



Developing Climate Resilient Livelihoods in the Vulnerable Watershed in Nepal (DCRL)

Terms of Reference

Consulting Firm to Provide Services for Operation of Watershed Desktop and Application of Assessment Tools, Guidelines and Protocols

Developing Climate Resilient Livelihoods in the Vulnerable Watersheds in Nepal (DCRL)

Type:	Consulting Firm
Location:	Kathmandu with Travel to Field
Additional Category:	Resilience and Climate Change
Starting Date:	15 th May 2024
End Date:	15 th Nov 2024
Duration:	80 days over 6 Months

1. Introduction

The Mid Mountain watersheds of Nepal are prone to multi-hazards (drought, landslides, and floods) and the impacts are magnifying due to its topographic settings, inappropriate anthropogenic activities, and adverse impacts of climate change. Climate change is intensifying the monsoon rainfall and is causing accelerated snow and glacial melt rates. The disastrous trends are increasing and contributing to more multi-hazard problems causing damages to agricultural land, physical assets, economic properties, and ecosystem services.

At the other extreme, water scarcity and climate-induced drought hazards have been emerging as one the major challenges in the mid-hill watersheds in Nepal. The drought stresses in combination with other hazards and socio-economic conditions of local communities, the problem is exacerbating and making society more vulnerable, and sometimes becoming environmental causes of displacement. The temporal and spatial variability of rainfall and runoff is intensifying the problem of excess water during the monsoon and water scarcity during the dry season creating a serious threat to the farming system, and food security.

A long-term solution to this climate change problem is to rehabilitate and maintain the functional integrity of watersheds that have critical functions of water storage and release, infiltration, drainage control with due emphasis on resilient livelihood development. Nepal is transferred into the federal system and the constitution of Nepal is giving the roles and responsibilities among three spheres of government for managing the natural resources, disaster risk, and climate change issues. The coordination and harmonization of policy and institutional frame, adoption of adaptive innovative technology, and building community stewardship are becoming critically important to address these multifaceted problems. To address this, a pioneering initiative is taken through Global Environment Facility (GEF)-Least Developed Country Fund (LDCF) project "Developing climate-resilient livelihoods in the vulnerable watershed in Nepal". The project is being implemented at the pilot scale in the Lower Dudhkoshi watershed, a major tributary of the Sunkoshi sub-basin, located in the eastern part of Nepal.



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Project Objective

The main objective of the project is to safeguard vulnerable communities and their physical and economic assets from climate change-induced disasters by applying a long-term, multi-hazard approach – with a particular stewardship role for women and marginalized communities. The project is introducing and scaling up integrated adaptive watershed management approaches to strengthen functional integrity through multiple activities including capturing the policy, and institutional knowledge gaps, and adoption of new tools and techniques.

2. RATIONALE

The Project has been being implemented to achieve establishment of integrated watershed management framework to address climate change induced floods and droughts and Introduction and scale up Integrated watershed management practices in project area as the outcomes. The strengthening of capacity of the Department of Forests and Soil Conservations (DoFSC) and government officials are one of the major activity of the project for the comprehensive climate change risk assessment and updates of watershed conditons, especially for the most critical, degraded and climate sensitive watersheds in integrated approach.

Climate change has been posing significant adverse impacts on the functional integrity of watersheds, and it aslo invites disasters such as landslides, floods and droughts. Though the local governments are given lots of functions related to watershed management, not much attention can be given to the degradatoin of watershed due to the lack of physical infrastructure. Data, maps and information on the watersheds, sub-watersheds and micro-watersheds are not easily available which has restricted data informed planning of the watershed areas. There is inadequate GIS Lab facilities in terms of equipment and dedicated human resources at department level. Unavailability/inadequate availability of data, maps and information required for planning the watershed management activities is a key gap at all level of organizations mandated for IWM. Planning and prioritizations are done either on self observation/judgement basis sometimes lead to adhoc planning and prioritization of watershed/sub-watersheds. Tools and methods needs to be introduced to facilitate climate responsive integrated watershed management practice across key sectors. The use of the generated data in hydrological and hydro-economic models is crucial to facilitate a sell-informed, climate responsive sectoral decision-making and policy formulaton. Both observation and modeling capacities need to be strengthened and/or established at the relevant instututions and departments. For this the establishment of a Spatial Data Initiative (SDI) as a data respository and single source of data for data sharing is needed which also aid DoFSC's current initiation on the concept of spatial planning for basin/landscape conservation with due emphais on "Desktop Watershed" aming for GIS making access, analysis, and display spatial data and information. The assessment carried out by the project also recommended to establish Watershed Desktop at DoFSC and provincial MoFESC accommodating all data, maps, tools and techniques and operate it through a dedicated human resoruces.

