

Ministry of Population and Environment (MoPE)
Department of Hydrology and Meteorology (DHM)
Community Based Flood and Glacial Lake Outburst Risk Reduction Project
CFGORRP

Terms of Reference

To develop “Imja Glacial Lake Monitoring Protocol”

1. Background

Community Based Flood and Glacial Lake Outburst Risk Reduction Project (CFGORRP) is a joint undertaking of the Government of Nepal (GoN), Global Environment Facility (GEF) and the United Nations Development Programme (UNDP). The project is being implemented by the Department of Hydrology and Meteorology (DHM) under the Ministry of Population and Environment (MoPE) as the lead Implementing Agency. Department of Water Induced Disaster Prevention (DWIDP), Department of Soil Conservation and Watershed Management (DSCWM) and Department of National Park and Wildlife Conservation (DNPWC) are the three collaborating partners of the project.

The CFGORRP has two outcomes: The First Outcome / Component I focusses on the Imja Glacial Lake Outburst Flood (GLOF) risk reduction in Solukhumbu (covering Chaurikharka, Namche, Juving and Khumjung VDCs including high risk settlements covering an area of 50 downstream of Imja lake) and the Second Outcome / Component II is aimed at reducing the flood risk in Terai and Churia covering 8 Village Development Committees (VDCs) namely Sarpallo and Nainhi in Ratu (in Mahottari district), Tulsipur and Pipra Pra Pi in Gagan (in Siraha district), Dighawa and Pakari in Khando (in Saptari district) and Hadiya and Jogidaha in Triyuga Watersheds (in Udayapur district). The project has thus a total of 8 VDCs coverage in Terai districts for flash flood and 3 in High Mountain (i.e. Solukhumbu) district for GLOF risk management thus totaling to 11 VDCs.

Imja Lake is considered as one of the rapidly growing glacial lake located at Sagarmatha National Park (SNP). The lake level has been reduced by 3.4 m recently in collaboration with Nepal Army, for reducing GLOF hazard level. After the lake lowering works, the potential GLOF risk has been mitigated. Even after the lake has been lowered and automated early warning systems in place, the GLOF hazard has not been fully addressed owing to its evolution as a moraine dam, which is highly unpredictable in nature.

The two outcomes of project have eight main outputs i.e. four outputs under each outcome. One of the output under GLOF component is to develop “Imja Lake Monitoring Protocol”. For undertaking the assignment of devising and developing monitoring protocols for Imja Lake, CFGORRP/DHM intends to hire a service provider/consultant.

2. Objective

The main objective of this assignment is to develop an “Imja Glacial Lake Monitoring Protocol” based on the assessment of the growth including parameters to be incorporated for long term monitoring of the lake after mitigation.

3. Scope of Works

The scope of works includes inter-alia, but not limited to the following:

- Review the detail technical studies report (ERT, Bathymetry, GPR, Survey and design) including the design, drawing, information on Imja Lake lowering work and generate necessary information on features, structures (natural and man-made) that warrants monitoring to be included in the protocol.
- Consult key stakeholders such as DHM, DNPWC, SNP, Nepal Army, locals and personals involved in construction work to get their feedback on structures of Imja Lake lowering work, and key features (glacier, lake, moraine dam, seepages, outlet, etc.) and physical environment (lake water quality, air quality, garbage and solid waste etc.) to identify parameters to be included.
- Identify and suggest areas for monitoring on bio-physical environment including post construction impacts on mock, spoils, garbage collection, waste disposal and local flora and fauna.
- Identify role and responsibilities of the institutions such as DHM, SNP and local communities in realizing the objective of lake monitoring.
- Consult with team involved in Imja Lake lowering works to explore changes in Imja Lake and surroundings as a result of lake lowering by 3.4 m and suggest monitoring of key features that are relevant for comparison of pre and post changes over period of time.
- Review and analyze available information and data for assessing the physical attributes and characteristics of Imja Lake, glacier and moraine dam in a bid to identify changes and instabilities that could potentially trigger GLOF which require constant monitoring for possible mitigation measures.
- Suggest timeline for monitoring and maintenance (regular, recurrent and periodic) and resources (human and financial) estimates for undertaking monitoring and maintenance works with the list of responsible agencies/ institutions with the responsibilities.

4. Duration of the assignment:

The duration of this assignment is of 8 weeks after the award of contract and the tentative timeline is as below:

Timeline	Activities
2 weeks	Soliciting technical and financial proposal from service providers/consultants
1 week	Review proposal and selection of service providers/consultants
1 week	Contract agreement with service providers/consultants
2 weeks	Submit a copy of inception report with working methodology, time schedule for delivery of output
4 weeks	Submit a copy of draft report for review and inputs
2 weeks	Submit a copy of final report after incorporating all comments and feedback received from the CFGORRP/DHM

5. Guidance and Supervision

The service provider/consultant will work under the general guidance and supervision of National Project Director (NPD) and National Project Manager (NPM) and in close consultation with Senior Technical Advisor (STA).

6. Required Human Resources, Qualification and Experiences:

Following human resources are required for the assignment.

Human Resource	Qualification and Experience	Remarks
Glacial Lake Expert	A Master's degree in Geology, Glaciology, Geomorphology, Environmental Science, Engineering or related fields with at least 5 years of relevant professional working experiences. Preferences will be given to those who have experience in Glacial Lake studies.	The consultant must have adequate knowledge and understanding in GLOF.

7. Deliverables

The contract will be deliverable-based and payment will be made after submission of the followings:

- An inception report with clear working methodology and timeline after signing of the contract.
- Draft Imja Glacial Lake Monitoring Protocol to be shared with project team for review and inputs.
- A Final Imja Glacial Lake Monitoring Protocol with appropriate time intervals and cost estimates (with responsible entities and responsibilities).

Deliverable Table

Deliverables	Timeline	Payment	Remarks
Submit a copy of inception report with working methodology, time schedule for delivery of output.	Within 2 weeks after contract signing.	30% of the contract amount.	
Submit a copy of draft report for review and inputs.	Within 6 weeks.	40% of the contract amount.	
Submit a copy of final report after incorporating all comments and feedback received from the CFGORRP/DHM.	Within 8 weeks.	30% of the contract amount.	Submit report in soft copy.

8. Mode of Payment:

The service provider shall be paid in three installments upon receipt of request:

- First Installment: 30 % of contract amount upon submission of inception report with tax invoice and acceptance of inception report.
- Second Installment: 40 % upon submission of draft report with tax invoice
- Third and Final Installment: 30% upon submission of final monitoring protocol with tax invoice.

9. Documents Required:

Following documents are required:

- Technical proposal illustrating the working methodology and time schedule and financial proposal in separate sealed envelope.
- Copy of company registration (not applicable for individual)
- Copy of VAT registration certificates with recent tax clearance
- Organizational profile (if individual - Curriculum Vitae required)