

# NATIONAL MISSION ON HIMALAYAN STUDIES

## HALF YEARLY PROGRESS REPORT

**Period: 01/04/2016 to 30/09/2016**

**Project Title:** Rejuvenation of springs and spring-fed streams in Mid-Himalayan Basins using spring sanctuary concept

**Sanction No. and Date:** NMHS/LG-2016/002 dated 31/03/2016

**Institution:** G.B.Pant National Institute of Himalayan Environment and Sustainable Development, Kosi-Katarmal, Almora-263643

### **Personal Details:**

<b>Name</b>	<b>Designation</b>	<b>Address</b>
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Dr. L.S.Rawat	Technician	GBPNIHESD, Srinagar, Uttarakhand

### **Partners Details:**

<b>Sl no.</b>	<b>Name/Address</b>	<b>Work assigned to partners</b>	<b>Fund allocated to partners</b>
1.	Prof. Subashisa Dutta, Dept. of Civil Engineering, IIT-Guwahati, Near DouL Gobinda Road, Amingaon, North Guwahati, Guwahati, Assam 781039	1.To quantify hydrological processes and establish functional relationship of land use changes and hydrological responses in social and climate change scenario.  2.Development and demonstration of functional land use model using optimized hydrological response (water allocations) at sub-watershed level.	Rs. 5.3 Lakhs for the first year

2	Dr Sudhir Kumar, Sc - G, National Institute of Hydrology, Roorkee 247667, Uttarakhand	Isotope analyses.	Not allocated, charges would per sample basis.
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**Project Objectives:** The following are the major objectives of the project:

- To quantify hydrological processes and establish functional relationship of land use changes and hydrological responses in social and climate change scenario.
- Model development for ground water augmentation through participatory approach in Kumaon, Garhwal and Himachal region.
- Development and demonstration of functional land use model using optimized hydrological response (water allocations) at sub-watershed level.
- Disseminations of an adaptive land use policy and integrated decision support system for water resource management at watershed level.
- To recommend policies and practices of land use (forest and non-forest land), land transformation (one land use category to other) and related water use.

**Completion in last six months in % (according to each deliverables):**

S.No.	Quantifiable Deliverables	Output	Performance in terms of monitoring indicators	Remarks
1	Inventory and mapping of village-wise springs/seeps and spring fed streams using handheld GPS and high resolution satellite data of all three watersheds	1. <b>Kosi watershed:</b> HRU identified, springs identified, mapped and physical parameters collected. LULC maps produced. Geo-database under preparation (~40%) 2. <b>Sainj watershed:</b> HRU identified, springs identified, mapped and physical parameters collected. LULC maps produced. Geo-database under preparation (~40%)	Monitoring in comparison to the baseline information to be provided by proponent: <ul style="list-style-type: none"> <li><b>No. of HRU/ spring sanctuary treated/ demonstrated (No.)</b>  1. Upper Kosi watershed:  HRUs considered for treatment/ demo: 4  Total no of springs identified: 144  2. Irgad watershed:  HRUs considered for treatment/ demo: 2  3. Sainj watershed:  HRUs considered for treatment/ demo: 1</li> <li><b>No. of beneficiaries (Nos.)</b>  1. Upper Kosi watershed: 242 HHs  2. Sainj watershed: 385 HHs</li> <li><b>Digital maps for different sites (map data) showing the interventions (Nos)</b>  1. Upper Kosi watershed: total digital maps prepared: 13  2. Sainj watershed: 13</li> <li><b>Alternative land use models studied (Nos): Nil</b></li> <li><b>No. of document prepared and published (Nos.): Nil</b></li> <li><b>No. of databases/models under preparation:</b>  1. Upper Kosi watershed: 1 Geodatabase  2. Sainj watershed: 1 Geodatabase</li> <li><b>No of performance indicators developed after testing: Nil</b></li> </ul>	The following hydro-meteorological instrumentation are currently being installed:  <b>1. Kosi watershed:</b> Rain gauges: 9 Flow probe:2 Soil moisture sensor:4  <b>2. Irgad watershed:</b> ET AWS: 1 Rain gauges: 9 Flow probe:2 Soil moisture sensor:4  <b>3. Sainj watershed:</b> Rain gauges: 2 Flow probe:1  <b>3. Senkhi watershed:</b> Rain gauges: 2 Flow probe:1
2	Functional Land use plan for sub-watersheds	NA		
3	DSS for Efficient Water allocation strategies for competing land uses	NA		
4	Document on the best management practices	NA		
5	Land Use Policy guidelines with efficient water allocation	NA		
6	Tool for complementary water budgeting at watershed level	NA		
7	Performance indicators for monitoring & evaluation of land use plan	NA		

**Summary of progress:**

The rejuvenation activities of this project is implemented in three watersheds of Uttarakhand (Kosi and Irgad) and Himachal Pradesh (Sainj), however, monitoring of springs and streams is also carried out in the Senkhi watershed of Arunachal Pradesh. The particular focus of rejuvenation activities of Kosi watershed is on 2 HRUs near Kantli village, identified by experts through a brainstorming, activity on 24-25May 2016. The same for Sainj watershed is identified to be Kanon sub-watershed. Village-wise mapping and preparation of spring inventory for seeps/springs/stepwells have been started for Kosi, Irgad and Sainj watersheds. A total of 144 and 13 seasonal and perennial springs are identified till date for Kosi and Sainj watersheds and physico-chemical parameters are inventoried. A total of 13 digital maps are produced individually for Kosi and Sainj watershed to quantify different geo-morphological features of the watersheds. Two systematic geo-databases, using GIS framework, are under preparation for Kosi and Sainj watershed that include information related to locations of springs, rain gauges, AWSs, soil sensors and their values and will be continued till duration of the project. Household surveys are carried out in upper Kosi watershed for collecting information on water use and demand. Necessary manpower recruitments are carried out.