3. OBJECTIVES OF THE CONSULTANCY

The overall objective of the assignment is to fully operate the Watershed desktop system at DoFSC and application of assessment tools, guidelines and protocols.



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The specific objectives are as follows:

- Establish and operate watershed desktop system basically with the use of GIS functions and support on capacity transfer to the DoFSC officials on GIS.
- Collection of soil and water samples, and analyse and update soil and water related data.

4. SCOPE OF WORK

The assignment mainly aims to operationalize the watershed desktop system upgrade/establishment that aims to storage of data, migrate the current data, aggregate, generate and analytical functions of watershed information system at the DoFSC/watershed and landslide management division (WLMD). The broader scope of the work comprises to capture spatial data initiative to make the desktop fully operationalized and capacity/skill transfer to the officials. The specific scope of works include:

1. Review available and relevant documents and consult with the WLMD and DCRL Project in order to prepare drainage basin and its major stream's profile including description of various characteristics for Koshi basin through generation of new maps, data and aggregation of available maps and data.
2. Based on relevant documents and consultation, prepare landslide inventory of lower Dudhkoshi watershed at watershed level and for DCRL working eight palikas.
3. Prepare complete map on spatial distribution of DCRL interventions at lower dudhkoshi watershed and corresponding palikas level.
4. Prepare data base inventory including socio-economic database of LDWS
5. Develop an implementation/operation plan for operation of watershed desktop.
6. Carry-out data integration on current server with DoFSC for operation, application and mangement.
7. Ensure qualitative standard of generated data, maps and information.
8. Provide recommendation to upgrade the watershed desktop.
9. Support training on GIS to DoFSC, SWMO, BMC-Koshi personnel, project staff and other stakeholders.
10. Provide the recommendations and action to be taken to internalize the watershed desktop within the departmental system.
11. Collection of soil samples from representative DCRL project area and their analysis for soil PH, N,P,K, micro-nutrients etc (five intervention sites and 2 contour trench sites)
12. Collection of water samples from major river systems of the project area such as, but not limited to, Rawakhola, Tapkhola and Dudhkoshi River and analyse sedimentation load over period of time (Two times of each water source)
13. Support DoFSc in GIS and Soil and Water Lab support as required



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5. Deliverables and delivery dates:

SN	Deliverables	No	Timeline /Duration
1	Inception report including literature review, summary of available reports, maps, data and equipment as per scope of work, detailed plan of future tasks, methodology, schedule/work plan and proposed outline of the final report.	1 Report	Within 10 days after signing the agreement
2	Submission and acceptance of First Report which includes: <ul style="list-style-type: none">Preparation of drainage basin and its major stream's profile (description of various characteristics) for Koshi Basin.Report on sedimentation load analysis of water from Rawa-Tap Khola confluence and JayramghatReport on Soil Moisture mapping of 3 intervention sites and vicinity	1 Report 1 Report 1 Report	Within 1.5 months after signing the agreement
3	Submission and acceptance of Second Report which includes: <ul style="list-style-type: none">Landslide inventory of Lower Dudhkoshi Watershed level, and corresponding palika levelPreliminary report on Spatial distribution of DCRL project interventionCompletion report of data integration on current server with DoFSC for operation, application and mangement.Report on soil sample collection from 2 contour trench sites and 2 conservation farming intervention sites, test and analysis for Soil PH, N,P,K and micro-nutrients	9 Reports 1 Report 1 Report 1 Report	Within 3.5 months after signing the agreement
4	Submission and acceptance of Third Report which includes: <ul style="list-style-type: none">Complete DCRL intervention map of the project area at watershed level and palika levelComplete data base inventory including socio-economic database of LDWSReport on soil sample collection from 5 intervention sites, test and analysis for Soil PH, N,P,K and micro-nutrientsReport on Soil Moisture mapping of 3 intervention sites and vicinity	9 Maps 1 Report 1 Report	Within 5 months after signing the agreement
5	Submission and acceptance of Final Report which includes: <ul style="list-style-type: none">Report on sedimentation load of post monsoon water collected from Rawa-Tap khola confluence and JayramghatReport on post monsoon soil sample collection from 2 contour trench sites and additional 3 intervention sites (previous sites), test and analysis for Soil PH, N,P,K and micro-nutrientsCompletion Report including all the maps, inventory, soil organic matter and soil moisture mapping, and a consolidated report on post monsoon sedimentation status of Jayramghat and Confluence of Rawa-Tap Khola	1 Report 1 Report 1 Report	By 15 th November 2024



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6. Institutional Arrangements

The assignment will be undertaken under the overall guidance of the National Project Director and overall supervision of the National Project Manager of the project. The consulting firm will directly report to the Conservation Technology Development Section (Section Chief/Under-Secretary) of Soil and Water Conservation Laboratory on the matters related to the Soil and Water and to the Planning and Watershed Information System Section (Section Chief/Under-Secretary) on the matters related to the GIS through the National Project Manager. The project will provide all the relevant documents and key contacts with the service providers.

