department, State forest department, Meghalaya Basin Development Authority (MBDA), North Eastern Region Community Resource Management Project(NERCORMP) under North Eastern Council (NEC) & International Fund for Agricultural Development(IFAD), North Eastern Hill University (NEHU), Deutsche GesellschaftfürInternationale Zusammenarbeit (GIZ).

Results:

According to discussions with various stakeholders across villages in West Khasi Hills, the water flow in a spring gradually declines after the end of the monsoon period and may completely dry up during December to March, causing drinking water scarcities and affecting livelihoods and increasing drudgery. The depletion of spring water during the lean season, has led to shift to alternatives. People resort to immediate coping mechanisms like transport water using animals and tankers especially during the lean season or during prolonged dry spells. Drudgery to women exist during the lean season when springs run dry, as manual collection of water is done.

It was been observed that impaired springs have caused widespread water stress in these regions especially during the winter seasons adversely affecting agriculture, horticulture, livestock and other allied livelihood activities of the people and causing hardship and drudgery. In spite of heavy rainfall, there are many areas which are water-stressed due to increase in demand-supply gap leading to a rise in ground water usage. So despite heavy rainfall, the state suffers from water shortages. This is mainly due to its inability to store and capture the rain water because of its location in the hilly areas, which leads to increased surface water runoff.

The site visit to Mawphanlur village and Mawthadraishan highlighted the spring shed revival programs being undertaken under the aegis of the state government. Along the slopes of the hills, construction of staggered contour trenches (Figure 4), digging of staggered pits, other methods of impounding rainwater such as water harvesting structures and ponds (Figure 5) and changing the vegetative cover through plantations are being undertaken with the primary purpose of increasing rainwater percolation and minimising run-off. Water budgeting, introduction of improved technologies and cropping strategies would be carried out for efficient utilisation of water post conservation of springs. The state government intends to develop a geographic information system (GIS) platform for information and knowledge management for better management of the project activities.

Figure 4. Staggered contoured trenches on the hill slopes of Mawthaidraishan, WKH to reduce run off and improve soil fertility.

State level stakeholders indicated that the state government is creating a large-scale, community-based initiative developed from the ground-up to protect springs for long term water security. The state has roped in volunteers from colleges and academic institutions that will visit communities and train the youths in mapping the springs. They will be called para-hydrologists who will monitor the springs and collect the data. Similarly, communities are being encouraged to create nurseries in the spring-shed area to promote sustained groundwater recharge.

Recommendations:

1) **Engaging with communities** to facilitate in the planning of various potential interventions to be undertaken during the spring shed rejuvenation. With the support of traditional knowledge; communities are able to understand the various aspects of spring shed management and derive a sense of ownership.
2) **Capacity building** through simple yet scientific practices can be imparted to the community and state line departments to aid them in measuring water discharge, rainfall and sometimes even water quality parameters such as fecal coliform using field test kits. The emphasis of training sessions is to bring about sensitization regarding springs and hydrogeology based participatory management to enable a mental shift towards community management approaches.
3) **Field training and site demonstration** in developing the required infrastructure for the spring shed such as contoured trenches and staggered pits etc to intensify the recharge process and source protection in accordance to the norms set out for drinking water as well as other supporting infrastructure.
4) A **comprehensive inventory and mapping of village-wise springs and spring fed streams** to facilitate a comprehensive treatment of the catchment should be brought within the ambit of the Community Natural Resource Management (CNRM) plan. This will also facilitate the local communities situated on the higher ridges of the catchment area of the springs towards controlling deforestation and mining activities which inevitably affect the quality and peak flows.
5) The CNRM plan should also take into account the **efficient practices of forest and non-forest land usage** and related water use to help sustain normal flow of springs, streams so as to not affect the vitality of ecosystems that depend on these flows downstream, including sediment transport and circulation.
6) **Maintaining water quality control and treatment** in cases where the spring rejuvenation and catchment conservation activities would be linked to potable water supply through convergence with drinking water schemes
7) In order to develop, plan and execute a successful spring shed program, **convergence of existing government schemes** including MGNREGS, National Rural Drinking Water Program, Integrated Watershed Development Program and others, as well as collaboration between responsible line departments is significant. Such programs should be able to impart sufficient resources for providing the basic infrastructure, technological support, training and capacity building at different levels. The support of the state government is important in this regard, to facilitate an enabling institutional architecture for communities to access spring recharge areas including in forest lands.

Figure 5. Formation of water bodies due to accumulation of run-off water attributed to spring shed activities in Mawthaidraishan village, WKH.

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