Revive springs for water security in Mizoram

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Community-led watershed management in climate-vulnerable Mizoram can ensure water security during the lean season

Many villages in the mountainous areas of Mizoram face acute water scarcity in the dry season (Photo by Flickr)

Often referred to as the land of rolling hills, lakes and rivers, the north-eastern province of Mizoram is today facing the impacts of climate change due to greater inherent vulnerability, which is similar to other Himalayan states in India. Among the main challenges upland villages in the state have to contend with is acute water scarcity in the lean season. In recent years, increased temperature and rainfall variations due to climate change have worsened the degradation of water catchments because of accelerated soil erosion and surface water runoff. Combined with mismanagement of water resources, a lack of regulatory framework and growing demand, water bodies in Mizoram are increasingly drying up or becoming seasonal, leading to acute shortage, particularly from November to March. Ensuring water availability, especially in the lean period, has thus become one of the crucial challenges in India's Himalayan provinces including Mizoram, which demands conservation and management of soil and water resources. In this regard, proper management of spring-shed, which covers the entire basin contributing to spring flow, has the potential to contribute towards addressing soil and water conservation. For rural households, springs serve as the primary source of water in the hilly terrain of the Himalayan region. Springs bring groundwater to the surface. Water-bearing rocks beneath the surface that feed the springs are known as aquifers. Proper spring-shed management would thwart slow-onset climate impacts such as soil erosion and water scarcity, while strengthening the adaptive capacities of rural communities. Spring-shed management is hailed as one of the key objectives in the State Action Plan on Climate Change (SAPCC) and State Water Policy of Mizoram.

Spring-shed initiative

One such initiative in Sumsuih village, some 50 kilometres from the state capital Aizawl, has successfully demonstrated that community-led conservation efforts could ensure water security around the year. In the village of 240 households, residents like Lalrenpuii Pachchau were primarily dependent for water from three small reservoirs built by the Public Health and Engineering Department (PHED). These reservoirs stored spring water to meet the needs of villagers. Traditionally, villagers have built trenches and recharge pits, and planted trees to conserve water and recharge aquifers. However, better management of groundwater requires scientific understanding of hydro-geology. Such an approach determines the type, structure and properties of rock, their faults, fractures and folds, which helps in determining the storage and transmission capacity of water-bearing rocks, or aquifers. To implement recharging of aquifers in Sumsuih village, a detailed hydro-geological mapping was conducted to identify specific recharge zones and interventions based on the properties of aquifers. Conservation structures such as pits, trenches and a weir were constructed after identifying the recharge points and zones, serving as more effective interventions for recharging aquifers.

A water harvesting structure in Sumsuih village in Mizoram (Photo by GIZ)

For this, a specialized group of state officials were trained in aspects of hydro-geology and the development of water security plans. The work also facilitated monitoring of base flow of spring water to quantify the impacts primarily due to interventions of spring-shed activities. The programme has worked to align construction of conservation structures with welfare schemes such as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and National Rural Drinking Water Programme (NRDWP). This initiative was undertaken under the auspices of Indo-German bilateral cooperation. The German development co-operation agency GIZ is supporting spring-shed development and management as a climate adaptation measure in Mizoram. The work is being done in partnership with various state departments and a consortium of NGOs. The programme aims at participatory spring-shed revival in Mizoram to promote sustainable and equitable management of groundwater resources with the overall goal of dealing with water scarcity as a result of climate change. For this, the programme covers two aspects — one on recharging aquifers through soil and water conservation structures in targeted groundwater recharge zones identified through hydro-geological assessment, and the other on preparation of participatory village water security plans. The purpose of formulating plans includes mapping of water resources, vulnerability, supply and distribution issues with involvement of communities with a view towards participatory management of water resources in village. GIZ has supported the building of trenches, recharge ponds, percolation pits and water storage structures, Gabien rocks and check dams to prevent runoff, after careful hydro-geological study for 20 springs in different villages of Mizoram that include Sihphir, Lamchhip, Hmuifang, Chamring and Sumsuih. The initiative started in 2018. Ease of living In Sumsuih, the water conservation efforts have enabled 20 households, including Pachchau's, to get easy access to water from a storage structure built with MGNREGA funds that is just 100 metres from their homes. This has saved time, and has reduced drudgery for women, who can now devote more time in maintaining their kitchen gardens and selling the produce in local markets. Huni Lalhunimawii, village chief of Sumsuih and chairperson of specialized WATSAN (water and sanitation) group, now dreams of tapped water connectivity for each household. She understands the vagaries of climate change and is certain of the increase of water in the lean period in her village as a result of the interventions. She emphasises the need to establish more monitoring mechanisms to accurately determine the increase.

Huni Lalhunimawii, village chief of Sumsuih, now dreams of piped water supply to every household (Photo by GIZ)

Such initiatives are not without their challenges. In India's northeast, the village council, which is still the main body for managing local issues and administration, faces an acute challenge of institutional memory in a culture where knowledge is transmitted orally rather than maintaining strict written records. Likewise, there is lack of trained manpower in the state, which is also plagued by inadequate coordination between government departments, and insufficient monitoring systems. The impact of spring-shed development can be further boosted by addressing these institutional and technical challenges. Encouraged by the results of spring-shed development, Mizoram is aiming at upscaling the work to larger areas, with support from centrally sponsored National Adaptation Fund for Climate Change (NAFCC). Since the context of the Himalayan region is similar, this approach could be replicated in upland areas where springs are the primary sources of water and are currently facing shortages during lean periods. First published by

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