The consulting firm will be responsible for managing the working station including laptop, internet, phone, printer/scanner etc for the assigned experts/Human Resource. Service provider shall carry out the activities listed in the TOR in a highly professional manner and collaborate with the project team and relevant stakeholders. Outputs produced under the assignment will undergo review for certification of acceptance from DCRL. All deliverables are expected to be delivered both electronically and physically as needed by the project.

7. Qualifications and Experience

Qualification and Experience of the Consulting Firm

The consulting firms are expected to possess the following qualifications:

- The agency must be legally registered and have at least 3 years of operations.
- Must provide company registration certificate, VAT registration certificate along with latest Fiscal Year tax clearance document.
- At least 3 years of experience in Spatial Data management and GIS services for watershed management, environment conservation, sustainable forest management etc.
- Demonstrated proven experience in delivering Spatial Data management and GIS services to a wider range of stakeholders including data analysis, reporting and documentation.
- Experience of working with the UN system, bilateral donor and GoN on Spatial data management, GIS Services, data analysis and watershed management will be the added benefit.

Qualifications and Experience of Experts for the Assignment

The consulting firm is expected to assign one GIS Expert and one Soil and Water Lab Facilitator with the following qualifications and experiences:



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EXPERTS	QUALIFICATIONS & Work Experience	ROLES & RESPONSIBILITIES
GIS Expert/ Team Leader	<ul style="list-style-type: none"> • Must have a master's degree in Geography/Environment/Engineering, or any relevant subjects. • At least five years of working experience in the field of GIS services, Data analysis and Information management system and added advantage in working in climate change, disaster risk and/or environment sector, land degradation and watershed management in Nepal. • Proven experience in leading at least three similar assignments related GIS Service, Data analysis and Information management system. • Good report writing and documentation skill along with good command over Ms. Excel, Word, Power Point. • Prior experience of GESI mainstreaming in watershed management, Climate Change, natural resource management and closely related field 	<ul style="list-style-type: none"> • Lead the establishment and operation of Watershed Desktop system. • Develop operation plan for watershed desktop system. • Provide service to enter the captured spatial data on watershed desktop, Carry out processing/analysis of data and generate the Data, reports, maps and information on the watersheds, sub-watersheds, and micro-watersheds level on regular basis and/or as required by NPD/Project. • Carry-out data integration on current server with DoFSC for operation, application, & management. • Ensure the qualitative standard of generated data, maps, and information. • Support training on GIS and capacity transfer to DoFSC, SWMO, BMC-Koshi personnels, project staff and other stakeholders. • Provide recommendation/s and action/s to be taken to internalize the watershed desktop within the departmental system. • Lead preparation and submission of reports and their presentation among DCRL and DoFSC officials. • Regular Communication, reporting, and Coordination with the DoFSC and DCRL team.
Soil and Water Lab Facilitator	<ul style="list-style-type: none"> • Must have Intermediate level in science or any other closely related field. • Demonstrated understanding of soil and water conservation and water testing • Prior experience in Gender Equality and Social Inclusion 	<ul style="list-style-type: none"> • Support lab in charge (section chief, chemist officer) in soil and water lab related assignment such as collection of samples, testing and input/entry of data into system and generate reports.

8. Duration of the Assignment and Renumeration

The contract duration will be maximum of 6 months (80 days each for GIS Expert/Team Leader and Soil and Water Lab Facilitator) after the signing of contract from 15th May 2024 to 15th Nov 2024. The remuneration of the consultant will be paid based on prevailing norms of the project.

9. Cost Estimate

The cost of Expert/consultant to undertake the scope of the assignment are as follows:



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Financial Proposal

SN	Particular	Unit	Quantity	Rate (NRs)	Amount	Remarks
A	HR Remuneration					
1	GIS Expert/Team Leader (1)	Days	80			
2	Soil and Water Lab Facilitator (1)	Days	80			
	Sub-total (A)					
D	VAT (13%)					
E	Grand TOTAL					

Note: The Daily Subsistence Allowance (DSA) and arrangement of travel on approved visits shall be made by project as per the prevailing norms and rules of the project.

