



# **INVITATION TO BID**

**UNDP/ITB/010/2014**

**Supply, Delivery and Installation of Early Warning System at  
Imja Lake**

**Community Based Flood and Glacial Lake Outburst Risk Reduction  
Project (CFGORRP)**

**Nepal**



**United Nations Development Programme**

**November, 2014**

## Section 1. Letter of Invitation

Kathmandu, Nepal  
November 6, 2014

### **UNDP/ITB/010/2014 Supply, Delivery and Installation of Early Warning System at Imja Lake**

Dear Sir/Madame,

The United Nations Development Programme (UNDP) hereby invites you to submit a Bid to this Invitation to Bid (ITB) for the above-referenced subject.

This ITB includes the following documents:

- Section 1 – This Letter of Invitation
- Section 2 – Instructions to Bidders (including Data Sheet)
- Section 3 – Schedule of Requirements and Technical Specifications
- Section 4 – Bid Submission Form
- Section 5 – Documents Establishing the Eligibility and Qualifications of the Bidder
- Section 6 – Technical Bid Form
- Section 7 – Price Schedule Form
- Section 8 – Form for Performance Security
- Section 9 – Contract to be Signed, including General Terms and Conditions

Your offer, comprising of a Technical Bid and Price Schedule, in separate sealed envelopes, should be submitted in accordance with Section 2.

You are kindly requested to submit an acknowledgment letter to UNDP to the following address:

**United Nations Development Programme  
UN House, Pulchowk  
Lalitpur, Nepal  
or  
E-mail address: [registry.np@undp.org](mailto:registry.np@undp.org)  
The Deputy Country Director (Operations)**

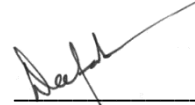
The letter should be received by UNDP no later than **Friday, 14 November 2014, 1700hrs**. The same letter should advise whether your company intends to submit a Bid. If that is not the case, UNDP would appreciate your indicating the reason, for our records.

If you have received this ITB through a direct invitation by UNDP, transferring this invitation to another firm requires notifying UNDP accordingly.

Should you require any clarification, kindly communicate with the contact person identified in the attached Data Sheet as the focal point for queries on this ITB.

UNDP looks forward to receiving your Bid and thanks you in advance for your interest in UNDP procurement opportunities.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Deepak', is written over a horizontal line.

Deepak Shrestha

Procurement Analyst, Procurement Unit

November 6, 2014

## Section 2: Instruction to Bidders<sup>1</sup>

### Definitions

- a) *“Bid”* refers to the Bidder’s response to the Invitation to Bid, including the Bid Submission Form, Technical Bid and Price Schedule and all other documentation attached thereto as required by the ITB.
- b) *“Bidder”* refers to any legal entity that may submit, or has submitted, a Bid for the supply of goods and provision of related services requested by UNDP.
- c) *“Contract”* refers to the legal instrument that will be signed by and between the UNDP and the successful Bidder, all the attached documents thereto, including the General Terms and Conditions (GTC) and the Appendices.
- d) *“Country”* refers to the country indicated in the Data Sheet.
- e) *“Data Sheet”* refers to such part of the Instructions to Bidders used to reflect conditions of the tendering process that are specific for the requirements of the ITB.
- f) *“Day”* refers to calendar day.
- g) *“Goods”* refer to any tangible product, commodity, article, material, wares, equipment, assets or merchandise that UNDP requires under this ITB.
- h) *“Government”* refers to the Government of the country where the goods and related services provided/rendered specified under the Contract will be delivered or undertaken.
- i) *“Instructions to Bidders”* refers to the complete set of documents which provides Bidders with all information needed and procedures to be followed in the course of preparing their Bid
- j) *“ITB”* refers to the Invitation to Bid consisting of instructions and references prepared by UNDP for purposes of selecting the best supplier or service provider to fulfil the requirement indicated in the Schedule of Requirements and Technical Specifications.
- k) *“LOI”* (Section 1 of the ITB) refers to the Letter of Invitation sent by UNDP to Bidders.
- l) *“Material Deviation”* refers to any contents or characteristics of the bid that is significantly different from an essential aspect or requirement of the ITB, and (i) substantially alters the scope and quality of the requirements; (ii) limits the rights of UNDP and/or the obligations of the offeror; and (iii) adversely impacts the fairness and principles of the procurement process, such as those that compromise the competitive position of other offerors.

---

<sup>1</sup> Note: this Section 2 - Instructions to Bidders shall not be modified in any way. Any necessary changes to address specific country and project information shall be introduced only through the Data Sheet.

- m) *“Schedule of Requirements and Technical Specifications”* refers to the document included in this ITB as Section 3 which lists the goods required by UNDP, their specifications, the related services, activities, tasks to be performed, and other information pertinent to UNDP’s receipt and acceptance of the goods.
- n) *“Services”* refers to the entire scope of tasks related or ancillary to the completion or delivery of the goods required by UNDP under the ITB.
- o) *“Supplemental Information to the ITB”* refers to a written communication issued by UNDP to prospective Bidders containing clarifications, responses to queries received from prospective Bidders, or changes to be made in the ITB, at any time after the release of the ITB but before the deadline for the submission of Bid.

## A. GENERAL

1. UNDP hereby solicits Bids as a response to this Invitation to Bid (ITB). Bidders must strictly adhere to all the requirements of this ITB. No changes, substitutions or other alterations to the rules and provisions stipulated in this ITB may be made or assumed unless it is instructed or approved in writing by UNDP in the form of Supplemental Information to the ITB.
2. Submission of a Bid shall be deemed as an acknowledgement by the Bidder that all obligations stipulated by this ITB will be met and, unless specified otherwise, the Bidder has read, understood and agreed to all the instructions in this ITB.
3. Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of any Bid by UNDP. UNDP is under no obligation to award a contract to any Bidder as a result of this ITB.
4. UNDP implements a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical practices, and obstruction. UNDP is committed to preventing, identifying and addressing all acts of fraud and corrupt practices against UNDP as well as third parties involved in UNDP activities. (See [http://www.undp.org/about/transparencydocs/UNDP\\_Anti\\_Fraud\\_Policy\\_English\\_FINAL\\_june\\_2011.pdf](http://www.undp.org/about/transparencydocs/UNDP_Anti_Fraud_Policy_English_FINAL_june_2011.pdf) and [http://www.undp.org/content/undp/en/home/operations/procurement/procurement\\_protest/](http://www.undp.org/content/undp/en/home/operations/procurement/procurement_protest/) for full description of the policies)
5. In responding to this ITB, UNDP requires all Bidders to conduct themselves in a professional, objective and impartial manner, and they must at all times hold UNDP’s interests paramount. Bidders must strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. All Bidders found to have a conflict of interest shall be disqualified. Without limitation on the generality of the above, Bidders, and any of their affiliates, shall be considered to have a conflict of interest with one or more parties in this solicitation process, if they:

- 5.1 Are, or have been associated in the past, with a firm or any of its affiliates which have been engaged UNDP to provide services for the preparation of the design, Schedule of Requirements and Technical Specifications, cost analysis/estimation, and other documents to be used for the procurement of the goods and related services in this selection process;
- 5.2 Were involved in the preparation and/or design of the programme/project related to the goods and related services requested under this ITB; or
- 5.3 Are found to be in conflict for any other reason, as may be established by, or at the discretion of, UNDP.

In the event of any uncertainty in the interpretation of what is potentially a conflict of interest, Bidders must disclose the condition to UNDP and seek UNDP's confirmation on whether or not such conflict exists.

6. Similarly, the following must be disclosed in the Bid :

- 6.1 Bidders who are owners, part-owners, officers, directors, controlling shareholders, or key personnel who are family of UNDP staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving the goods and related services under this ITB; and
- 6.4 Others that could potentially lead to actual or perceived conflict of interest, collusion or unfair competition practices.

Failure of such disclosure may result in the rejection of the Bid.

- 7. The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to UNDP's further evaluation and review of various factors such as being registered as an independent entity, the extent of Government ownership/share, receipt of subsidies, mandate, access to information in relation to this ITB, and others that may lead to undue advantage against other Bidders, and the eventual rejection of the Bid.
- 8. All Bidders must adhere to the UNDP Supplier Code of Conduct, which may be found at this link: <http://web.ng.undp.org/procurement/undp-supplier-code-of-conduct.pdf>

## **B. CONTENTS OF BID**

### **9. Sections of Bid**

Bidders are required to complete, sign and submit the following documents:

- 9.1 Bid Submission Cover Letter Form (see ITB Section 4);
- 9.2 Documents Establishing the Eligibility and Qualifications of the Bidder (see ITB Section 5);
- 9.3 Technical Bid (see prescribed form in ITB Section 6);
- 9.4 Price Schedule (see prescribed form in ITB Section 7);
- 9.5 Bid Security, if applicable (if required and as stated in the DS nos. 9-11, see prescribed Form in ITB Section 8);

9.6 Any attachments and/or appendices to the Bid (including all those specified under the **Data Sheet**)

#### 10. Clarification of Bid

- 10.1 Bidders may request clarification of any of the ITB documents no later than the number of days indicated in the **Data Sheet** (DS no. 16) prior to the Bid submission date. Any request for clarification must be sent in writing via courier or through electronic means to the UNDP address indicated in the **Data Sheet** (DS no. 17). UNDP will respond in writing, transmitted by electronic means and will transmit copies of the response (including an explanation of the query but without identifying the source of inquiry) to all Bidders who have provided confirmation of their intention to submit a Bid.
- 10.2 UNDP shall endeavor to provide such responses to clarifications in an expeditious manner, but any delay in such response shall not cause an obligation on the part of UNDP to extend the submission date of the Bid, unless UNDP deems that such an extension is justified and necessary.

#### 11. Amendment of Bid

- 11.1 At any time prior to the deadline for submission of Bid, UNDP may for any reason, such as in response to a clarification requested by a Bidder, modify the ITB in the form of a Supplemental Information to the ITB. All prospective Bidders will be notified in writing of all changes/amendments and additional instructions through Supplemental Information to the ITB and through the method specified in the **Data Sheet** (DS No. 18).
- 11.2 In order to afford prospective Bidders reasonable time to consider the amendments in preparing their Bid, UNDP may, at its discretion, extend the deadline for submission of Bid, if the nature of the amendment to the ITB justifies such an extension.

### C. PREPARATION OF BID

#### 12. Cost

The Bidder shall bear any and all costs related to the preparation and/or submission of the Bid, regardless of whether its Bid was selected or not. UNDP shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the procurement process.

#### 13. Language

The Bid, as well as any and all related correspondence exchanged by the Bidder and UNDP, shall be written in the language (s) specified in the **Data Sheet** (DS No. 4). Any printed literature furnished by the Bidder written in a language other than the language indicated in the **Data Sheet**, must be accompanied by a translation in the preferred language indicated in the **Data Sheet**. For purposes of interpretation of the Bid, and in the event of discrepancy or inconsistency in meaning, the version translated into the preferred language shall govern. Upon conclusion of a contract, the language of the contract shall govern the relationship between the contractor and UNDP.

#### 14. Bid Submission Form

The Bidder shall submit the Bid Submission Form using the form provided in Section 4 of this ITB.

#### 15. Technical Bid Format and Content

Unless otherwise stated in the **Data Sheet** (DS no. 28), the Bidder shall structure the Technical Bid as follows:

- 15.1 Expertise of Firm/Organization – this section should provide details regarding management structure of the organization, organizational capability/resources, and experience of organization/firm, the list of projects/contracts (both completed and on-going, both domestic and international) which are related or similar in nature to the requirements of the ITB, manufacturing capacity of plant if Bidder is a manufacturer, authorization from the manufacturer of the goods if Bidder is not a manufacturer, and proof of financial stability and adequacy of resources to complete the delivery of goods and provision of related services required by the ITB (see ITB Clause 18 and DS No. 26 for further details). The same shall apply to any other entity participating in the ITB as a Joint Venture or Consortium.
- 15.2 Technical Specifications and Implementation Plan – this section should demonstrate the Bidder's response to the Schedule of Requirements and Technical Specifications by identifying the specific components proposed; how each of the requirements shall be met point by point; providing a detailed specification and description of the goods required, plans and drawings where needed; the essential performance characteristics, identifying the works/portions of the work that will be subcontracted; a list of the major subcontractors, and demonstrating how the bid meets or exceeds the requirements, while ensuring appropriateness of the bid to the local conditions and the rest of the project operating environment during the entire life of the goods provided. Details of technical bid must be laid out and supported by an Implementation Timetable, including Transportation and Delivery Schedule where needed, that is within the duration of the contract as specified in the **Data Sheet** (DS noS. 29 and 30).

Bidders must be fully aware that the goods and related services that UNDP require may be transferred, immediately or eventually, by UNDP to the Government partners, or to an entity nominated by the latter, in accordance with UNDP's policies and procedures. All bidders are therefore required to submit the following in their bids :

- a) A statement of whether any import or export licences are required in respect of the goods to be purchased or services to be rendered, including any restrictions in the country of origin, use or dual use nature of the goods or services, including any disposition to end users;
- b) Confirmation that the Bidder has obtained license of this nature in the past, and have an expectation of obtaining all the necessary licenses, should their bid be rendered the most responsive; and
- c) Complete documentation, information and declaration of any goods classified or may be classified as "Dangerous Goods".



- 15.3 Management Structure and Key Personnel – This section should include the comprehensive curriculum vitae (CVs) of key personnel that will be assigned to support the implementation of the technical bid, clearly defining their roles and responsibilities. CVs should establish competence and demonstrate qualifications in areas relevant to the requirements of this ITB.

In complying with this section, the Bidder assures and confirms to UNDP that the personnel being nominated are available to fulfil the demands of the Contract during its stated full term. If any of the key personnel later becomes unavailable, except for unavoidable reasons such as death or medical incapacity, among other possibilities, UNDP reserves the right to render the Bid non-responsive. Any deliberate substitution of personnel arising from unavoidable reasons, including delay in the implementation of the project of programme through no fault of the Bidder, shall be made only with UNDP's acceptance of the justification for substitution, and UNDP's approval of the qualification of the replacement who shall be either of equal or superior credentials as the one being replaced.

- 15.4 Where the **Data Sheet** requires the submission of the Bid Security, the Bid Security shall be included along with the Technical Bid. The Bid Security may be forfeited by UNDP, and reject the Bid, in the event of any or any combination of the following conditions:

- a) If the Bidder withdraws its offer during the period of the Bid Validity specified in the **Data Sheet** (DS no. 11), or;
- b) If the Bid Security amount is found to be less than what is required by UNDP as indicated in the **Data Sheet** (DS no. 9), or;
- c) In the case the successful Bidder fails:
  - i. to sign the Contract after UNDP has awarded it;
  - ii. to comply with UNDP's variation of requirement, as per ITB Clause 35; or
  - iii. to furnish Performance Security, insurances, or other documents that UNDP may require as a condition to rendering effective the contract that may be awarded to the Bidder.

