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TERMS OF REFERENCE

FOR

Conduct water balance study including preparation of inventory of the spring sources and identification of critical ones with management options

Background

The Government of Nepal has prioritized management of water resources on a basin wise approach by endorsing the National Water Plan (NWP) in 2005. This has been prepared to operationalize the Water Sector Strategy of Nepal, 2002 with an objective to contribute in a balanced manner to the overall national goals of economic development, poverty alleviation, food security, public health and safety, decent standards of living for the people and protection of the natural environment. Under the leadership of Water and Energy Commission Secretarial (WECS) with support from WWF- Nepal, Koshi River basin was selected to pilot the Integrated River Basin Management (IRBM) approach. In this context, under the Koshi River Basin Management (KRBM) program, IRBM approach is being implemented in two sub basins: Dudhkoshi and Indrawati sub basin of the Koshi River basin. The 3E pillars of IRBM: 1) Sustainable Environment; 2) Social Equity; and 3) Economic Efficiency have been internalized as a strategic approach of implementation of IRBM putting equal emphasis on institutional set up and their strengthening. This particular assignment is targeted for the Indrawati sub basin.

The Indrawati sub basin is located in the mid-hill of the central region of Nepal, in the Bagmati zone, which originates from the higher snowy range of the Himalayas and joins downstream with Sun koshi (at 626 msl). The sub-basin covers Sindupalchowk, Kavrepalanchowk and part of Katmandu district. Some of the major tributaries of the Indrawati river are Larke *khola*, Yangri khola, Melamchi khola, Jhyangri Khola, Chaa khola, Handi khola and Mahadev khola. The landscape in the sub basin mostly covers rugged mountains, with occasional plateaus where farming is done. The length of the main course of the Indrawati river is about 59 km, covering 124,000 hectares of land, out of which 40% is covered by natural forest. The Indrawati basin is predominantly an agriculture-based system. Its upper basin, supplies water to more than 120 Farmer Managed Irrigation Schemes (FMIS), comprising about 2,100 hectares of agricultural land. The rivers upstream originate from Langtang National Park and its Buffer Zone (LNPBZ).

Objective

The overall objective of the proposed assignment is to conduct water balance study of the whole Indrawati sub basin along with the preparation of the inventory of the spring sources in the selected nine catchments of the Indrawati Sub Basin Project and to identify the critical spring sources based on the inventory and to provide management options for their sustainability (available volume and use) and protection.

The nine catchments of the Indrawati Sub Basin Project are: Cha khola, Dhand Khola, Jarge Khola, Sindhu Khola, Ghatte Khola, Handi Khola, Mahadev-Tipeni Khola, Sahare-Baghmare Khola and Musure Khola catchments.

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Scope of Work

The consultant shall undertake the assignment with close coordination with the KRBM team.
The scope of work includes but not limited to the following:

1. Conduct literature reviews and collect related secondary information and field data (primary) as necessary
2. Conduct analysis of the hydrological and meteorological data
3. Analyze the present water balance of the Indrawati sub basin
4. Prepare inventory of the available spring sources in the nine catchments of Indrawati Sub Basin Project
5. Conduct field survey (through site visit, questionnaire, discussion, meeting etc) of spring sources: Information like maximum, minimum and average discharge; source location (GPS coordinates); physical size, condition, present use, management/protection status, pollution level, vulnerability for its damage, destruction and other related information of the spring sources should be collected
6. Conduct local level meetings and discussions with concerned users, stakeholders on how they are using/managing/protecting the sources presently and what they plan to do in future
7. Data entry and analysis
8. List out of the critical spring sources in terms of their discharge depletion, protection, pollution, uses etc in priority
9. Recommend management, protection, uses options for sustainability of the spring sources as well as for reducing vulnerability of the sources for discharge depletion, pollution, damage and destruction.
10. Final report compilation

Expected Outcome

1. Report 1: GIS based report on water balance study (hard copy and soft copy)
2. Report 2: Comprehensive GIS based report on spring sources inventory, critical sources along with management options (hard copy and soft copy)

Deliverables

- Inception report
- Draft final report
- Final technical (GIS based) and financial report (2 copies of each report in hard and soft copies)
- Maps, photographs, data purchased under this contract

Duration

4 months from the date of assignment

Budget

Within the limit of NRs 900,000/-