

## Remote Building: An Integrated Approach to Domestic Rainwater Harvesting System Implementation in a Rural Village in Himachal Pradesh, India

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**Abstract :** In Himachal Pradesh, India, a majority of the population lives in rural villages spread throughout its hilly regions; many of these households rely on subsistence farming as their main source of livelihood. The student-run non-profit organization affiliated with this study, Project RISHI (Rural India Social and Health Improvement), works to promote sustainable development practices in Bharog Baneri, a gram panchayat, or union, of villages in Himachal Pradesh. In 2017, an established rainwater harvesting (RWH) project group within Project RISHI had surveyed many families, finding that the most common issue regarding food and water access was a lack of accessible water sources for agricultural use in the dry season. After a prototype build in 2018, the group built 6 systems for eligible residents that demonstrated need in 2019. Subsequently, the project went through an evaluation period, including self-evaluation of project goals and post-impact surveying of system recipients. The group used the social impact assessment model to optimize the implementation of domestic RWH systems in Bharog Baneri. Assessing implementation after in-person builds produced three pillars of focus — system design, equitable recipient selection, and community involvement. After two years of remote involvement during COVID-19, the group prepared to visit Bharog Baneri to build 10 new systems in the Summer 2022. First, the group created a more durable and cost-effective design that could withstand debris and heavy rains to prevent gutter failure. The domestic system design is a rooftop RWH catchment system with two tanks attached, an overflow pipe, debris filtration, and a spigot for accessibility. The group also developed a needs-based eligibility methodology with assistance from village leaders and surveying in Bharog Baneri and set up the groundwork for a future community board. COVID-19 has strengthened remote work, telecommunications, and other organizational support systems. As sustainable development evolves to encompass these practices in a post-pandemic world, the potential for new RWH system design and implementation processes has emerged as well. This raises the question: how can a social impact assessment of rural RWH projects inform an integrated approach to post-pandemic RWH system practices? The objective of this exploratory study is to investigate and evaluate a novel remote build infrastructure that brings access to reliable and sustainable sources of water for agricultural use. To construct the remote build approach, the group identified and assigned a point of contact who was experienced with previous RWH system builds. The recipients were selected based on demonstrated need and ease of building. The contact visited each of the houses and coordinated supplier relations and transportation of the materials in accordance with the participatory approach to sustainable development. Over the course of two months, the group completed four system builds with the resulting infrastructure. The infrastructure adhered to the social impact assessment model by centering supplier relations, material transportation, and construction logistics within the community. The conclusion of this exploration is that post-pandemic rural RWH practices should be rooted in strengthening villager communication and utilizing local assets. Through this, non-profit organizations can incorporate remote build strategies into their long-term goals.

**Keywords :** capturing run-off from rooftops, domestic rainwater harvesting, Implementation approaches and strategies, rainwater harvesting and management in rural sectors

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