10. SCHEDULE OF PAYMENT

The payments will be delivery-based on progress submitted by consulting firm as follows:

Installment	Milestone	Payments
1 st	Inception report including literature review, summary of available reports, maps, data and equipment as per scope of work, detailed plan of future tasks, methodology, schedule/work plan and proposed outline of the final report.	20 % of contract amount within 10 days after signing the agreement
2 nd	<p>Submission and acceptance of First Report which includes:</p> <ul style="list-style-type: none"> Preparation of drainage basin and its major stream's profile (description of various characteristics) for Koshi Basin. Report on sedimentation load analysis of water from Rawa-Tap Khola confluence and Jayramghat Report on Soil Moisture mapping of 3 intervention sites and vicinity 	20 % of contract amount within 1.5 month after signing the agreement.
3 rd	<p>Submission and acceptance of Second Report which includes:</p> <ul style="list-style-type: none"> Landslide inventory of Lower Dudhkoshi Watershed level, and corresponding palika level Preliminary report on Spatial distribution of DCRL project intervention Completion report of data integration on current server with DoFSC for operation, application and mangement. Report on soil sample collection from 2 contour trench sites and 2 conservation farming intervention sites, test and analysis for Soil PH, N,P,K and micro-nutrients 	20 % of contract amount within 3.5 months after signing the agreement.



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4 th	<p>Submission and acceptance of Third Report which includes:</p> <ul style="list-style-type: none"> • Complete DCRL intervention map of the project area at watershed level and palika level • Complete data base inventory including socio-economic database of LDWS • Report on soil sample collection from 5 intervention sites, test and analysis for Soil PH, N,P,K and micro-nutrients 	20 % of contract amount within 5 months after signing the agreement.
5 th	<p>Submission and acceptance of Final Report which includes:</p> <ul style="list-style-type: none"> • Report on sedimentation load of post monsoon water collected from Rawa-Tap khola confluence and Jayramghat • Report on post monsoon soil sample collection from 2 contour trench sites and additional 3 intervention sites (previous sites), test and analysis for Soil PH, N,P,K and micro-nutrients • Completion Report including all the maps, inventory, soil organic matter and soil moisture mapping, and a consolidated report on post monsoon sedimentation status of Jayramghat and Confluence of Rawa-Tap Khola. 	20% of contract amount within 15 th November 2024

11. Submission of Proposals

A consultancy firm needs to submit the following documents while applying for the assignment:

Legal Documents

- Firm Registration Certificate
- VAT registration certificate
- Latest Tax clearance Certificate
- Firm Renewal Certificate
- Latest two years' audit report.
- Organization Profile including the area of expertise, list of current and previous activities undertaken, available human resources, evidence of similar assignment undertaken, etc.
- Written Self-Declaration that the service provider is not in the UN Security Council 1267/1989 List or Other UN Ineligibility List.
- Gender Equality and Social Inclusion Policy/Strategy/Guideline of the organization
- Organization's policy on conducive work environment/prevention of harassment, sexual harassment and sexual exploitation Code of Conduct

Technical proposal

- Submission letter
 - Technical proposal covering all aspects and tasks required in the TOR. The technical offer must be included:
 - Approach, methods, and tentative work plan
- Duly signed Curriculum Vitae (CV) of the proposed human resources including areas of expertise, list of current and previous services.



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- Written confirmation from the expert that they are available for the entire period of the assignment.

Financial proposal including cost breakdown:

- The proposal shall include all items mentioned in **point 9** of the ToR.

12. EVALUATION METHOD

Service provider will be evaluated on the basis of ‘Combined Scoring method’ where the technical and financial proposal will be weighted 70% and 30% respectively. Only consulting firm obtaining a minimum of 70 % points of technical evaluation would be considered for the financial evaluation. The Evaluation Committee will be formed by DCRL which will evaluate the Technical and Financial proposals based on pre-approved criteria. The service provider obtaining highest combined score will be awarded the contract. The evaluation criteria for the technical and financial proposal are presented in the table below:

Technical Evaluation Criteria

Summary of Technical Proposal Evaluation Criteria		Score Weight
1.	Expertise of Service Provider submitting proposal	15%
2.	Proposed Methodology, Work Plan and Approach	20%
3.	Human Resources	35%
	Total	70%

Financial Evaluation Criteria

Summary of Financial Proposal Evaluation Forms		Score Weight
1	Each technically qualified proposal (70%) shall be given a financial score. The lowest Financial Bid will be awarded the highest marks	30%
	Total	30%

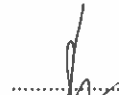
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.....Date: 24th April 2024

Endorsed By:

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National Project Manager, DCRL

.....Date:

Pragyajan Yalamber Rai
Portfolio Manager, UNDP

.....Date:

Approved By:

Ganesh Paudel
National Project Director, DCRL

.....Date: