Innovative or Ancient? Increasing Water Resilience in Nepal

Climate change introduces new uncertainty to the availability of freshwater resources in many parts of the world. To reduce the impact to vulnerable communities, global climate efforts need to focus on transformative actions that increase water security. The Pilot Program for Climate Resilience (PPCR) is funding many such initiatives.

In response to the problem, Nepal has shifted away from the traditional watershed management approach, which focusses mainly on rivers and dams. Instead, the country is focussing on an innovative “spring-shed” management tactic. This relies on the role of groundwater in storing and supplying water as a priority, particularly for vulnerable, rural communities.
What is groundwater recharge? Groundwater lies within an aquifer, which is the underground soil or rock surface that can become saturated with water or can contain large amounts of water. Groundwater can be stored in the aquifer for long periods, resurfacing in the form of springs. This water can also be extracted by humans, using wells and boreholes. Spring-shed management protects and augments water resources by recharging groundwater and raising the water table so that water is pushed upwards, emerging naturally as springs.

How did this work in the past? In Nepal and other parts of the region, people traditionally dug channels and ponds to collect rainwater for domestic and agricultural needs. An unintended result was that the water slowly seeped through the soil at the bottom of these ponds and recharged the shallow aquifers beneath, where groundwater is stored. However, since the introduction of municipal piped water, people have greatly reduced traditional practices for rainwater harvesting and storage. This in turn has reduced the extent of groundwater recharge. Thus the level of water in aquifers (the water table) has dropped, and this has greatly reduced the potential for extracting and using groundwater from wells, boreholes and springs.

Is there a way to replicate this today? A variety of modern solutions allows for water to be channelled down into the aquifer for storage and later extraction. This replicates the effects of ancient, traditional practices. These solutions involve capturing and channeling rainwater into the aquifer at a faster and greater rate than occurs naturally, a process called groundwater recharge. This can be done in two ways:

- By pumping captured water into existing dry wells or into newly bored recharge wells
- By building recharge pits or percolation tanks/ponds that allow water to seep through the surface layers of soil and rock.
Using bamboo as vegetative check dams to prevent water run off and erosion loss down slopes, enhancing water infiltration and recharge.

**SOLUTIONS:**

**The PPCR Nepal project**

PPCR Nepal has piloted a project for catching rainwater to recharge aquifers at the community level. This project brings the traditional practices of local communities back to life with some added innovation, contributing to the revival of dry springs and wells. The target of the initial project is to build 15-20 small, groundwater recharge systems. The communities will manage these themselves. These systems will ultimately provide more reliable water supplies in the dry season.

Overall, the project is in line with the broader Government policy on community-based water resource management. Stakeholders see this alignment as contributing to the success and sustainability of the project. The Government has a history of working with communities on water research and innovation. Under this system, local government, in consultation with local communities, takes the lead on the choice of projects and provides technical advice and capacity as needed.

At the same time, local Water User Committees play an active leadership role in managing water resources. A partnership was formed for the PPCR project, including communities, government, and an international company with technical knowledge and experience in Nepal to execute the project.

Community members built stone and gabion walls to prevent soil and water losses, and to reduce the impact of landslides.

Rainwater is channeled into a catchment pit with concrete walls, allowing for infiltration and water use.
Case study: NEPAL

**PROJECT SUCCESSES:**

**Direct benefit**
The project directly benefits households. Out of the USD30m budget, more than USD17m is spent at the local level. This directly benefits 40,000 households.

**Active community management**
Small-scale, decentralized solutions like this are generally within the abilities and capacities of local communities, who can play a more active role in their management.

**Sense of community ownership**
Ownership is increased when communities view projects like these as common property, that plays a vital role in day-to-day livelihood activities, such as agriculture and household needs.

**Manageable size**
The smaller scale of such projects and investments means that local government officials can manage them, without a need for additional technical capacity.

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**Context of PPCR Learning**
The PPCR Knowledge for Resilience series aims to share the observations of and lessons learnt by countries implementing projects under the PPCR. Such lessons facilitate evidence-based learning to advance climate resilience goals, both in the PPCR and globally. The knowledge products in this Series are co-created by designated implementing entities in each PPCR country and the appointed Learning Partner for the PPCR, drawing on interviews with a range of stakeholders. The Series is part of the work undertaken by the Learning Partner to create and facilitate a dynamic, actively-engaged knowledge and learning network amongst the PPCR Community of Practice (COP).

The Climate Investment Funds (CIF) community recognises that the onset of climate change requires urgent responses, that often does not allow the time for academic, traditional, or compliance-driven evaluation and learning. Instead, the emphasis needs to be on generating practical and timely insights, through learning by doing, that guide decision-making among investors and practitioners. The Knowledge for Resilience series seeks to address these aims, and includes a range of products, from case studies and photo stories, to policy and research briefs.

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