

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

For the development of web-portal
to upgrade DHM web-site (www.hydrology.gov.np)

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, automated early warning systems and hydromet sensors have been installed as part of regular monitoring. Even though the GLOF hazard has been significantly reduced, because of evolution of Imja Lake and its moraine dam, the lake has to be closely monitored for changes and signs of any future disasters.

One of the output under GLOF component is to regularly monitor the lake with hydrological and meteorological stations and operationalize GLOF detection sensors and automated early warning systems. The information on hydro-met data and early warnings are disseminated through web portal. Thus, it is crucial that the web portals are capable of disseminating information on real time. This ToR is developed to “Provide support to strengthen DHM web-portal” for real time GLOF warning dissemination”.

The existing web portal of DHM is too slow and congested to cater a wide range of services at one go. During monsoon seasons, dissemination of flood level and generating warnings to the general public is very crucial. The data, website and the backend are all in the same server which is filling up the server space and the information dissemination and retrieval is very slow. There is a need for securing the server as well as integration of hydrological and meteorological information to make it compatible and efficient.

2. Objective

The main objective of this assignment are to:

- To upgrade/develop existing website in a user friendly format that is accessible in real time and that provides comprehensive information for the stakeholders and general public.
- To make the server more secure with quality controls.
- To upgrade the existing backend software.

3. Scope of Works

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

- For securing the server, redesign the architecture and add firewall in the software.
- Designing of two servers- one for the frontend and the other for the backend and database management to ensure more efficient and fast website.
- Maintaining a server at Government Integrated Data Center (GIDC) and mirrored at NITC and Google Hosting as well.
- Quality control (QC) integrated in the system to avoid the errors and wrong data.
- Design user friendly and simple interface so that DHM can make changes in-house. Creating Stations in a one-time process and avoiding multiple pages.
- Integrating all modules (page setup, status page, different data visualization page, etc.) into one web portal.
- Addition of analytics and hit counters.
- Integrate water –level forecasting into existing Rainfall Watch.
- Design detailed display page for each stations, display page linked in the website similar to Tsho Rolpa, which displays information of the station and its parameter at a glance.
- Displaying capacity of 3 months data, for achieved data make provisions to email the request to DHM and use Capta for verification.
- Display homepage map in different color code to indicate the station water-level as danger-level, warning level and normal level.
- Prepare or use detailed Basin Map that is capable to add overlays.
- Design and integrate Decision Support Systems.
- Design proper ways of dissemination of all the events and news of DHM to the general public in a proper manner.
- Use Content Management System to manage the content of the website.

- Make provision for the admin (DHM) to view the status of the station even when the website is down.
- Implement and Upgraded Backend Software.
- Archiving of data on regular interval through Scheduler and backup at safe locations.
- Use of dashboard designer for customization and display in a user friendly way.
- Undertake proper training to DHM personnel for backend software.
- Use Cron Job to store data in the front end server and lessen the load at backend server.
- Prepare separate maintenance and management system for monitoring and fault finding including for DHM.
- Ensure minor repair and maintenance of the site.

4. Duration of the assignment:

The duration of this assignment is of 4 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
1 week	Review proposal and selection of service providers
1 week	Contract agreement with service providers
1 weeks	Submit a copy of inception report with working methodology, time schedule for delivery of output
2 weeks	Submit a copy of draft report for review and inputs
1 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 will work under the general guidance and supervision of National Project Director (NPD) and National Project Manager (NPM) and in close consultation with Focal Person of the project from DHM and Senior Technical Advisor (STA).

6. Required Human Resources, Qualification and Experiences:

Following human resources are required for the assignment.

Position, Qualification and experience	Job Description	Tentative Work Hours Required
Project Manager: <ul style="list-style-type: none"> • Bachelor's Degree in Management, Computer Science or Relevant field • At least 5 years' experience in project management and software development. • Prior working experiences in similar field is desirable. 	<ul style="list-style-type: none"> • Set the scope of the project • Ensure the availability of resources to deliver the project in a timely manner and ensure quality of work. • Ensure the development team is meeting and delivering the product in defined benchmarks and standards. 	25

Database Specialist: <ul style="list-style-type: none"> • Bachelor's Degree in Computer Science and Electronics. • At least 3 years' experience in database development, design and maintenance. 	<ul style="list-style-type: none"> • Design and Build the database architecture 	30
Senior Software Engineer: <ul style="list-style-type: none"> • Bachelor's Degree in Computer Science or Relevant • At least 5 years prior experience in software development 	<ul style="list-style-type: none"> • Development and customization of the website as per the final design. • Developments of APIs 	30
Software Developer: <ul style="list-style-type: none"> • Bachelor's Degree in Computer Science or relevant field. • At least 3 years' experience in software development, 	<ul style="list-style-type: none"> • User Interface Design and Development • Testing and debugging. 	80
Network Administration: <ul style="list-style-type: none"> • Bachelor's Degree in Computer Engineering or information technology or relevant field. • At least 3 years' experience in network administration. 	<ul style="list-style-type: none"> • Maintaining, Repairing and updating the server, firewalls, security updates. • Responsible for securing the network by developing network access, monitoring, control, and evaluation 	90
Requirements Specialist: <ul style="list-style-type: none"> • Bachelor's Degree in Computer Engineering or information technology or relevant field. • At least 3 years' experience in requirement analysis. 	<ul style="list-style-type: none"> • Study of the requirement and detail analysis Design of the mockup as per customer's needs. • Documentation 	15
Graphic Designer: <ul style="list-style-type: none"> • Bachelor's Degree in Computer Engineering or information technology or relevant field. • At least 3 years' experience in graphic design. 	<ul style="list-style-type: none"> • Design the front end as per the requirements • Developing concepts, graphics and layouts for illustrations, company logos, and websites • Determining size and arrangement of illustrative material and copy, and font style and size. 	30

7. Documents Required

The potential service provider/institution having following criteria can apply for this assignment along with technical and financial proposal:

- Detail technical and financial proposal in two separate sealed envelope
- Profile of the organization including organization structure
- VAT registration certificates
- Renewed registration and recent year Tax clearance certificates

- Evidence of prior work experiences of having undertaken similar task
- Detailed working methodology including working schedule

8. Deliverables

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

- A Final report of strengthened web-portal of DHM (with responsible entities and responsibilities).

Deliverable Table

Deliverables	Timeline	Payment	Remarks
Submit a final copy of the report after incorporating all comments and feedback received from the CFGORRP/DHM.	Within 4 weeks.	100% of the contract amount.	Submit report in soft copy.

9. Mode of Payment:

The service provider shall be paid in one installment upon receipt of request:

- First and Final Installment: 100% upon submission of final report of web-portal strengthen of DHM with tax invoice.