Consultation Workshop on Economic Valuation of Spring-shed Management in Indian Himalayan Region: *Assessing effectiveness for restoration and enhancing climate resilience*

Jointly organized by
G. B. Pant National Institute of Himalayan Environment (NIHE)
and
International Centre for Integrated Mountain Development (ICIMOD)
[6-7 August 2024; Venue: NIHE Almora]

Background:

The Indian Himalayan Region (IHR), home to nearly 50 million people, serves as a critical water source. Mountain springs in the IHR are the primary water source for both rural and urban communities, playing an indispensable role in supporting over 15% of India's population by facilitating drinking, irrigation, and livestock rearing (NITI Aayog, 2017). Mountain springs, in the Himalayan region, are drying up due to increased water demand, land use change, and ecological degradation. With climate change and rising temperatures, rise in rainfall intensity and reduction in its temporal spread, and a marked decline in winter rain, the problem of dying springs is being increasingly felt across the Indian Himalayan Region. The precipitation patterns are intensifying with the annual rainfall concentrated in fewer numbers of rainy days. Winter droughts are becoming longer and more frequent. Climate forecast models also predict higher rainfall with more intensity in the future, which will result in higher surface runoff and reduced spring recharge, thereby further impacting the spring discharge. Variable and complex in its geology and terrain, the Himalayan region has about 70% of its rural population dependent on springs for drinking water, sanitation and irrigation. Several parts of the region experience huge water scarcity during dry period, especially during the pre-monsoon season.

In the context of sustainable groundwater management, it is essential to assess the effectiveness of managed spring recharge schemes in terms of their ability to recharge the aquifer and delivering direct and other associated benefits. However, effectiveness can be difficult to measure directly. A detailed water balance study provides a quantitative estimate of the contribution of a scheme to groundwater recharge. However, these are very expensive and require technical expertise. Methods needs be developed to assess indicative measures of the effectiveness of managed recharge and these methods need to be applied widely to promote improved management of schemes. The uncertainties associated with recharge activities need to be addressed through systematic assessments of the water balances of recharge schemes in a variety of environments in order to provide guidelines on their effectiveness and sustainability. The importance of different management strategies also needs to be assessed in relation to their impact on livelihoods, society, and ecology of the region. Bringing these aspects together will provide sound data and guidelines for future investment and sustainable implementation of spring recharge activities.

Water-related systems and practices, including those associated with mountain springs, are struggling to ensure water security for local populations. Amidst these challenges, initiatives focused on the revival of mountain springs have emerged as potential tools to enhance resilience to ongoing changes and have been implemented across various locations. Several schemes and programmes are being implemented by various agencies to augment discharge of drying springs and recharge groundwater resources. The societal, economic, ecological and environmental impacts and benefits of these schemes are seldom evaluated and thus their effectiveness is often difficult to quantify. If

the management of the demand side of the water balance (groundwater abstraction) is not addressed, the benefits of recharge augmentation may not be significant and groundwater resources may continue to be over-exploited.

Aim & Objectives:

Realizing the above, a two day consultation workshop is being organized by NIHE and ICIMOD on "Economic valuation of spring-shed management in Himalayan Region" on 6th and 7th August 2024 at NIHE Almora, It is supported by UK-FCDO funded Himalayan Resilience Enabling Action Programme which aims to scale up springshed management as an ecosystem based approach with water provisioning, biodiversity and climate co-benefits.

The aim of the workshop is to bring together leading experts to discuss and design an approach for assessing effectiveness of spring recharge activities and evaluate the socio-economic-ecological profitability of the spring recharge activities and their effectiveness as sustainable solution for water scarcity in the Himalayan region. The deliberations during the workshop would also include influence of the main variables affected (i.e., population and water consumption) over the profitability indicators, net present value (NPV) and internal rate of return (IRR), under changing demand scenarios. The objective of the workshop is to design a framework for assessment of: (i) post implementation economic valuation of spring-shed management, and (ii) sustainability of spring recharge schemes/activities.

Expected Outcomes:

- Draft frameworks for economic valuation of springshed management (SSM) activities. It would be helpful towards policy level planning for effective implementation of the spring recharge.
- Informed decision making on the role of artificial/ managed recharge in rural water supply, groundwater management, improving socio-economic well being and ecological ecosystems, climate change adaptation and resilience building in Himalaya.
- Action strategies and roadmap for economic valuation of SSM in IHR and fostering knowledge partnership through consortium based approach and knowledge networking

Programme Schedule (Tentative):

To meet the above objectives, event has been broadly planned in following manner

Day I - 6 August 2024

Pre-lunch Session: (10:30 Hrs- 13:00 Hrs)

- Inaugral session
- Welcome and About HI-REAP Programme
- About the project and aim of the workshop
- Opening remarks
- Economic valuation- An approach
- Economic valuation of Spring Shed Management: Examples & case studies

Post-lunch session: (14:00 Hrs- 16:30 Hrs)

- Group work- Screening of broad categories, drivers, parameters, approach, and pilot sites for valuation
- Group presentation
- Way forward: Scoping pilots and consortium

Day II – 7 August 2024

Focused discussion among NIHE & ICIMOD team

- Action strategies and roadmap for economic valuation of SSM in IHR
- Designing framework
- Selecting pilots
- Fostering knowledge partnership
- Knowledge networking

Workshop Organizers & Collaborators:

G. B. Pant National Institute of Himalayan Environment (GBP-NIHE)

Patron:

Prof. Sunil Nautiyal, Director, NIHE

Coordinators:

- Dr. I D Bhatt, Scientist G & Head, CBCM, NIHE, Almora, Uttarakhand (Email: id_bhatt@yahoo.com; Mob. 9411703802)
- Dr. Rajesh Joshi, Scientist F & Head, NIHE, Sikkim Regional Centre, Sikkim (Email: dr.rajeshjoshi@gmail.com; Mob. 941159622)

International Centre for Integrated Mountain Development (ICIMOD)

- Dr. Bandana Shakya, Action Area Coordinator
  Resilient mountain economies and landscapes (SG2)
  Ecosystem and landscape restoration (SG2-AAD), ICIMOD Kathmandu; email: bandana.shakya@icimod.org