## 16. Price Schedule

The Price Schedule shall be prepared using the attached standard form (Section 7). It shall list all major cost components associated with the goods and related services, and the detailed breakdown of such costs. All goods and services described in the Technical Bid must be priced separately on a one-to-one correspondence. Any output and activities described in the Technical Bid but not priced in the Price Schedule, shall be assumed to be included in the prices of the items or activities, as well as in the final total price of the bid.

## 17. Currencies

All prices shall be quoted in the currency indicated in the **Data Sheet** (DS no. 15). However, where Bids are quoted in different currencies, for the purposes of comparison of all Bid:

- 17.1 UNDP will convert the currency quoted in the Bid into the UNDP preferred currency, in accordance with the prevailing UN operational rate of exchange on the last day of submission of Bid; and
- 17.2 In the event that the Bid found to be the most responsive to the ITB requirement is quoted in another currency different from the preferred currency as per **Data Sheet** (DS no. 15), then UNDP shall reserve the right to award the contract in the currency of UNDP's preference, using the conversion method specified above.

## **18. Documents Establishing the Eligibility and Qualifications of the Bidder**

- 18.1 The Bidder shall furnish documentary evidence of its status as an eligible and qualified vendor, using the forms provided under Section 5, Bidder Information Forms. In order to award a contract to a Bidder, its qualifications must be documented to UNDP's satisfactions. These include, but are not limited to the following:
- a) That, in the case of a Bidder offering to supply goods under the Contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' manufacturer or producer to supply the goods in the country of final destination;
  - b) That the Bidder has the financial, technical, and production capability necessary to perform the Contract; and
  - c) That, to the best of the Bidder's knowledge, it is not included in the UN 1267 List or the UN Ineligibility List, nor in any and all of UNDP's list of suspended and removed vendors.
- 18.2 Bids submitted by two (2) or more Bidders shall all be rejected by UNDP if they are found to have any of the following:
- a) they have at least one controlling partner, director or shareholder in common; or
  - b) any one of them receive or have received any direct or indirect subsidy from the other/s; or
  - c) they have the same legal representative for purposes of this ITB; or
  - d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about, or influence on the Bid of, another Bidder regarding this ITB process;
  - e) they are subcontractors to each other's bid, or a subcontractor to one bid also submits another Bid under its name as lead Bidder; or
  - f) an expert proposed to be in the bid of one Bidder participates in more than one Bid received for this ITB process. This condition does not apply to subcontractors being included in more than one Bid.

## **19. Joint Venture, Consortium or Association**

If the Bidder is a group of legal entities that will form or have formed a joint venture, consortium or association at the time of the submission of the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the joint venture jointly and severally, and this shall be duly evidenced by a duly notarized Agreement among the legal entities, which shall be submitted along with the Bid; and

(ii) if they are awarded the contract, the contract shall be entered into, by and between UNDP and the designated lead entity, who shall be acting for and on behalf of all entities that comprise the joint venture.

After the bid has been submitted to UNDP, the lead entity identified to represent the joint venture shall not be altered without the prior written consent of UNDP. Furthermore, neither the lead entity nor the member entities of the joint venture can:

- a) Submit another Bid, either in its own capacity; nor
- b) As a lead entity or a member entity for another joint venture submitting another Bid.

The description of the organization of the joint venture/consortium/association must clearly define the expected role of each of the entity in the joint venture in delivering the requirements of the ITB, both in the bid and in the Joint Venture Agreement. All entities that comprise the joint venture shall be subject to the eligibility and qualification assessment by UNDP.

Where a joint venture is presenting its track record and experience in a similar undertaking as those required in the ITB, it should present such information in the following manner:

- a) Those that were undertaken together by the joint venture; and
- b) Those that were undertaken by the individual entities of the joint venture expected to be involved in the performance of the services defined in the ITB.

Previous contracts completed by individual experts working privately but who are permanently or were temporarily associated with any of the member firms cannot be claimed as the experience of the joint venture or those of its members, but should only be claimed by the individual experts themselves in their presentation of their individual credentials.

If the Bid of a joint venture is determined by UNDP as the most responsive Bid that offers the best value for money, UNDP shall award the contract to the joint venture, in the name of its designated lead entity, who shall sign the contract for and on behalf of all the member entities.

## **20. Alternative Bid**

Unless otherwise specified in the **Data Sheet** (DS nos. 5 and 6), alternative bid shall not be considered. Where the conditions for its acceptance are met, or justifications are clearly established, UNDP reserves the right to award a contract based on an alternative bid.

## **21. Validity Period**

- 21.1 Bid shall remain valid for the period specified in the **Data Sheet** (DS no. 8), commencing on the submission deadline date also indicated in the **Data Sheet** (DS no. 21). A Bid valid for a shorter period shall be immediately rejected by UNDP and rendered non-responsive.
- 21.2 In exceptional circumstances, prior to the expiration of the Bid validity period, UNDP may request Bidders to extend the period of validity of their Bid. The request and the responses shall be made in writing, and shall be considered integral to the Bid.

## 22. Bidder's Conference

When appropriate, a Bidder's conference will be conducted at the date, time and location specified in the **Data Sheet** (DS no. 7). All Bidders are encouraged to attend. Non-attendance, however, shall not result in disqualification of an interested Bidder. Minutes of the Bidder's conference will be either posted on the UNDP website, or disseminated to the individual firms who have registered or expressed interest with the contract, whether or not they attended the conference. No verbal statement made during the conference shall modify the terms and conditions of the ITB unless such statement is specifically written in the Minutes of the Conference, or issued/posted as an amendment in the form of a Supplemental Information to the ITB.

## D. SUBMISSION AND OPENING OF BID

### 23. Submission

23.1 The Technical Bid and the Price Schedule **must be submitted together and sealed together in one and the same envelope**, delivered either personally, by courier, or by electronic method of transmission. If submission will not be done by electronic means, the Technical Bid and Price Schedule must be sealed together in an envelope whose external side must :

- a) Bear the name of the Bidder;
- b) Be addressed to UNDP as specified in the **Data Sheet** (DS no.20); and
- c) Bear a warning not to open before the time and date for Bid opening as specified in the **Data Sheet** (DS no. 24).

If the envelope is not sealed nor labeled as required, the Bidder shall assume the responsibility for the misplacement or premature opening of Bid due to improper sealing and labeling by the Bidder.

23.2 Bidders must submit their Bid in the manner specified in the **Data Sheet** (DS nos. 22 and 23). When the Bid is expected to be in transit for more than 24 hours, the Bidder must ensure that sufficient lead time has been provided in order to comply with UNDP's deadline for submission. UNDP shall indicate for its record that the official date and time of receiving the Bid is the actual date and time when the said Bid has physically arrived at the UNDP premises indicated in the **Data Sheet** (DS no. 20).

23.3 Bidders submitting Bid by mail or by hand shall enclose the original and each copy of the Bid, in separate sealed envelopes, duly marking each of the envelopes as "Original Bid" and the others as "Copy of Bid". The two envelopes, consisting of original and copies, shall then be sealed in an outer envelope. The number of copies required shall be as specified in the **Data Sheet** (DS no. 19). In the event of any discrepancy between the contents of the "Original Bid" and the "Copy of Bid", the contents of the original shall govern. The original version of the Bid shall be signed or initialed by the Bidder or person(s) duly authorized to commit the Bidder on every page. The authorization shall be communicated through a document evidencing such authorization issued by the highest official of the firm, or a

Power of Attorney, accompanying the Bid.

- 23.4 Bidders must be aware that the mere act of submission of a Bid, in and of itself, implies that the Bidder accepts the General Contract Terms and Conditions of UNDP as attached hereto as Section 11.

#### **24. Deadline for Submission of Bid and Late Bids**

Bid must be received by UNDP at the address and no later than the date and time specified in the **Data Sheet** (DS no. 20 and 21).

UNDP shall not consider any Bid that arrives after the deadline for submission of Bid. Any Bid received by UNDP after the deadline for submission of Bid shall be declared late, rejected, and returned unopened to the Bidder.

#### **25. Withdrawal, Substitution, and Modification of Bid**

- 25.1 Bidders are expected to have sole responsibility for taking steps to carefully examine in detail the full consistency of its Bid to the requirements of the ITB, keeping in mind that material deficiencies in providing information requested by UNDP, or lack clarity in the description of goods and related services to be provided, may result in the rejection of the Bid. The Bidder shall assume any responsibility regarding erroneous interpretations or conclusions made by the Bidder in the course of understanding the ITB out of the set of information furnished by UNDP.
- 25.2 A Bidder may withdraw, substitute or modify its Bid after it has been submitted by sending a written notice in accordance with ITB Clause 23, duly signed by an authorized representative, and shall include a copy of the authorization (or a Power of Attorney). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be received by UNDP prior to the deadline for submission and submitted in accordance with ITB Clause 23 (except that withdrawal notices do not require copies). The respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," or "MODIFICATION".
- 25.3 Bid requested to be withdrawn shall be returned unopened to the Bidders.
- 25.4 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bid and the expiration of the period of Bid validity specified by the Bidder on the Bid Submission Form or any extension thereof.

#### **26. Bid Opening**

UNDP will open the Bid in the presence of an ad-hoc committee formed by UNDP of at least two (2) members. If electronic submission is permitted, any specific electronic Bid opening procedures shall be as specified in the **Data Sheet** (DS no. 23).

The Bidders' names, modifications, withdrawals, the condition of the envelope labels/seals, the

number of folders/files and all other such other details as UNDP may consider appropriate, will be announced at the opening. No Bid shall be rejected at the opening stage, except for late submission, for which the Bid shall be returned unopened to the Bidder.

## **27. Confidentiality**

Information relating to the examination, evaluation, and comparison of Bid, and the recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process, even after publication of the contract award.

Any effort by a Bidder to influence UNDP in the examination, evaluation and comparison of the Bid or contract award decisions may, at UNDP's decision, result in the rejection of its Bid.

In the event that a Bidder is unsuccessful, the Bidder may seek a meeting with UNDP for a debriefing. The purpose of the debriefing is discussing the strengths and weaknesses of the Bidder's submission, in order to assist the Bidder in improving the bid presented to UNDP. The content of other bid and how they compare to the Bidder's submission shall not be discussed.

## **E. EVALUATION OF BID**

### **28. Preliminary Examination of Bid**

UNDP shall examine the Bid to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, whether or not the Bidder is in the UN Security Council 1267/1989 Committee's list of terrorists and terrorist financiers, and in UNDP's list of suspended and removed vendors, and whether the Bid are generally in order, among other indicators that may be used at this stage. UNDP may reject any Bid at this stage.

### **29. Evaluation of Bid**

29.1 UNDP shall examine the Bid to confirm that all terms and conditions under the UNDP General Terms and Conditions and Special Conditions have been accepted by the Bidder without any deviation or reservation.

29.2 The evaluation team shall review and evaluate the Bids on the basis of their responsiveness to the Schedule of Requirements and Technical Specifications and other documentation provided, applying the procedure indicated in the **Data Sheet** (DS No. 25). Absolutely no changes may be made by UNDP in the criteria after all Bids have been received.

29.1 UNDP reserves the right to undertake a post-qualification exercise, aimed at determining, to its satisfaction the validity of the information provided by the Bidder. Such post-qualification shall be fully documented and, among those that may be listed in the **Data Sheet** (DS No.33), may include, but need not be limited to, all or any combination of the following :

a) Verification of accuracy, correctness and authenticity of the information provided by the

- bidder on the legal, technical and financial documents submitted;
- b) Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team;
  - c) Inquiry and reference checking with Government entities with jurisdiction on the bidder, or any other entity that may have done business with the bidder;
  - d) Inquiry and reference checking with other previous clients on the quality of performance on on-going or previous contracts completed;
  - e) Physical inspection of the bidder's plant, factory, branches or other places where business transpires, with or without notice to the bidder;
  - f) Testing and sampling of completed goods similar to the requirements of UNDP, where available; and
  - g) Other means that UNDP may deem appropriate, at any stage within the selection process, prior to awarding the contract.

### **30. Clarification of Bid**

To assist in the examination, evaluation and comparison of bids, UNDP may, at its discretion, ask any Bidder to clarify its Bid.

UNDP's request for clarification and the Bidder's response shall be in writing. Notwithstanding the written communication, no change in the prices or substance of the Bid shall be sought, offered, or permitted, except to provide clarification, and confirm the correction of any arithmetic errors discovered by UNDP in the evaluation of the Bid, in accordance with ITB Clause 35.

Any unsolicited clarification submitted by a Bidder in respect to its Bid, which is not a response to a request by UNDP, shall not be considered during the review and evaluation of the Bid.

### **31. Responsiveness of Bid**

UNDP's determination of a Bid's responsiveness will be based on the contents of the Bid itself.

A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the ITB without material deviation, reservation, or omission.

If a Bid is not substantially responsive, it shall be rejected by UNDP and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.

### **32. Nonconformities, Repairable Errors and Omissions**

32.3 Provided that a Bid is substantially responsive, UNDP may waive any non-conformities or omissions in the Bid that, in the opinion of UNDP, do not constitute a material deviation.

32.4 Provided that a Bid is substantially responsive, UNDP may request the Bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

32.5 Provided that the Bid is substantially responsive, UNDP shall correct arithmetical errors as follows:

- a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of UNDP there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;
- b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to the above.

32.6 If the Bidder does not accept the correction of errors made by UNDP, its Bid shall be rejected.

## **F. AWARD OF CONTRACT**

### **33. Right to Accept, Reject, or Render Non-Responsive Any or All Bid**

33.1 UNDP reserves the right to accept or reject any Bid, to render any or all of the Bids as non-responsive, and to reject all Bids at any time prior to award of contract, without incurring any liability, or obligation to inform the affected Bidder(s) of the grounds for UNDP's action. Furthermore, UNDP is not obligated to award the contract to the lowest price offer.

33.2 UNDP shall also verify, and immediately reject their respective Bid, if the Bidders are found to appear in the UN's Consolidated List of Individuals and Entities with Association to Terrorist Organizations, in the List of Vendors Suspended or Removed from the UN Secretariat Procurement Division Vendor Roster, the UN Ineligibility List, and other such lists that as may be established or recognized by UNDP policy on Vendor Sanctions. (See [http://www.undp.org/content/undp/en/home/operations/procurement/procurement\\_protest/](http://www.undp.org/content/undp/en/home/operations/procurement/procurement_protest/))

### **34. Award Criteria**

Prior to expiration of the period of Bid validity, UNDP shall award the contract to the qualified and eligible Bidder that is found to be responsive to the requirements of the Schedule of Requirements and Technical Specification, and has offered the lowest price (See DS No. 32).

### **35. Right to Vary Requirements at the Time of Award**

At the time of award of Contract, UNDP reserves the right to vary the quantity of the goods and/or related services, by up to a maximum twenty five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.



### **36. Contract Signature**

Within fifteen (15) days from the date of receipt of the Contract, the successful Bidder shall sign and date the Contract and return it to UNDP.

Failure of the successful Bidder to comply with the requirement of ITB Section F.3 and this provision shall constitute sufficient grounds for the annulment of the award, and forfeiture of the Bid Security if any, and on which event, UNDP may award the Contract to the Bidder with the second highest rated Bid, or call for new Bid.

### **37. Performance Security**

A performance security, if required, shall be provided in the amount and form provided in Section 9 and by the deadline indicated in the **Data Sheet** (DS no. 14), as applicable. Where a Performance Security will be required, the submission of the said document, and the confirmation of its acceptance by UNDP, shall be a condition for the effectivity of the Contract that will be signed by and between the successful Bidder and UNDP.

### **38. Bank Guarantee for Advanced Payment**

Except when the interests of UNDP so require, it is the UNDP's preference to make no advanced payment(s) on contracts (i.e., payments without having received any outputs). In the event that the Bidder requires an advanced payment upon contract signature, and if such request is duly accepted by UNDP, and the said advanced payment exceeds 20% of the total Bid price, or exceed the amount of USD 30,000, UNDP shall require the Bidder to submit a Bank Guarantee in the same amount as the advanced payment. A bank guarantee for advanced payment shall be furnished in the form provided in Section 10.

### **39. Vendor Protest**

UNDP's vendor protest procedure provides an opportunity for appeal to those persons or firms not awarded a purchase order or contract through a competitive procurement process. In the event that a Bidder believes that it was not treated fairly, the following link provides further details regarding UNDP vendor protest procedures:  
<http://www.undp.org/procurement/protest.shtml>

## Instructions to Bidders

### DATA SHEET<sup>2</sup>

The following data for the supply of goods and related services shall complement / supplement the provisions in the Instruction to Bidders. In the case of a conflict between the Instruction to Bidders and the Data Sheet, the provisions in the Data Sheet shall prevail.

DS No.	Cross Ref. to Instructions	Data	Specific Instructions / Requirements
1		Project Title:	<b>Community Based Flood and Glacial Lake Outburst Risk Reduction Project (CFGORRP)</b>
2		Title of Goods/Services/Work Required:	<b>UNDP/ITB/010/2014 Supply, Delivery and Installation of Early Warning System at Imja Lake</b>
3		Country:	<b>Nepal</b>
4	C.13	Language of the Bid:	<input checked="" type="checkbox"/> <b>English</b> <input type="checkbox"/> French <input type="checkbox"/> Spanish <input type="checkbox"/> Others (pls. specify) _____
5	C.20	Conditions for Submitting Bid for Parts or sub-parts of the Total Requirements	<input type="checkbox"/> Allowed [ <i>Partial Bids allowed on Lot basis</i> ] <input checked="" type="checkbox"/> <b>Not allowed</b>
6	C.20	Conditions for Submitting Alternative Bid	<input checked="" type="checkbox"/> <b>Shall not be considered</b>  <input type="checkbox"/> Shall be considered. A Bidder may submit an alternative Bid, <u>but only if it</u> also submits a Bid that meets the base case (i.e., what is originally required by UNDP in this ITB). UNDP shall only consider the alternative bid offered by the Bidder whose Bid for the base case was determined to be a responsive Bid that offers the lowest price.
7	C.22	A pre-Bid conference will be held on:	Time: <a href="#">Click here to enter text.</a> Date: <a href="#">Click here to enter a date.</a>

<sup>2</sup> All DS number entries in the Data Sheet are cited as references in the Instructions to Bidders. All DS Nos. corresponding to a Data must not be modified. Only information on the 3<sup>rd</sup> column may be modified by the user. If the information does not apply, the 3<sup>rd</sup> column must state "n/a" but must not be deleted.

		<b>Not applicable (N/A)</b>	Venue: _____  The UNDP focal point for the arrangement is: <a href="#">Click here to enter text.</a> Address: _____ Telephone: _____ Facsimile: _____ E-mail: _____.
8	C.21.1	Period of Bid Validity commencing on the submission date	<input type="checkbox"/> 60 days <input type="checkbox"/> 90 days <input checked="" type="checkbox"/> <b>120 days</b>
9	B.9.5 C.15.4 b)	Bid Security	<input type="checkbox"/> Required Amount: <a href="#">Click here to enter text.</a> Form: <a href="#">Click here to enter text.</a>  <input checked="" type="checkbox"/> <b>Not Required</b>
10	B.9.5	Acceptable forms of Bid Security <sup>3</sup>  <b>Not applicable (N/A)</b>	<input type="checkbox"/> Bank Guarantee (See Section 8 for template) <input type="checkbox"/> Any Bank-issued Check / Cashier's Check / Certified Check <input type="checkbox"/> Other negotiable instrument <input type="checkbox"/> Cash (exceptionally, if none of the other forms are feasible) <input type="checkbox"/> Others [pls. specify]
11	B.9.5 C.15.4 a)	Validity of Bid Security <b>Not applicable (N/A)</b>	<i>[indicate no. of days, but minimum of 90] days from the last day of Bid submission.</i>  Bid Security of unsuccessful Bidders shall be returned.
12		Advanced Payment upon signing of contract	<input type="checkbox"/> Allowed up to a maximum of ____% of contract <sup>4</sup> <input checked="" type="checkbox"/> <b>Not allowed</b>
13		Liquidated Damages	<input type="checkbox"/> Will not be imposed <input checked="" type="checkbox"/> <b>Will be imposed under the following conditions:</b> Percentage of contract price per day of delay: <b>0.5%</b>

<sup>3</sup> Surety bonds or other instruments issued by non-bank Financial Institutions are least preferred by UNDP. Unless stated otherwise, they shall be considered unacceptable to UNDP.

<sup>4</sup> If the advanced payment that the Bidder will submit will exceed 20% of the Price Offer, or will exceed the amount of USD 30,000, the Bidder must submit an Advanced Payment Security in the same amount as the advanced payment, using the form and contents of the document in Section 10

			<p>Max. no. of days of delay : <b>1 calendar month</b>  Next course of action: <b>Contract may be terminated.</b>  <input checked="" type="checkbox"/> <b>Will be imposed also in any delay in Operation and Maintenance during the contract period</b>  Percentage of contract price per day of delay:<b>0.5%</b>  Max. no. of days of delay : <b>15 days</b>  Next course of action: <b>Contract may be terminated.</b></p>
14	F.37	Performance Security	<p><input checked="" type="checkbox"/> <b>Required</b>  <b>Amount : 10% of the contract amount</b>  <b>Form: Bank Guarantee</b>  <input type="checkbox"/> Not Required</p>
15	C.17 C.17.2	Preferred Currency of Bid and Method for Currency conversion	<p><input checked="" type="checkbox"/> <b>United States Dollars (US\$)</b>  <input type="checkbox"/> Euro  <input checked="" type="checkbox"/> <b>Local Currency</b>  <b>Reference date for determining UN Operational Exchange Rate : USD 97.60</b></p>
16	B.10.1	Deadline for submitting requests for clarifications/ questions	<b>17 November 2014</b>
17	B.10.1	Contact Details for submitting clarifications/questions <sup>5</sup>	<p><b>Focal Person in UNDP: Sushma Murray</b>  <b>Address: UNDP, UN House, Pulchowk</b></p> <p><b>Facsimile:</b>  <b>Fax No. : 00 977 1 5223991</b>  <b>E-mail address dedicated for this purpose: registry.np@undp.org</b></p>
18	B.11.1	Manner of Disseminating Supplemental Information to the ITB and responses/clarifications to queries	<p><input type="checkbox"/> Direct communication to prospective Bidders by email or fax  <input checked="" type="checkbox"/> <b>Direct communication to prospective Bidders by email or fax, and Posting on the website<sup>6</sup></b>  <a href="http://www.np.undp.org/content/nepal/en/home/operations/procurement.html">http://www.np.undp.org/content/nepal/en/home/operations/procurement.html</a></p>
19	D.23.3	No. of copies of Bid that must be submitted	<p><b>Original : 1</b>  Copies : Not required</p>

<sup>5</sup> This contact person and address is officially designated by UNDP. If inquiries are sent to other person/s or address/es, even if they are UNDP staff, UNDP shall have no obligation to respond nor can UNDP confirm that the query was officially received.

<sup>6</sup> Posting on the website shall be supplemented by directly transmitting the communication to the prospective offerors.

20	D.23.1 b) D.23.2 D.24	Bid submission address	<b>The Deputy Country Director (Operations) United Nations Development Programme UN House, Pulchowk, Lalitpur, Nepal</b>
21	C.21.1 D.24	Deadline of Bid Submission	Date and Time : <b>November 28, 2014 12:00 AM (Noon)</b>
22	D.23.2	Manner of Submitting Bid	<input checked="" type="checkbox"/> <b>Courier/Hand Delivery</b> <input type="checkbox"/> Electronic submission of Bid <sup>7</sup>
23	D.23.2 D.26	Conditions and Procedures for electronic submission and opening, if allowed  <b>(Not applicable)</b>	<input type="checkbox"/> Official Address for e-submission: [N/A] <input type="checkbox"/> Format : PDF files only, password protected <input type="checkbox"/> Password <u>must</u> not be provided to UNDP until the date and time of Bid Opening as indicated in No. 24 <input type="checkbox"/> Max. File Size per transmission: [N/A] <input type="checkbox"/> Max. No. of transmission : [N/A] <input type="checkbox"/> No. of copies to be transmitted : [N/A] <input type="checkbox"/> Mandatory subject of email : <input type="checkbox"/> Virus Scanning Software to be Used prior to transmission: [N/A] <input type="checkbox"/> Digital Certification/Signature: [N/A] <input type="checkbox"/> Time Zone to be Recognized: [N/A] <input type="checkbox"/> Other conditions: [N/A]
24	D.23.1 c)	Date, time and venue for opening of Bid	<b>Date and Time: November 28, 2014 3:30 PM</b> <b>Venue : UN House, Pulchowk</b>
25		Evaluation method to be used in selecting the most responsive Bid	<input checked="" type="checkbox"/> <b>Non-Discretionary “Pass/Fail” Criteria on the Technical Requirements; and</b> <input checked="" type="checkbox"/> <b>Lowest price offer of technically qualified/responsive Bid</b>
26	C.15.1	Required Documents that must be Submitted to Establish Qualification of Bidders (In “Certified True Copy” form only)  <i>[check all that apply, delete those that will not be required.]</i>	<input checked="" type="checkbox"/> <b>Company Profile, which should <u>not</u> exceed fifteen (15) pages, including printed brochures and product catalogues relevant to the goods/services being procured</b> <input checked="" type="checkbox"/> <b>Tax Registration/Payment Certificate issued by the Internal Revenue Authority evidencing that the Bidder is updated with its tax payment obligations, or Certificate of Tax exemption, if any such privilege is enjoyed by the Bidder</b>

<sup>7</sup> If this will be allowed, security features (e.g., encryption, authentication, digital signatures, etc.) are strictly required and must be enforced to ensure confidentiality and integrity of contents.

			<p><input checked="" type="checkbox"/> <b>Certificate of Registration of the business, including Articles of Incorporation, or equivalent document if Bidder is not a corporation</b></p> <p><input type="checkbox"/> Trade name registration papers, if applicable</p> <p><input type="checkbox"/> Local Government permit to locate and operate in the current location of office or factory</p> <p><input type="checkbox"/> Official Letter of Appointment as local representative, if Bidder is submitting a Bid in behalf of an entity located outside the country</p> <p><input checked="" type="checkbox"/> <b>Quality Certificate (e.g., ISO, etc.) and/or other similar certificates, accreditations, awards and citations received by the Bidder, if any</b></p> <p><input type="checkbox"/> Environmental Compliance Certificates, Accreditations, Markings/Labels, and other evidences of the Bidder's practices which contributes to the ecological sustainability and reduction of adverse environmental impact (e.g., use of non-toxic substances, recycled raw materials, energy-efficient equipment, reduced carbon emission, etc.), either in its business practices or in the goods it manufactures</p> <p><input type="checkbox"/> Patent Registration Certificates, if any of technologies submitted in the Bid is patented by the Bidder</p> <p><input type="checkbox"/> Plan and details of manufacturing capacity, if Bidder is a manufacturer of the goods to be supplied</p> <p><input type="checkbox"/> Certification or authorization to act as Agent in behalf of the Manufacturer, or Power of Attorney, if bidder is not a manufacturer</p> <p><input checked="" type="checkbox"/> <b>Latest Audited Financial Statement (Income Statement and Balance Sheet) including Auditor's Report for the past [2 years]</b></p> <p><input checked="" type="checkbox"/> <b>Statement of Satisfactory Performance from the Top [3] Clients in terms of Contract Value the past [3 years]</b></p> <p><input type="checkbox"/> List of Bank References (Name of Bank, Location, Contact Person and Contact Details)</p> <p><input checked="" type="checkbox"/> <b>All information regarding any past and current litigation during the last five (5) years, in which the bidder is involved, indicating the parties concerned, the subject of the litigation, the amounts involved, and the final resolution if already concluded.</b></p>
27		Other documents that may be Submitted to Establish Eligibility	<b>All documents to be submitted should correspond to the stipulated conditions in the ITB data sheet</b>

28	C.15	Structure of the Technical Bid and List of Documents to be Submitted	<b><i>Refer to Section 6, Technical Bid Form</i></b>
29	C.15.2	Latest Expected date for commencement of Contract	<b><i>December 5, 2014</i></b>
30	C.15.2	Maximum Expected duration of contract	<b>3 - 5 months</b>
31		UNDP will award the contract to:	<input checked="" type="checkbox"/> <b>One Bidder only</b> <input type="checkbox"/> One or more Bidders, depending on the following factors: <i>[One bidder for each Lot]</i>
32	F.34	Criteria for the Award and Evaluation of Bid	<b><u>Award Criteria</u></b> <input checked="" type="checkbox"/> <b>Non-discretionary “Pass” or “Fail” rating on the detailed contents of the Schedule of Requirements and Technical Specifications</b> <input checked="" type="checkbox"/> <b>Compliance on the following qualification requirements :</b> <b><u>Bid Evaluation Criteria</u><sup>8</sup></b> <input checked="" type="checkbox"/> <b>Minimum no. of years of experience in similar contracts: <i>[3 years]</i>;</b> <input type="checkbox"/> Minimum annual turnover of <i>[indicate amount and currency]</i> for the past <i>[indicate number of years of reference]</i> ; <input checked="" type="checkbox"/> <b>Current ratio of not less than 1.0;</b> <input checked="" type="checkbox"/> <b>Minimum no. of similar projects undertaken over the past 3 years <i>[at least 1 project]</i>;</b> <input checked="" type="checkbox"/> <b>Highest value of contract over the past 5 years <i>[USD 50,000.00]</i>;</b> <input checked="" type="checkbox"/> <b>Full compliance of Bid to the Technical Requirements;</b> <input type="checkbox"/> Quality Inspection and Testing Certificates for the goods to be supplied; <input type="checkbox"/> After-sales service of at least <i>[indicate number]</i> ; <input type="checkbox"/> Lowest Operating Costs Evidenced by a Table of Consumables, Rate of Consumption, and Unit Price; <input checked="" type="checkbox"/> <b>Warranty on parts and services for a minimum period of <i>[3 years]</i>;</b> <input checked="" type="checkbox"/> <b>Acceptability of the Transportation/Delivery Schedule;</b>

<sup>8</sup> *Pls. reconcile and ensure consistency with the contents of the Technical Specifications*

			<input type="checkbox"/> Appropriateness of the Implementation Timetable to Project Schedule; <input type="checkbox"/> Qualification of the Team Leader to directly coordinate with UNDP [N/A]; <input type="checkbox"/> Qualification of all other personnel to be assigned to the contract [N/A] <input type="checkbox"/> Others <i>[pls. specify and list further]</i>
33	E.29	Post qualification Actions	<input checked="" type="checkbox"/> <b>Verification of accuracy, correctness and authenticity of the information provided by the bidder on the legal, technical and financial documents submitted;</b> <input checked="" type="checkbox"/> <b>Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team;</b> <input type="checkbox"/> Inquiry and reference checking with Government entities with jurisdiction on the bidder, or any other entity that may have done business with the bidder; <input checked="" type="checkbox"/> <b>Inquiry and reference checking with other previous clients on the quality of performance on ongoing or previous contracts completed;</b> <input type="checkbox"/> Physical inspection of the bidder's plant, factory, branches or other places where business transpires, with or without notice to the bidder; <input type="checkbox"/> Testing and sampling of completed goods similar to the requirements of UNDP, where available; and <input type="checkbox"/> Others <i>[click here to specify]</i>
34		Conditions for Determining Contract Effectivity	<input checked="" type="checkbox"/> <b>UNDP's receipt of Performance Bond of 10% of the total contract amount</b> <input checked="" type="checkbox"/> <b>After the issuance of the Purchase Order and signing of the contract</b> <input type="checkbox"/> Others <i>[click here to specify]</i> .
35		Other Information Related to the ITB <sup>9</sup>	<b>1. Factory Assembly and Testing of all components and accessories are must with test certificates.</b>

<sup>9</sup> Where the information is available in the web, a URL for the information may simply be provided.



36		Brief Background on the requested services	<p>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 Department of Hydrology and Meteorology (DHM) under the Ministry of Science, Technology and Environment (MoSTE) as the lead Implementing Agency. The project working areas include Solukhumbu in the hill and Mahottari, Siraha, Saptari and Udaypur districts in the Terai.</p> <p>The project under the first component aims to install and implement Imja GLOF Warning Systems in order to reduce the loss of lives and properties of the downstream communities. The systems include both Automatic and Community Based Early Warning Systems. The entire early warning systems include (a) automatic weather station (b) GLOF sensing station and equipment, (c) wireless local area network, (d) audio emergency notification system (e) server and software and (f) community based early warning system. The CFGORRP therefore intends to procure and install the GLOF warning system for Imja Lake.</p>
37		Brief scope of works	<p>The scope of work includes but not limited to:</p> <ul style="list-style-type: none"> <li>☐ Supply, and delivery of various equipment related to GLOF Warning System as per specification</li> <li>☐ Ground preparation and development of individual equipment's platform for the proper installation</li> <li>☐ Installation of entire GLOF Warning Systems ensuring warranty and quality as per specification</li> <li>☐ Conduct training to DHM officials and representatives of GRMCC and BZMC on installation of stations, operation and maintenance of sensor, data logger configuration, remote monitoring and troubleshooting and site maintenance</li> <li>☐ Conduct training to the local community on operation and maintenance of community based early warning system</li> </ul>

## Section 3a: Schedule of Requirements and Technical Specifications

### Item A: Automatic Weather Station

Item	Quantity	Description / Specifications of Goods
1	1 unit	<p><b>Wind Speed and Direction Sensor:</b> Should have:</p> <ul style="list-style-type: none"> <li>• Sensor Type: Four blade propeller type</li> <li>• <b>Wind Speed:</b> <ul style="list-style-type: none"> <li>o Measuring range: 0 to 70 m/s</li> <li>o Coating: Ice resistant</li> <li>o Threshold Sensitivity: 1 m/s</li> <li>o Accuracy: better than <math>\pm 0.3</math> m/s or 1% of reading</li> <li>o Operating Temperature: -40° C to +50°</li> <li>o Operating Relative humidity: 10-100%.</li> <li>o Output signal: RS 485 / SDI 12 / Analog</li> </ul> </li> <li>• <b>Wind Direction:</b> <ul style="list-style-type: none"> <li>o Sensor type: Vane</li> <li>o Measuring range: 0 to 359 Deg</li> <li>o Accuracy: better than <math>\pm 3</math> %.</li> </ul> </li> </ul> <p>Rugged and fit for installation at high altitude mechanism to resist ice formation on its body.</p>
2	1 unit	<p><b>Temperature and RH Sensor:</b></p> <p>Temperature sensor Should have:</p> <ul style="list-style-type: none"> <li>• Sensor type: Platinum resistance Thermometer (Pt100) Class B</li> <li>• Measuring range: -40 to +60 °C</li> <li>• Output: RS485 or RS232 or TTL</li> <li>• Accuracy: <math>\pm 0.1</math> K°</li> <li>• Resolution: 0.01 K</li> <li>• Long-term stability: <math>&lt; 0.2</math> °C / year</li> <li>• Temperature response time: 3...15 seconds</li> </ul> <p>Relative Humidity Sensor should have:</p> <ul style="list-style-type: none"> <li>• Sensor type: Hygrometer capacitive</li> <li>• Probe type: Standard probe</li> <li>• Measuring range: 0 – 100%</li> <li>• Accuracy: <math>\pm 0.8</math> % Rh</li> <li>• Operating temperature range: -40 ... +60 °C</li> <li>• Output: RS485 or RS232 or TTL</li> <li>• Humidity response time: 3...15 seconds</li> <li>• Long-term stability: <math>&lt; 1</math> % rh/year</li> </ul> <p>Calculation: Dew point</p>

<b>3</b>	<b>1 unit</b>	<b>Weighing Type Precipitation Gauge with Wind Shield</b> Should have: <ul style="list-style-type: none"> <li>• Type of measurement: liquid and solid</li> <li>• Measuring Capacity: <math>\geq 750\text{mm}</math></li> <li>• Collecting Area: <math>\geq 400\text{ cm}^2</math></li> <li>• Measuring Range: 0 - 50 mm/min</li> <li>• Accuracy at -25 to 45°C: <math>\pm 1\%</math> of measured value</li> <li>• Resolution: 0.01mm</li> <li>• Protocol: SDI-12, RS-485</li> <li>• Sensor Technology: Weighing principle (sealed load cell)</li> <li>• O/p Interval: 1 minute</li> <li>• Voltage Input: 9.6V to 28V DC</li> <li>• Operating Temperature: -40° C to +60° C</li> <li>• Wind Shield Alter type with 24 Lamellas</li> </ul>
<b>4</b>	<b>1 unit</b>	<b>Net Radiometer</b> <ul style="list-style-type: none"> <li>• 2 pyranometers for measuring solar radiation</li> <li>• 2 pyrgeometers for infrared measurements</li> <li>• Sensor type: thermopile</li> <li>• Temperature dependence of sensitivity: &lt;5% from -10 deg.C to +40 deg. C</li> <li>• Sensitivity: 7 to 20 <math>\mu\text{V/W/m}^2</math> short wave; 5 to 10 <math>\mu\text{V/W/m}^2</math> long wave</li> <li>• Operating Temperature: - 40 deg.C to +80 deg.C</li> <li>• Spectral Range: 310 to 2800 nm short wave; 4.5 to 42 <math>\mu\text{m}</math> long wave</li> <li>• Field of View: 180 deg. Short Wave; 150 deg. long wave (lower sensor), 180 deg. long wave (upper sensor);</li> </ul>
<b>5</b>	<b>1 unit</b>	<b>Pressure Sensor</b> <ul style="list-style-type: none"> <li>• Sensor type: Silicon capacitive, absolute pressure sensor with Class B accuracy</li> <li>• Pressure Range: 50- 1100 hPa</li> <li>• Operating Temperature range: -40° C to +60° C</li> <li>• Linearity: <math>\pm 0.2\text{ hPa}</math></li> <li>• Accuracy at +20 °C: <math>\pm 0.35\text{ hPa}</math></li> <li>• Temperature dependence: <math>\pm 0.4\text{ hPa}</math></li> <li>• Total accuracy at -40° C to +60° C: <math>\pm 0.5\text{ hPa}</math></li> <li>• Long-term stability: <math>\pm 0.2\text{ hPa/year}</math></li> <li>• Inputs and outputs: RS 232/ RS485</li> <li>• Resolution: 0.01 hPa</li> <li>• Response time (one sensor): 2 s</li> </ul>
<b>6</b>	<b>1 unit</b>	<b>Snow Depth Sensor</b> <ul style="list-style-type: none"> <li>• Sensor type: Ultrasonic</li> <li>• Measurement time: &lt;1 second</li> <li>• Output: SDI-12 version 1.3, RS232, RS485</li> <li>• Baud Rates: 1200 to 38,400 bps</li> <li>• Power: 9 to 18 VDC</li> <li>• Power Consumption: &lt;1.0mA</li> </ul>

		<ul style="list-style-type: none"> <li>• Measurement Range: 0.5 m to 10m</li> <li>• Resolution: 0.25mm</li> <li>• Accuracy: 0.4% of distance to target</li> <li>• Operating Temperature: -45 deg.C to 50 deg.C</li> </ul>
7	1 unit	<b>Water level Sensor (Pressure Type):</b> Should have: <ul style="list-style-type: none"> <li>• Standard Range: Up To 40 meters.</li> <li>• Accuracy ( Distance&lt;10m): <math>\pm 5</math> mm</li> <li>• Working Principle: Static Pressure measurement</li> <li>• Protocol: SDI-12</li> <li>• SDI-12 measurement sequence: <math>\leq 20</math> seconds</li> <li>• Voltage Input: 12V <math>\pm 2</math>V DC</li> <li>• Operating Temperature: -40° C to +60° C</li> <li>• Storage Temperature: -40° C to +80° C</li> <li>• Temperature Sensitivity: average TK:&lt; 3 mm/10 K, max 5 mm over the entire temperature range -40° C to +80° C</li> </ul>
8	1 unit	<b>Wireless Remote Terminal Unit</b>  The wireless RTU is required to transmit data from the water level sensor to Data Collection Platform. Should have: <ul style="list-style-type: none"> <li>• Digital Interface: SDI-12, RS485</li> <li>• Built in rechargeable battery for power source</li> <li>• Built in charge controller to charge the battery</li> <li>• Should use solar panels to charge the internal battery</li> <li>• Should use 2.4Ghz for radio communication</li> <li>• The battery should last at least a month without solar charging</li> </ul>
9	1 unit	<b>Protection Pipe:</b> to install the sensor into the lake
10	1 unit	<b>Data Logger for recording and restoring data:</b> Should have: Analog Input: <ul style="list-style-type: none"> <li>• No. of Channels: 4 Differential or 8 single ended (SE) individually configured channel with 24 bit resolution.</li> <li>• Input range: (0-20ma, 4-20ma, 0-1v, 0-5v, 0-10v, 2-10v etc.)</li> <li>• Pulse counters: 2 Counter/frequency inputs</li> <li>• Switch closure (minimum switch closer time 5ms)</li> <li>• Digital Ports: 4 Input Output ports (RS-485, RS-232 &amp; SDI 12etc.)v Up to 10 SDI 12 ports should be supported</li> </ul> Storage: <ul style="list-style-type: none"> <li>• Device: SRAM/ Flash</li> <li>• Flash Program Memory for operating system: 2MB or more SRAM for CPU / data storage: 4MB or more</li> </ul>

		<ul style="list-style-type: none"> <li>• External Flash memory: &gt; 16 GB flash storage</li> <li>• Operating Voltage: 12Volt</li> <li>• Communication Ports: Simultaneous communication on all ports</li> <li>• Should have wireless sensor interface features.</li> <li>• Operating Temperature: - 40 ~ + 60 C°</li> <li>• Processor: 32bit</li> <li>• LCD Display: Alphanumeric Display for live and archived data.</li> <li>• Timer: Real time synchronization with international time servers.</li> <li>• Warranty: 1-years against defects in materials and workmanship.</li> <li>• Automatically collect data from sensors, store in memory and transmit database to server located in Kathmandu (<a href="http://www.hydrology.gov.np">www. hydrology.gov.np</a>).</li> <li>• Data logger configuration settings and polling rate must be controllable and accessible via internet.</li> <li>• The sensors channels (Digital, Analog and counter) must be compatible with data logger.</li> <li>• Simultaneous data transmission should be through CDMA / GSM/ IRIDIUM/ WIFI networks.</li> <li>• Capability to store data for at least 6 years.</li> <li>• Capability to send SMS and email alerts during emergencies.</li> <li>• System capable of monitoring power and logger status (errors, battery, voltage and power supply conditions) posted to database server for monitoring power and logger.</li> <li>• PC based and web based software for programming, configuring remotely via the server.</li> </ul>
11	1 unit	<p><b>Communication Module:</b> Should have:</p> <ul style="list-style-type: none"> <li>• Economical service selection</li> <li>• Service selection according to signal strength.</li> </ul> <p><b>CDMA:</b></p> <ul style="list-style-type: none"> <li>• access mode: Standard CDMA 2000 1X CDMA</li> <li>• CDMA protocols:IS-95 A/B, IS-98A, IS-126,IS-637A, IS-683, IS-707A, IS-2000</li> <li>• Frequency: 800 Mhz between Tx and Rx:45Mhz for800M</li> <li>• Cellular Rx sensitivity: -104 dBm (FER &lt;=0.5%).</li> <li>• Rx signal Transmission range: -25 dBm – 104dBm (FER&lt;=0.5%)</li> <li>• Rx signal Receiving range: -25dBm - 104dBm (FER&lt;=0.5%)</li> <li>• SMS: Supports Text</li> <li>• Data: Supports internal TCP/ IP stack</li> <li>• Data Speed: Up/down link data rate 153.6kbps</li> <li>• UIM Interface: UIM card Interface</li> <li>• Antenna interface: 50 Ohms input impedance</li> </ul> <p><b>GSM/GPRS:</b></p> <ul style="list-style-type: none"> <li>• Rx /Tx frequency interval: <ul style="list-style-type: none"> <li>o 45Mhz for GSM 850 / 45Mhz for EGSM 900 / 95Mhz for DCS 1800 / 80 Mhz for PCS 1900</li> </ul> </li> <li>• SMS: Supports Text</li> <li>• Data: Supports internal TCP/ IP stack</li> <li>• Data Speed: Maximum upload at 85.6Kbps and download at 42.8Kbps</li> </ul>

		<ul style="list-style-type: none"> <li>• SIM Interface: SIM card Interface</li> <li>• Antenna interface: 50 Ohms input impedance</li> <li>• Encrypted data transmission through HTTP and FTP</li> </ul> <p><b>CPE Wifi gateway:</b></p> <ul style="list-style-type: none"> <li>• Frequency: 2 Ghz or 5 Ghz</li> <li>• Throughput: &gt; 50 Mbps</li> <li>• Range: &gt; 20 Km</li> <li>• Should include complete set with power supply, radio and antenna</li> <li>• Max. power consumption: &lt; 4W</li> <li>• Operating temperature: -30 to 70C</li> <li>• Should use shielded cables and surge protection</li> </ul> <p><b>Iridium:</b></p> <ul style="list-style-type: none"> <li>• Complete end-to-end system to transmit data from remote loggers to the Central database system via SBD communication.</li> </ul> <p>Encrypted data transmission through HTTP and FTP.</p>
12	1 Set	<p><b>Solar Panel, Battery, Charge controller and accessories:</b></p> <ul style="list-style-type: none"> <li>• Solar PV Panel including stand: 2 x 50 Watts, 12V</li> <li>• Battery: VRLA battery, 2 x 12V 42Ah, high performance specially designed for use in very low temperatures.</li> <li>• <i>Solar Charge Controller</i>: 5A charging current Capacity for 24 V systems.</li> <li>• With log/ report system for: <ul style="list-style-type: none"> <li>o Charging Current</li> <li>o Load Current</li> <li>o Battery Voltage</li> <li>o Charging Voltage</li> <li>o Display battery charge level</li> </ul> </li> <li>• Smart control system to cut off load in critical battery conditions.</li> <li>• Interface: Digital SDI-12</li> </ul>
13	1 Set	<p><b>Mast:</b></p> <p>Material: Aluminum alloy.</p> <p>Type: Tripod Mast of 3m height with tapering top built on round pipe more than 3" diameter of height 3m.</p> <p>Hinge base and bolts: Stainless steel</p> <p>Guy wire: 3 sets stainless steel</p> <p>Support: Tilt able support.</p>
14	1 Set	<p><b>Weather proof Housing system complete set:</b></p> <p>Should be weather proof metal housing:</p> <ul style="list-style-type: none"> <li>• Dimension 500 x 700 x 250 mm</li> <li>• Protection category: IP 66</li> <li>• NEMA 4</li> <li>• Lightning and Grounding: Standard Lightning and grounding required. The DCP should also be grounded separately.</li> <li>• Surge Protection: All connections to the Datalogger and accessories surge protected for 1.5 KVA.</li> <li>• Cables and Connectors: All cables and connectors of rugged industrial grade with corrosion and climate/environment proof.</li> </ul>

### **Item B: GLOF Sensing Equipment**

During the Glacier Lake Outburst all equipment in the vicinity of the lake might be washed away. Hence the data collection platform for GLOF sensing must be placed at a higher altitude than the maximum flood level of the Imja Lake whereas the sensors need to be at a lower altitude to sense flood. The sensors used to detect the GLOF will communicate with the DCP using low power wireless communication built into the wireless remote terminal unit.

Item	QTY	Description of Goods
<b>1</b>	<b>Automatic GLOF Sensors for Upstream - 1 unit</b>	
<b>1.1</b>	<b>3 units</b>	<b>Volumetric Water Content Sensor</b> The volumetric water content sensor should measure water content using dielectric constant of the media using capacitance / frequency domain technology. The sensor should also be able to measure temperature to detect ice formation Should have: <ul style="list-style-type: none"> <li>• Measurement range: 0 to 100% VWC</li> <li>• Measurement accuracy: <math>\pm 3\%</math> VWC</li> <li>• Supply voltage: 12V</li> <li>• Digital Interface: SDI- 12</li> <li>• Measurement duration: 150ms</li> <li>• Operating temperature range: -40 to 50°C</li> <li>• Current consumption (during measurement): 3ma</li> <li>• Current consumption (during asleep): 0.03ma</li> </ul>
<b>1.2</b>	<b>2 units</b>	<b>Moraine Dam Movement Sensor</b> <ul style="list-style-type: none"> <li>• The sensor should uses a combination of a 3 axis gyroscope and a 3 axis accelerometer to determine change in inclination, vibration and angular velocity</li> <li>• Accelerometer range: <math>\pm 2g</math></li> <li>• Gyroscope range: <math>\pm 250^\circ/\text{sec}</math></li> <li>• Resolution: 16 bit ADC</li> </ul>
<b>1.3</b>	<b>5 units</b>	<b>Wireless Remote Terminal Unit</b> The wireless transceiver is required to fetch data from the wireless sensor network that will be placed at lower level to detect glacier lake outburst. <ul style="list-style-type: none"> <li>• Digital Interface: SDI-12, RS485</li> <li>• Built in rechargeable battery for power source</li> <li>• Built in charge controller to charge the battery</li> <li>• Should use solar panels to charge the internal battery</li> <li>• Should use 2.4Ghz for radio communication</li> <li>• The battery should last at least a month without solar charging</li> </ul>
<b>2</b>	<b>Automatic GLOF Sensors for downstream - 1 unit</b>	
<b>2.1</b>	<b>1 unit</b>	<b>Water level Sensor (Radar Type):</b> Should have: <ul style="list-style-type: none"> <li>• Standard Range: Up To 30 meters.</li> <li>• Accuracy (depth&lt;10m): <math>\pm 5</math> mm</li> </ul>

		<ul style="list-style-type: none"> <li>● Frequency: 24~26 GHz</li> <li>● Antenna: Flat type</li> <li>● Beam angle: 6° to 12°</li> <li>● Interface: SDI-12</li> <li>● Baud Rate:1200</li> <li>● Protocol: SDI-12, 7-bit even parity, 1 stop bit</li> <li>● SDI-12 measurement sequence:≤20 seconds</li> <li>● Voltage Input: 12V ±2V DC</li> <li>● Surge Protection: Built in, 1.5 KVA</li> <li>● Operating Temperature: -40° C to +60° C</li> <li>● Storage Temperature:-40° C to +80° C</li> <li>● Temperature Sensitivity: average TK:&lt; 3 mm/10 K, max 5 mm over the entire temperature range -40° C to +80° C</li> </ul>
2.2	3 unit	<p><b>Volumetric Water Content Sensor</b></p> <p>The volumetric water content sensor should measure water content using dielectric constant of the media using capacitance / frequency domain technology. The sensor should also be able to measure temperature to detect ice formation</p> <p>Should have:</p> <ul style="list-style-type: none"> <li>● Measurement range: 0 to 100% VWC</li> <li>● Measurement accuracy: <math>\pm 3\%</math> VWC</li> <li>● Supply voltage: 12V</li> <li>● Digital Interface: SDI- 12</li> <li>● Measurement duration: 150ms</li> <li>● Operating temperature range: -40 to 50°C</li> <li>● Current consumption (during measurement): 3ma</li> <li>● Current consumption (during asleep): 0.03ma</li> </ul>
2.3	1 unit	<p><b>Digital Sound Metering Sensor</b></p> <p>Specification:</p> <ul style="list-style-type: none"> <li>● Sound metering: 0 to 120 dB</li> <li>● Acoustic overload point: 120 dBSPL</li> <li>● Signal to noise ratio: 60 dB</li> <li>● Sensitivity: -26 dBFS</li> </ul> <p>When the sound decibel exceeds certain threshold, sensor should also be capable of logging and transmitting sound clips to the server for analysis.</p>
2.4	1 unit	<p><b>Camera for Harsh Environment</b></p> <p>The camera should be designed to work for very harsh environment.</p> <p>Specification:</p> <ul style="list-style-type: none"> <li>● Image standard: Compressed JPG images</li> <li>● Video resolution: 720P</li> <li>● Image resolution: 5 megapixels</li> <li>● Window defroster to prevent and remove light frost and icing from the cameras window</li> <li>● Communication interface: RS-232, RS-485 and ethernet 10/100 interface</li> <li>● Communication protocols: PakBus, FTP, email and web page interface</li> </ul>



		<ul style="list-style-type: none"> <li>Operating power: 12 to 16 Vdc</li> <li>Operating current drain: 250ma</li> <li>Quiescent current: <math>\leq 1</math> ma (off power mode)</li> <li>Memory Card Interface: SD card, FAT32, JPEG (image)</li> <li>Weatherproof enclosure for harsh environments</li> <li>Operating temperature: -30 °C to + 50°C</li> </ul>
2.5	4 units	<p><b>Wireless Remote Terminal Unit</b></p> <p>The wireless transceiver is required to fetch data from the wireless sensor network that will be placed at lower level to detect glacier lake outburst.</p> <ul style="list-style-type: none"> <li>Digital Interface: SDI-12, RS485</li> <li>Built in rechargeable battery for power source</li> <li>Built in charge controller to charge the battery</li> <li>Will use solar panels to charge the internal battery</li> <li>Should use 2.4Ghz for radio communication</li> <li>The battery should last at least a month without solar charging</li> </ul>
3	2 units	<p><b>Data logger</b></p> <p>The data logger should have following features:</p> <ul style="list-style-type: none"> <li>The data logger should be remotely configurable to change any settings in the system.</li> <li>Besides logging sensor parameters, it should also log battery voltage, solar voltage, charging current, and load current to monitor health of battery and communication errors to know about communication status.</li> <li>The data logger should also support micro SD card as secondary backup for data storage. Stored data should be easily retrieved through a pen drive.</li> <li>It should have internal battery-backed real time clock that automatically synchronizes its time with global time server.</li> <li>Data Logger should have digital interfaces - SDI12, RS485, RS232 and analog interfaces.</li> <li>PC based and web based software for programming, multi-tasking, configuring remotely.</li> <li>Simultaneous data transmission should be through CDMA / GSM/ IRIDIUM/ WIFI networks simultaneously.</li> <li>Capability to send SMS and email alerts during emergencies.</li> <li>It should withstand harsh environmental condition with operating temperature ranging from -20 deg C to +60 deg C</li> <li>Warranty: 1-years against defects in materials and workmanship.</li> </ul> <p><b>Specifications:</b></p> <ul style="list-style-type: none"> <li>Device: SRAM/ Flash</li> <li>Flash Program Memory for operating system: 2MB or more SRAM for CPU / data storage: 4MB or more</li> <li>External Flash memory: &gt; 16 GB flash storage</li> </ul>

		<ul style="list-style-type: none"> <li>● Operating Voltage: 12Volt</li> <li>● Communication Ports: Simultaneous communication on all ports</li> <li>● Should have wireless sensor interface features.</li> <li>● Operating Temperature: - 40 ~ + 60 C°</li> <li>● Processor: 32bit</li> <li>● A/D converter: &gt;=10bit</li> <li>● LCD Display: Alphanumeric Display for live and archived data.</li> <li>● Timer: Real time synchronization with international time servers.</li> </ul> <p><b>Interfaces/Ports:</b></p> <ul style="list-style-type: none"> <li>● 4 Input Output ports (RS-485, RS-232 &amp; SDI 12.) Up to 10 SDI 12 ports should be supported</li> <li>● No. of Channels: 4 Differential or 8 single ended (SE) individually configured channel</li> <li>● Input range: (0-20ma, 4-20ma, 0-1v, 0-5v, 0-10v, 2-10v etc.)</li> <li>● Pulse counters: 2 Counter/frequency inputs</li> <li>● Switch closure (minimum switch closer time 5ms)</li> </ul>
4	2 units	<p><b>Communication Module</b></p> <p>The communication from the DCP to the server should be very reliable. The communication module should support following communication channels:</p> <p><b>CDMA:</b></p> <ul style="list-style-type: none"> <li>● access mode: Standard CDMA 2000 1X CDMA</li> <li>● CDMA protocols: IS-95 A/B, IS-98A, IS-126, IS-637A, IS-683, IS-707A, IS-2000</li> <li>● Frequency: 800 Mhz between Tx and Rx: 45Mhz for 800M</li> <li>● Cellular Rx sensitivity: -104 dBm (FER &lt;=0.5%).</li> <li>● Rx signal Transmission range: -25 dBm – 104dBm (FER &lt;=0.5%)</li> <li>● Rx signal Receiving range: -25dBm - 104dBm (FER &lt;=0.5%)</li> <li>● SMS: Supports Text</li> <li>● Data: Supports internal TCP/ IP stack</li> <li>● Data Speed: Up/down link data rate 153.6kbps</li> <li>● UIM Interface: UIM card Interface</li> <li>● Antenna interface: 50 Ohms input impedance</li> </ul> <p><b>GSM/GPRS:</b></p> <ul style="list-style-type: none"> <li>● Rx /Tx frequency interval: <ul style="list-style-type: none"> <li>○ 45Mhz for GSM 850 / 45Mhz for EGSM 900 / 95Mhz for DCS 1800 / 80 Mhz for PCS 1900</li> </ul> </li> <li>● SMS: Supports Text</li> <li>● Data: Supports internal TCP/ IP stack</li> <li>● Data Speed: Maximum upload at 85.6Kbps and download at 42.8Kbps</li> <li>● SIM Interface: SIM card Interface</li> <li>● Antenna interface: 50 Ohms input impedance</li> <li>● Encrypted data transmission through HTTP and FTP</li> </ul> <p><b>CPE Wifi gateway:</b></p> <ul style="list-style-type: none"> <li>● Frequency: 2 Ghz or 5 Ghz</li> <li>● Throughput: &gt; 50 Mbps</li> <li>● Range: &gt; 20 Km</li> <li>● Should include complete set with power supply, radio and antenna</li> <li>● Max. power consumption: &lt; 4W</li> <li>● Operating temperature: -30 to 70C</li> </ul>

		<ul style="list-style-type: none"> <li>Should use shielded cables and surge protection</li> </ul> <b>Iridium:</b> <ul style="list-style-type: none"> <li>Complete end-to-end system to transmit data from remote loggers to the Central database system via SBD communication.</li> <li>Encrypted data transmission through HTTP and FTP.</li> </ul> <p>* Signal strengths, communication errors should be logged by datalogger</p> <p>* Any changes in the modem parameters should be achievable through web browser.</p>
5	2 sets	<b>Solar Panel, Battery, Charge controller and accessories:</b> <ul style="list-style-type: none"> <li>Solar PV Panel including stand: 100 Watts, 12V</li> <li>Battery: VRLA battery, 2 x 12v 42Ah, high performance specially designed for use in very low temperatures.</li> <li><i>Solar Charge Controller</i>: 5A charging current Capacity for 24 V systems.</li> <li>With log/ report system for: <ul style="list-style-type: none"> <li>Charging Current</li> <li>Load Current</li> <li>Battery Voltage</li> <li>Charging Voltage</li> <li>Display battery charge level</li> </ul> </li> <li>Smart control system to cut off load in critical battery conditions.</li> <li>Interface: Digital SDI-12</li> </ul>
6	2 sets	<b>Weather proof Housing system complete set:</b> Should be weatherproof metal housing: <ul style="list-style-type: none"> <li>Dimension 500 x 700 x 250 mm</li> <li>Protection category: IP 66</li> <li>NEMA 4</li> <li>Lightning and Grounding: Standard Lightning and grounding required, the DCP should be grounded separately.</li> <li>Surge Protection: All connections to the Data logger and accessories surge protected for 1.5 KVA.</li> <li>Cables and Connectors: All cables and connectors of rugged industrial grade with corrosion and climate/environment proof.</li> </ul>
7	2 sets	<b>Mast:</b> <ul style="list-style-type: none"> <li>Material: Aluminum alloy.</li> <li>Type: Tripod Mast of 3m height with tapering top built on round pipe more than 3" diameter of height 3m.</li> <li>Hinge base and bolts: Stainless steel</li> <li>Guy wire: 3 sets stainless steel</li> <li>Support: Tilt able support.</li> </ul>

### Item C: Wireless Local Area Network

Using a wireless local area network, the communication between various sensing stations and audio emergency notification system can be made more reliable and lower the communication cost. For maximum coverage a repeater station needs to be placed at Kongde which has an altitude of 4500 masl. The repeater station from Kongde will be connected to two distribution base stations at Chukung Ri and at Dingboche.

Item	QTY	Description/ Specification of Goods
1	1 set	<b>Repeater Station at Kongde</b> The repeater station at Kongde will have the following equipment: <ul style="list-style-type: none"> <li>• Wireless Bridge to connect to Namche</li> <li>• Wireless Bridge to connect to the base station at Chukung Ri</li> <li>• Wireless Bridge to connect to the base station at Dingboche</li> <li>• Switch to connect all the bridges</li> <li>• Solar Panel for Power Source</li> <li>• Battery bank for backup</li> <li>• Tower mast</li> <li>• Solar Charge Controller</li> <li>• Remote Terminal Unit for health monitoring</li> <li>• Communication module with CDMA and GSM modems to communicate faults when the WAN breaks down</li> </ul>
2	1 unit	<b><u>Specification:</u></b> <b>Wireless Bridge</b> <ul style="list-style-type: none"> <li>• Operating Temperature: -30 to 75° C</li> <li>• Operating Humidity: 5 to 95% Non-Condensing</li> <li>• Maximum Power Consumption: 6.5 W</li> <li>• Wind Survivability: 200 km/hr</li> <li>• Operating Frequency: 2.4 GHz</li> <li>• Power Supply: 24V PoE</li> <li>• Networking Interface: 10/100 Mbps, Full duplex</li> <li>• Output Power: 23dBm ± 2dB</li> <li>• Sensitivity: -94dBm ± 2dB</li> </ul> Enclosure: Outdoor UV Stabilized <ul style="list-style-type: none"> <li>• Connections: Waterproof</li> </ul>

3	1 unit	<b>Switch</b> <ul style="list-style-type: none"> <li>Operating Temperature: -30 to 75° C</li> <li>Operating Humidity: 5 to 95% Non-Condensing</li> <li>Maximum Power Consumption: 8.5 W</li> <li>Power Supply: 24V</li> <li>Networking Interface: 10/100 Mbps, Full duplex</li> <li>Enclosure: IP30 protection</li> </ul>
4	1 unit	<b>Remote Terminal Unit</b> The remote terminal unit will monitor the health of the repeater station and will post the data to the central server. <ul style="list-style-type: none"> <li>Will connect to the charge controller to monitor different parameters</li> <li>The health status can be transmitted to the central server using the wireless bridge or using the communication module.</li> </ul>
5	1 unit	<b>Communication Module:</b> Should have: <ul style="list-style-type: none"> <li>Economical service selection</li> <li>Service selection according to signal strength.</li> </ul> <b>CDMA:</b> <ul style="list-style-type: none"> <li>access mode: Standard CDMA 2000 1X CDMA</li> <li>CDMA protocols:IS-95 A/B, IS-98A, IS-126,IS-637A, IS-683, IS-707A, IS-2000</li> <li>Frequency: 800 MHz between Tx and Rx:45Mhz for800M</li> <li>Cellular Rx sensitivity: -104 dBm (FER &lt;=0.5%).</li> <li>Rx signal Transmission range: -25 dBm – 104dBm (FER&lt;=0.5%)</li> <li>Rx signal Receiving range: -25dBm - 104dBm (FER&lt;=0.5%)</li> <li>SMS: Supports Text</li> <li>Data: Supports internal TCP/ IP stack</li> <li>Data Speed: Up/down link data rate 153.6kbps</li> <li>UIM Interface: UIM card Interface</li> <li>Antenna interface: 50 Ohms input impedance</li> </ul> <b>GSM/GPRS:</b> <ul style="list-style-type: none"> <li>Rx /Tx frequency interval: <ul style="list-style-type: none"> <li>45Mhz for GSM 850 / 45Mhz for EGSM 900 / 95Mhz for DCS 1800 / 80 Mhz for PCS 1900</li> </ul> </li> <li>SMS: Supports Text</li> <li>Data: Supports internal TCP/ IP stack</li> <li>Data Speed: Maximum upload at 85.6Kbps and download at 42.8Kbps</li> <li>SIM Interface: SIM card Interface</li> <li>Antenna interface: 50 Ohms input impedance</li> <li>Encrypted data transmission through HTTP and FTP</li> </ul>

6	1 set	<p><b>Solar Panels, Batteries &amp; Charge Controllers:</b></p> <p>The solar panels, batteries and charge controllers will be chosen according to the requirement of the Repeater Station. The repeater station should operate for 7 days even without any sunlight. The charge controller should have a digital interface such that the different parameters can be monitored.</p>
7	1 set	<p><b>Base Station at Dingboche</b></p> <p>The base station at Dingboche will have the following equipment:</p> <ul style="list-style-type: none"> <li>• Wireless Bridge to connect to Kongde</li> <li>• Distribution Base Station</li> <li>• Distribution Base Antenna X 2</li> <li>• Switch</li> <li>• Solar Panel for Power Source</li> <li>• Battery Bank for Backup</li> <li>• Tower Mast</li> <li>• Solar Charge Controller</li> <li>• Remote Terminal Unit for health monitoring</li> <li>• Communication module with CDMA and GSM modems</li> </ul> <p><b>Specification:</b></p> <p><b>Wireless Bridge x 1 unit</b></p> <ul style="list-style-type: none"> <li>• Operating Temperature: -30 to 75° C</li> <li>• Operating Humidity: 5 to 95% Non-Condensing</li> <li>• Maximum Power Consumption: 6.5 W</li> <li>• Wind Survivability: 200 km/hr</li> <li>• Operating Frequency: 2.4 GHz</li> <li>• Power Supply: 24V PoE</li> <li>• Networking Interface: 10/100 Mbps, Full duplex</li> <li>• Output Power: 23dBm ± 2dB</li> <li>• Sensitivity: -94dBm ± 2dB</li> <li>• Enclosure: Outdoor UV Stabilized</li> <li>• Connections: Waterproof</li> </ul> <p><b>Wireless Distribution Base Antenna x 2 units for each station</b></p> <ul style="list-style-type: none"> <li>• Operating Temperature: -30 to 75° C</li> <li>• Operating Humidity: 5 to 95% Non-Condensing</li> <li>• Wind Survivability: 200 km/hr</li> <li>• Gain: 15 dBi</li> <li>• Connections: Waterproof</li> </ul> <p><b>Wireless Distribution Base Station x 1 unit</b></p> <ul style="list-style-type: none"> <li>• Operating Temperature: -30 to 75° C</li> <li>• Operating Humidity: 5 to 95% Non-Condensing</li> <li>• Maximum Power Consumption: 8.5 W</li> <li>• Wind Survivability: 200 km/hr</li> </ul>

		<ul style="list-style-type: none"> <li>● Operating Frequency: 2.4 GHz</li> <li>● Power Supply: 24V PoE</li> <li>● Networking Interface: 10/100 Mbps, Full duplex</li> <li>● Output Power: 27dBm <math>\pm</math> 2dB</li> <li>● Sensitivity: -96dBm <math>\pm</math> 2dB</li> <li>● Enclosure: Outdoor UV Stabilized</li> <li>● Connections: Waterproof</li> </ul> <p><b>Switch x 1 unit</b></p> <ul style="list-style-type: none"> <li>● Operating Temperature: -30 to 75° C</li> <li>● Operating Humidity: 5 to 95% Non-Condensing</li> <li>● Maximum Power Consumption: 8.5 W</li> <li>● Power Supply: 24V</li> <li>● Networking Interface: 10/100 Mbps, Full duplex</li> <li>● Enclosure: IP30 protection</li> </ul> <p><b>Remote Terminal Unit x 1 unit</b></p> <p>The remote terminal unit will monitor the health of the repeater station and will post the data to the central server.</p> <ul style="list-style-type: none"> <li>● Will connect to the charge controller to monitor different parameters</li> <li>● The health status can be transmitted to the central server using the wireless bridge or using the communication module.</li> </ul> <p><b>Communication Module x 1 unit</b></p> <p>Should have:</p> <ul style="list-style-type: none"> <li>● Economical service selection</li> <li>● Service selection according to signal strength.</li> </ul> <p><b>CDMA:</b></p> <ul style="list-style-type: none"> <li>● access mode: Standard CDMA 2000 1X CDMA</li> <li>● CDMA protocols: IS-95 A/B, IS-98A, IS-126, IS-637A, IS-683, IS-707A, IS-2000</li> <li>● Frequency: 800 Mhz between Tx and Rx: 45Mhz for 800M</li> <li>● Cellular Rx sensitivity: -104 dBm (FER <math>\leq</math> 0.5%).</li> <li>● Rx signal Transmission range: -25 dBm – 104dBm (FER <math>\leq</math> 0.5%)</li> <li>● Rx signal Receiving range: -25dBm - 104dBm (FER <math>\leq</math> 0.5%)</li> <li>● SMS: Supports Text</li> <li>● Data: Supports internal TCP/ IP stack</li> <li>● Data Speed: Up/down link data rate 153.6kbps</li> <li>● UIM Interface: UIM card Interface</li> <li>● Antenna interface: 50 Ohms input impedance</li> </ul> <p><b>GSM/GPRS:</b></p> <ul style="list-style-type: none"> <li>● Rx /Tx frequency interval: <ul style="list-style-type: none"> <li>○ 45Mhz for GSM 850 / 45Mhz for EGSM 900 / 95Mhz for DCS 1800 / 80 Mhz for PCS 1900</li> </ul> </li> </ul>
--	--	--

		<ul style="list-style-type: none"> <li>• SMS: Supports Text</li> <li>• Data: Supports internal TCP/ IP stack</li> <li>• Data Speed: Maximum upload at 85.6Kbps and download at 42.8Kbps</li> <li>• SIM Interface: SIM card Interface</li> <li>• Antenna interface: 50 Ohms input impedance</li> <li>• Encrypted data transmission through HTTP and FTP</li> </ul> <p><b>Solar Panels, Batteries &amp; Charge Controllers x 1 set</b></p> <p>The solar panels, batteries and charge controllers will be chosen according to the requirement of the Repeater Station. The repeater station should operate for 7 days even without any sunlight. The charge controller should have a digital interface such that the different parameters can be monitored.</p>
8	1 set	<p><b>Base Station at Chukung Ri</b></p> <p>The base station at Chukung Ri will have the following equipment:</p> <ul style="list-style-type: none"> <li>• Wireless Bridge to connect to Kongde</li> <li>• Distribution Base Station</li> <li>• Distribution Base Antenna X 2</li> <li>• Solar Panel for Power Source</li> <li>• Battery Bank for Backup</li> <li>• Tower Mast</li> <li>• Solar Charge Controller</li> <li>• Remote Terminal Unit for health monitoring</li> <li>• Communication module with CDMA and GSM modems</li> </ul> <p><b><u>Specification:</u></b></p> <p><b>Wireless Bridge x 1 unit</b></p> <ul style="list-style-type: none"> <li>• Operating Temperature: -30 to 75° C</li> <li>• Operating Humidity: 5 to 95% Non-Condensing</li> <li>• Maximum Power Consumption: 6.5 W</li> <li>• Wind Survivability: 200 km/hr</li> <li>• Operating Frequency: 2.4 GHz</li> <li>• Power Supply: 24V PoE</li> <li>• Networking Interface: 10/100 Mbps, Full duplex</li> <li>• Output Power: 23dBm ± 2dB</li> <li>• Sensitivity: -94dBm ± 2dB</li> <li>• Enclosure: Outdoor UV Stabilized</li> <li>• Connections: Waterproof</li> </ul> <p><b>Wireless Distribution Base Antenna x 2 units for each station</b></p> <ul style="list-style-type: none"> <li>• Operating Temperature: -30 to 75° C</li> <li>• Operating Humidity: 5 to 95% Non-Condensing</li> <li>• Wind Survivability: 200 km/hr</li> <li>• Gain: 15 dBi</li> <li>• Connections: Waterproof</li> </ul>



		<p><b>Wireless Distribution Base Station x 1 unit</b></p> <ul style="list-style-type: none"> <li>● Operating Temperature: -30 to 75° C</li> <li>● Operating Humidity: 5 to 95% Non-Condensing</li> <li>● Maximum Power Consumption: 8.5 W</li> <li>● Wind Survivability: 200 km/hr</li> <li>● Operating Frequency: 2.4 GHz</li> <li>● Power Supply: 24V PoE</li> <li>● Networking Interface: 10/100 Mbps, Full duplex</li> <li>● Output Power: 27dBm ± 2dB</li> <li>● Sensitivity: -96dBm ± 2dB</li> <li>● Enclosure: Outdoor UV Stabilized</li> <li>● Connections: Waterproof</li> </ul> <p><b>Switch x 1 unit</b></p> <ul style="list-style-type: none"> <li>● Operating Temperature: -30 to 75° C</li> <li>● Operating Humidity: 5 to 95% Non-Condensing</li> <li>● Maximum Power Consumption: 8.5 W</li> <li>● Power Supply: 24V</li> <li>● Networking Interface: 10/100 Mbps, Full duplex</li> <li>● Enclosure: IP30 protection</li> </ul> <p><b>Remote Terminal Unit x 1 unit</b></p> <p>The remote terminal unit will monitor the health of the repeater station and will post the data to the central server.</p> <ul style="list-style-type: none"> <li>● Will connect to the charge controller to monitor different parameters</li> <li>● The health status can be transmitted to the central server using the wireless bridge or using the communication module.</li> </ul> <p><b>Communication Module x 1 unit</b></p> <p>Should have:</p> <ul style="list-style-type: none"> <li>● Economical service selection</li> <li>● Service selection according to signal strength.</li> </ul> <p><b>CDMA:</b></p> <ul style="list-style-type: none"> <li>● access mode: Standard CDMA 2000 1X CDMA</li> <li>● CDMA protocols: IS-95 A/B, IS-98A, IS-126, IS-637A, IS-683, IS-707A, IS-2000</li> <li>● Frequency: 800 Mhz between Tx and Rx: 45Mhz for 800M</li> <li>● Cellular Rx sensitivity: -104 dBm (FER ≤ 0.5%).</li> <li>● Rx signal Transmission range: -25 dBm – 104dBm (FER ≤ 0.5%)</li> <li>● Rx signal Receiving range: -25dBm - 104dBm (FER ≤ 0.5%)</li> <li>● SMS: Supports Text</li> <li>● Data: Supports internal TCP/ IP stack</li> <li>● Data Speed: Up/down link data rate 153.6kbps</li> </ul>
--	--	--

		<ul style="list-style-type: none"> <li>• UIM Interface: UIM card Interface</li> <li>• Antenna interface: 50 Ohms input impedance</li> </ul> <p><b>GSM/GPRS:</b></p> <ul style="list-style-type: none"> <li>• Rx /Tx frequency interval: <ul style="list-style-type: none"> <li>o 45Mhz for GSM 850 / 45Mhz for EGSM 900 / 95Mhz for DCS 1800 / 80 Mhz for PCS 1900</li> </ul> </li> <li>• SMS: Supports Text</li> <li>• Data: Supports internal TCP/ IP stack</li> <li>• Data Speed: Maximum upload at 85.6Kbps and download at 42.8Kbps</li> <li>• SIM Interface: SIM card Interface</li> <li>• Antenna interface: 50 Ohms input impedance</li> <li>• Encrypted data transmission through HTTP and FTP</li> </ul> <p><b>Solar Panels, Batteries &amp; Charge Controllers x 1 set</b></p> <p>The solar panels, batteries and charge controllers will be chosen according to the requirement of the Repeater Station. The repeater station should operate for 7 days even without any sunlight. The charge controller should have a digital interface such that the different parameters can be monitored.</p>
--	--	---

**Item D: Audio Emergency Notification system**

ITEM	QTY	Description/Specification of Goods
<b>1</b>	<b>5 units</b>	<b>Remote Terminal Unit with Audio Codec</b> <ul style="list-style-type: none"> <li>• Remote triggering by CDMA, GSM, Wifi and Iridium</li> <li>• Live Public Address and /or pre-recorded text messages</li> <li>• Integrated Automatic Self-Monitoring with remote monitoring</li> <li>• Real Time Operating System</li> <li>• SIP compatible for live public address</li> <li>• Common Alerting Protocol (CAP) compliant</li> </ul>
<b>2</b>	<b>5 units</b>	<b>Horn Speakers Array</b> <ul style="list-style-type: none"> <li>• 40W RMS / 60W max</li> <li>• SPL &gt; 125dB/40W/1m</li> <li>• Material ABS or Stainless steel</li> <li>• Weatherproof Siren Horns</li> <li>• 360 Omni directional Sound Propagation</li> <li>• Sound should be audible from at least 700 meters both directions at 50 db</li> </ul>
<b>3</b>	<b>5 units</b>	<b>Audio Amplifier</b> <ul style="list-style-type: none"> <li>• Class D Audio Amplifier for power efficiency</li> <li>• Shutdown control for power efficiency</li> </ul>
<b>4</b>	<b>5 units</b>	<b>Communication Module:</b> Should have: <ul style="list-style-type: none"> <li>• Economical service selection</li> <li>• Service selection according to signal strength.</li> </ul> <b>CDMA:</b> <ul style="list-style-type: none"> <li>• access mode: Standard CDMA 2000 1X CDMA</li> <li>• CDMA protocols:IS-95 A/B, IS-98A, IS-126,IS-637A, IS-683, IS-707A, IS-2000</li> <li>• Frequency: 800 Mhz between Tx and Rx:45Mhz for800M</li> <li>• Cellular Rx sensitivity: -104 dBm (FER &lt;=0.5%).</li> <li>• Rx signal Transmission range: -25 dBm – 104dBm (FER&lt;=0.5%)</li> <li>• Rx signal Receiving range: -25dBm - 104dBm (FER&lt;=0.5%)</li> <li>• SMS: Supports Text</li> <li>• Data: Supports internal TCP/ IP stack</li> <li>• Data Speed: Up/down link data rate 153.6kbps</li> <li>• UIM Interface: UIM card Interface</li> <li>• Antenna interface: 50 Ohms input impedance</li> </ul>

		<p><b>GSM/GPRS:</b></p> <ul style="list-style-type: none"> <li>Rx /Tx frequency interval: <ul style="list-style-type: none"> <li>45Mhz for GSM 850 / 45Mhz for EGSM 900 / 95Mhz for DCS 1800 / 80 Mhz for PCS 1900</li> </ul> </li> <li>SMS: Supports Text</li> <li>Data: Supports internal TCP/ IP stack</li> <li>Data Speed: Maximum upload at 85.6Kbps and download at 42.8Kbps</li> <li>SIM Interface: SIM card Interface</li> <li>Antenna interface: 50 Ohms input impedance</li> <li>Encrypted data transmission through HTTP and FTP</li> </ul> <p><b>CPE Wifi gateway:</b></p> <ul style="list-style-type: none"> <li>Frequency: 2 Ghz or 5 Ghz</li> <li>Throughput: &gt; 50 Mbps</li> <li>Range: &gt; 20 Km</li> <li>Should include complete set with power supply, radio and antenna</li> <li>Max. power consumption: &lt; 4W</li> <li>Operating temperature: -30 to 70C</li> <li>Should use shielded cables and surge protection</li> </ul> <p><b>Iridium:</b></p> <ul style="list-style-type: none"> <li>Complete end-to-end system to transmit data from remote loggers to the Central database system via SBD communication.</li> <li>Encrypted data transmission through HTTP and FTP.</li> </ul>
5	5 units	<p><b>Power Supply</b></p> <ul style="list-style-type: none"> <li>24 Volt system</li> <li>Should use two 12V 42AH VRLA Batteries</li> </ul> <p><b>Solar Charge Controller</b></p> <ul style="list-style-type: none"> <li>5Amp 24 Volt digital solar charge controller</li> <li>SDI-12 Digital Interface to poll parameters: <ul style="list-style-type: none"> <li>Battery voltage</li> <li>Solar PV voltage</li> <li>Charging current</li> <li>Load current</li> </ul> </li> </ul> <p><b>Solar Panel</b></p> <ul style="list-style-type: none"> <li>24 Volt system</li> <li>60 Watts</li> <li>With stainless steel support</li> </ul>
6	5 units	<p><b>Weather proof Housing system complete set:</b></p> <p>Should be weatherproof metal housing:</p> <ul style="list-style-type: none"> <li>Dimension 500 x 700 x 250 mm</li> <li>Protection category: IP 66</li> <li>NEMA 4</li> </ul>

		<ul style="list-style-type: none"> <li>• Lightning and Grounding: Standard Lightning and grounding required</li> <li>• Earthing: The panel should also be grounded.</li> <li>• Cables and Connectors: All cables and connectors of rugged industrial grade with corrosion and climate/environment proof.</li> </ul>
<b>7</b>	<b>5 units</b>	<b>Mast:</b> <ul style="list-style-type: none"> <li>• Material: Aluminum alloy.</li> <li>• Type: Tripod Mast of 3m height with tapering top built on round pipe more than 3" diameter of height 3m.</li> <li>• Hinge base and bolts: Stainless steel</li> <li>• Guy wire: 3 sets stainless steel</li> <li>• Support: Tilt able support.</li> </ul>

### Item E: Server and Software

S.NO.	Qty	ITEM	Description/Specification of Goods
1	1	<b>Server Computer</b>	<p>A server computer will be required for running the customized software. The server should be of enterprise class and high performance.</p> <p>Specification:</p> <ul style="list-style-type: none"> <li>● At Least Intel Xenon processor E5-2600 product family</li> <li>● Processor: 2</li> <li>● Cache: 2.5Mb per core</li> <li>● Memory: 16Gb</li> <li>● Hard disk raid controller</li> <li>● Hard drive capacity: 3*1TB @ 15000 RPM</li> <li>● Hard drive bays: at least 4</li> <li>● Operating system: Linux or licensed Microsoft Windows server 2012</li> </ul>
2	1	<b>Online UPS</b>	<p>For uninterrupted operation of the server, an online UPS is required.</p> <p>Specification:</p> <ul style="list-style-type: none"> <li>● Power ratings: 2KVA</li> <li>● Input voltage range: 170V to 280 volts AC</li> <li>● Input frequency range: 47 to 53 Hz</li> <li>● Output waveform: Pure sine wave</li> <li>● Battery requirement: Enough battery for at least 6 hours operation without main lines</li> <li>● Communication port: RS-232</li> </ul>
3	2	<b>Customized Software</b>	<p>One software to be installed in Server Computer and other software to be installed in DHM server.</p> <p>A customized software needs to be developed with the following modules:</p> <ol style="list-style-type: none"> <li>1. Data Acquisition Module</li> <li>2. Data Processing Module</li> <li>3. Data Presentation Module</li> <li>4. Remote Device Configuration Module</li> <li>5. Automatic and Human Assisted Decision Support System</li> <li>6. Emergency Alert Dissemination Module</li> </ol> <p><b>Data Acquisition Module:</b></p>

			<p>This is the part of the software that receives data streams from various data collection platforms automatically. This should support encryption for security reasons.</p> <p><b>Data Processing Module</b></p> <ul style="list-style-type: none"> <li>● Quality Control <ul style="list-style-type: none"> <li>○ Data Validation based on rules</li> <li>○ Rules should be simple mathematical operation and / or user defined function based on time and data</li> <li>○ Invalid data should raise flags and alerts</li> </ul> </li> <li>● Data Aggregation <ul style="list-style-type: none"> <li>○ Derived parameters should be produced from existing parameters such as deriving discharge using water levels and rating curves.</li> <li>○ Aggregated data should raise flags and create alerts</li> </ul> </li> </ul> <p><b>Data Presentation Module</b></p> <p>The data presentation module should display data points in tabular formats and graphical format; real time, hourly, daily and monthly. The module should also support GIS, showing different points on a map.</p> <p><b>Remote Device Configuration Module</b></p> <p>The field devices such as data collection platforms, audio emergency notification system should be configurable remotely through web based interfaces via the server. It should support special administration rights for remote device configurations.</p> <p><b>Automatic and Human Assisted Decision Support System</b></p> <p>For upstream villages the alerts needs to be disseminated promptly as there is very less lead time. Whereas for the downstream villages there is enough time for the data to be verified by the government officials. Hence the decision support system should support both automatic and human assisted. During alert conditions the authorized experts are notified using SMS and emails. The experts then need to login to the system using internet and a web browser. They can then verify the data from different field devices, pictures from the camera and sound. The alert can be cancelled in case of false alarm.</p> <p>Specification:</p>
--	--	--	--

			<ul style="list-style-type: none"> <li>Should support logging in using a web browser or an android based application for interacting with experts</li> </ul> <p><b>Emergency Alert Dissemination Module</b></p> <p>The emergency alert Dissemination module interfaces the Decision Support System to the various media that can be used for alert dissemination such as SMS, email, audio emergency notification system, etc.</p> <p>Specification:</p> <ul style="list-style-type: none"> <li>Web interface for various interested participants to register their mobile numbers and email address to receive alerts</li> <li>GIS based application to send alerts to specific regions</li> <li>Android based mobile app to receive alerts using GPRS</li> <li>SIP based module to send out live public announcement</li> <li>Should be Common Alerting Protocol (CAP) Compliant</li> </ul>
--	--	--	---

**Item F: Equipment for Community Based Early Warning System**

ITEM	QTY	Description/Specification of Goods
<b>1</b>	<b>32 units</b>	<p><b>Hand Operated Siren</b></p> <ul style="list-style-type: none"> <li>Audible Range: 1.5 Km diameter</li> <li>Frequency: 400 Hz nominal</li> <li>Construction: Aluminum siren / steel frame</li> <li>Sound: Air raid warning type sound</li> </ul>
<b>2</b>	<b>32 units</b>	<p><b>PA Megaphones</b></p> <ul style="list-style-type: none"> <li>Type: Shoulder sling type</li> <li>Watts: 20 Watts</li> <li>Built in siren</li> <li>Microphone with volume control &amp; press-to-talk switch</li> <li>Dry cell &amp; 12V car battery operation</li> <li>All ABS body, sturdy yet lightweight</li> </ul>
<b>3</b>	<b>32 units</b>	<p><b>Manual Staff Gage</b></p> <ul style="list-style-type: none"> <li>Material: Aluminum with grooved markings in SI units</li> <li>Length: 1000mm</li> <li>Width: 100mm</li> <li>Thickness: 2mm</li> </ul>



### **Item G: Services**

Imja Lake and its associated glaciers and the moraine dam at 5010 m in Solukhumbu District. The site is remote and inaccessible by road and the nearest airport is at Lukla. The trekking routes are through Namche, Tengboche, Pangboche, **Dingboche**, **Chhukung** and finally to Imja Lake. The hotel facilities are available from Lukla to Chhukung. The Service Provider needs to arrange camping and foods for entire period during supply, delivery and installation of equipment, and during operations and maintenance period. The Kongde is at about 4500 masl and trekking time is 3-4 hours from Monjo. Similarly, the Chukung Ri is at about 5400 masl and trekking time is about 2-3 hours from Chukung.

<b>S.No.</b>	<b>Item</b>	<b>Description</b>
<b>1.</b>	<b>Documentation</b>	Equipment should be supplied with full documentation that should include user's manuals, operating instructions, Standard Operating Procedures, wiring diagrams.
<b>2.</b>	<b>Communication Charges</b>	It should Include: <ul style="list-style-type: none"><li>• Data charges for CDMA and GSM for 1 year</li><li>• Iridium SBD charges for 1 year</li><li>• 500kbps bandwidth from a local ISP</li></ul>
<b>3.</b>	<b>Training</b>	Training should include: <ul style="list-style-type: none"><li>• Installation of stations</li><li>• Operation and maintenance course that should include:<ul style="list-style-type: none"><li>■ Operation and Maintenance of Sensor</li><li>■ Data logger configuration</li><li>■ Remote Monitoring and troubleshooting</li><li>■ Site maintenance</li></ul></li><li>• One training session at Kathmandu and another session at Namche.</li><li>• Each session will have 3 days training with at least 20 participants.</li></ul>
<b>4.</b>	<b>Operations and Maintenance</b>	Operation and Maintenance of the system should be provided for 1 year, which can be extended upto warranty period of 3 years, to ensure proper functioning. The Service Provider has to mobilize its staff for periodic maintenance of the system.
<b>5.</b>	<b>Warranty</b>	Warranty on parts and equipment for a minimum period of 3 years.

## Section 3b: Related Services

Further to the Schedule of Requirements in the preceding Table, Bidders are requested to take note of the following additional requirements, conditions, and related services pertaining to the fulfillment of the requirements: *[check the condition that applies to this ITB, delete the entire row if condition is not applicable to the goods being procured]*

Delivery Term [INCOTERMS 2010] <i>(Pls. link this to price schedule)</i>	<input type="checkbox"/> FCA <input type="checkbox"/> CPT <input type="checkbox"/> CIP <input checked="" type="checkbox"/> <b>Duty, Delivery Paid (DDP)</b> <input type="checkbox"/> Other <i>Click here to specify</i>	
Exact Address of Delivery/Installation Location	<b>Community Based Flood and Glacial Lake Outburst Risk Reduction Project (CFGORRP)</b> <b>Imja Lake, Solukhumbu</b> <b>Nepal</b>	
Mode of Transport Preferred	<input checked="" type="checkbox"/> <b>AIR</b>	<input checked="" type="checkbox"/> <b>LAND</b>
	<input type="checkbox"/> SEA	<input type="checkbox"/> OTHER <i>[pls. specify]</i>
UNDP Preferred Freight Forwarder, if any <sup>10</sup>	N/A	
Distribution of shipping documents <i>(if using freight forwarder)</i>	N/A	
Delivery Date	<b>4 months from the issuance of Purchase Order (PO) and signing of the contract.</b>	
Customs, if needed, clearing shall be done by:	<input type="checkbox"/> UNDP <input checked="" type="checkbox"/> <b>Supplier</b> <input type="checkbox"/> Freight Forwarder	
Ex factory / Pre-shipment inspection	N/A	
Inspection upon delivery	<b>By the Project</b>	
Installation Requirements	<b>By Supplier</b>	
Testing Requirements	<b>By Supplier</b>	
Scope of Training on Operation and Maintenance	N/A	
Commissioning	<b>Yes</b>	
Technical Support Requirements	<b>Yes</b>	
Payment Terms <i>(max. advanced)</i>	<input checked="" type="checkbox"/> <b>70% upon delivery of materials at site with verification by Project.</b>	

<sup>10</sup>A factor of the INCOTerms stipulated in the ITB. The use of a UNDP preferred courier may be considered for purposes of ensuring forwarder's familiarity with procedures and processing of documentary requirements applicable to UNDP when clearing with customs authority of the country of destination.

payment is 20% of total price as per UNDP policy)	<input checked="" type="checkbox"/> <b>30% upon completion of installation at site with verification by Project.</b> <input type="checkbox"/> Max of 20% upon issuance of PO and the rest within 30 days from UNDP's acceptance of goods as specified and receipt of invoice
Conditions for Release of Payment	<input type="checkbox"/> Pre-shipment inspection <i>[pls. provide details]</i> <input checked="" type="checkbox"/> <b>Inspection at destination <i>[Project to verify invoice]</i></b> <input checked="" type="checkbox"/> <b>Installation <i>[Project to verify]</i></b> <input type="checkbox"/> Testing <i>[pls. provide details]</i> <input type="checkbox"/> Training on Operation and Maintenance <i>[pls. provide details]</i> <input checked="" type="checkbox"/> <b>Written Acceptance of Goods based on full compliance with ITB requirements</b> <input type="checkbox"/> Others <i>[pls. specify]</i>
After-sale services required	<input checked="" type="checkbox"/> <b>Warranty on Parts and Labor for minimum period of As indicated in Bill of Quantity</b> <input type="checkbox"/> Technical Support <input type="checkbox"/> Provision of Service Unit when pulled out for maintenance/repair <input type="checkbox"/> Others <i>[pls. specify]</i>
All documentations, including catalogs, instructions and operating manuals, shall be in this language	<input checked="" type="checkbox"/> <b>English</b> <input type="checkbox"/> French <input type="checkbox"/> Spanish <input type="checkbox"/> Others <i>[pls. specify, including dialects, if needed]</i>

## Section 4: Bid Submission Form<sup>11</sup>

***(This should be written in the Letterhead of the Bidder. Except for indicated fields, no changes may be made in this template.)***

---

Kathmandu, Nepal

Date: .../.../2014

To:

Dear Sir/Madam:

We, the undersigned, hereby offer to supply the goods and related services required for \_\_\_\_\_ in accordance with your Invitation to Bid dated *Insert: bid date*. We are hereby submitting our Bid, which includes the Technical Bid and Price Schedule.

We hereby declare that :

- a) All the information and statements made in this Bid are true and we accept that any misrepresentation contained in it may lead to our disqualification;
- b) We are currently not on the removed or suspended vendor list of the UN or other such lists of other UN agencies, nor are we associated with, any company or individual appearing on the 1267/1989 list of the UN Security Council;
- c) We have no outstanding bankruptcy or pending litigation or any legal action that could impair our operation as a going concern; and
- d) We do not employ, nor anticipate employing, any person who is or was recently employed by the UN or UNDP.

We confirm that we have read, understood and hereby fully accept the Schedule of Requirements and Technical Specifications describing the duties and responsibilities required of us in this ITB, and the General Terms and Conditions of UNDP's Standard Contract for this ITB.

We agree to abide by this Bid for *[insert: period of validity as indicated in Data Sheet]*.

We undertake, if our Bid is accepted, to initiate the supply of goods and provision of related services not later than the date indicated in the Data Sheet.

We fully understand and recognize that UNDP is not bound to accept this Bid, that we shall bear all costs associated with its preparation and submission, and that UNDP will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the evaluation.

We remain,

Yours sincerely,

---

<sup>11</sup> No deletion or modification may be made in this form. Any such deletion or modification may lead to the rejection of the Bid.

Authorized Signature [*In full and initials*]: \_\_\_\_\_  
Name and Title of Signatory: \_\_\_\_\_  
Name of Firm: \_\_\_\_\_  
Contact Details: \_\_\_\_\_

---

*[please mark this letter with your corporate seal, if available]*

---

## Section 5: Documents Establishing the Eligibility and Qualifications of the Bidder

### Bidder Information Form<sup>12</sup>

Date: *[insert date (as day, month and year) of Bid Submission]*

ITB No.: *[insert number of bidding process]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Bidder's Legal Name <i>[insert Bidder's legal name]</i>		
2. In case of Joint Venture (JV), legal name of each party: <i>[insert legal name of each party in JV]</i>		
3. Actual or intended Country/ies of Registration/Operation: <i>[insert actual or intended Country of Registration]</i>		
4. Year of Registration in its Location: <i>[insert Bidder's year of registration]</i>		
5. Countries of Operation	6. No. of staff in each Country	7. Years of Operation in each Country
8. Legal Address/es in Country/ies of Registration/Operation: <i>[insert Bidder's legal address in country of registration]</i>		
9. Value and Description of Top three (3) Biggest Contract for the past five (5) years		
10. Latest Credit Rating (Score and Source, if any)		
11. Brief description of litigation history (disputes, arbitration, claims, etc.), indicating current status and outcomes, if already resolved.		
12. Bidder's Authorized Representative Information  Name: <i>[insert Authorized Representative's name]</i> Address: <i>[insert Authorized Representative's Address]</i> Telephone/Fax numbers: <i>[insert Authorized Representative's telephone/fax numbers]</i> Email Address: <i>[insert Authorized Representative's email address]</i>		
13. Are you in the UNPD List 1267.1989 or UN Ineligibility List ? <input type="checkbox"/> YES or <input type="checkbox"/> NO		
14. Attached are copies of original documents of:  <input type="checkbox"/> All eligibility document requirements listed in the Data Sheet  <input type="checkbox"/> If Joint Venture/Consortium – copy of the Memorandum of Understanding/Agreement or Letter of Intent to form a JV/Consortium, or Registration of JV/Consortium, if registered  <input type="checkbox"/> If case of Government corporation or Government-owned/controlled entity, documents establishing legal and financial autonomy and compliance with commercial law.		

<sup>12</sup> The Bidder shall fill in this Form in accordance with the instructions. Apart from providing additional information, no alterations to its format shall be permitted and no substitutions shall be accepted.

# Joint Venture Partner Information Form (if Registered)<sup>13</sup>

Date: *[insert date (as day, month and year) of Bid Submission]*

ITB No.: *[insert number of bidding process]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Bidder's Legal Name: <i>[insert Bidder's legal name]</i>		
2. JV's Party legal name: <i>[insert JV's Party legal name]</i>		
3. JV's Party Country of Registration: <i>[insert JV's Party country of registration]</i>		
4. Year of Registration: <i>[insert Party's year of registration]</i>		
5. Countries of Operation	6. No. of staff in each Country	7. Years of Operation in each Country
8. Legal Address/es in Country/ies of Registration/Operation: <i>[insert Party's legal address in country of registration]</i>		
9. Value and Description of Top three (3) Biggest Contract for the past five (5) years		
10. Latest Credit Rating (if any) : <a href="#">Click here to enter text.</a>		
1. Brief description of litigation history (disputes, arbitration, claims, etc.), indicating current status and outcomes, if already resolved. <a href="#">Click here to enter text.</a>		
13. JV's Party Authorized Representative Information  Name: <i>[insert name of JV's Party authorized representative]</i> Address: <i>[insert address of JV's Party authorized representative]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers of JV's Party authorized representative]</i> Email Address: <i>[insert email address of JV's Party authorized representative]</i>		
14. Attached are copies of original documents of: <i>[check the box(es) of the attached original documents]</i>  <input type="checkbox"/> All eligibility document requirements listed in the Data Sheet <input type="checkbox"/> Articles of Incorporation or Registration of firm named in 2. <input type="checkbox"/> In case of government owned entity, documents establishing legal and financial autonomy and compliance with commercial law.		

<sup>13</sup> The Bidder shall fill in this Form in accordance with the instructions. Apart from providing additional information, No alterations to its format shall be permitted and no substitutions shall be accepted.

## Section 6: Technical Bid Form<sup>14</sup>

**INSERT TITLE OF THE ITB**

<b>Name of Bidding Organization / Firm:</b>	
<b>Country of Registration:</b>	
<b>Name of Contact Person for this Bid:</b>	
<b>Address:</b>	
<b>Phone / Fax:</b>	
<b>Email:</b>	

### SECTION 1: EXPERTISE OF FIRM/ ORGANISATION

*This section should fully explain the Bidder's resources in terms of personnel and facilities necessary for the performance of this requirement.*

**1.1 Brief Description of Bidder as an Entity:** Provide a brief description of the organization / firm submitting the Bid, its legal mandates/authorized business activities, the year and country of incorporation, and approximate annual budget, etc. Include reference to reputation, or any history of litigation and arbitration in which the organisation / firm has been involved that could adversely affect or impact the delivery of goods and/or performance of related services, indicating the status/result of such litigation/arbitration.

**1.2. Financial Capacity:** Based on the latest Audited Financial Statement (Income Statement and Balance Sheet) describe the financial capacity (liquidity, stand-by credit lines, etc.) of the bidder to engage into the contract. Include any indication of credit rating, industry rating, etc.

**1.3. Track Record and Experiences:** Provide the following information regarding corporate experience within at least the last five (5) years which are related or relevant to those required for this Contract.

Name of project	Client	Contract Value	Period of activity	Types of activities undertaken	Status or Date Completed	References Contact Details (Name, Phone, Email)

<sup>14</sup> Technical Bids not submitted in this format may be rejected.



## SECTION 2 - SCOPE OF SUPPLY, TECHNICAL SPECIFICATIONS, AND RELATED SERVICES

*This section should demonstrate the Bidder's responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the specifications.*

**2.1. Scope of Supply:** Please provide a detailed description of the goods to be supplied, indicating clearly how they comply with the technical specifications required by the ITB (see below table); describe how the organisation/firm will supply the goods and any related services, keeping in mind the appropriateness to local conditions and project environment.

Item No.	Description/ Specification of Goods	Source/ Manufacturer	Country of Origin	Qty	Quality Certificate/ Export Licences, etc. (indicate all that applies and if attached)

*A supporting document with full details may be annexed to this section*

**2.2. Technical Quality Assurance Mechanisms:** The bid shall also include details of the Bidder's internal technical and quality assurance review mechanisms, all the appropriate quality certificates, export licenses and other documents attesting to the superiority of the quality of the goods and technologies to be supplied.

**2.3. Reporting and Monitoring:** Please provide a brief description of the mechanisms proposed for this project for reporting to the UNDP and partners, including a reporting schedule.

**2.4. Subcontracting:** Explain whether any work would be subcontracted, to whom, how much percentage of the work, the rationale for such, and the roles of the proposed sub-contractors. Special attention should be given to providing a clear picture of the role of each entity and how everyone will function as a team.

**2.5. Risks / Mitigation Measures:** Please describe the potential risks for the implementation of this project that may impact achievement and timely completion of expected results as well as their quality. Describe measures that will be put in place to mitigate these risks.

**2.6 Implementation Timelines:** The Bidder shall submit a Gantt Chart or Project Schedule indicating the detailed sequence of activities that will be undertaken and their corresponding timing.

**2.7. Partnerships (Optional):** Explain any partnerships with local, international or other organizations that are planned for the implementation of the project. Special attention should be given to providing a clear picture of the role of each entity and how everyone will function as a team. Letters of commitment from partners and an indication of whether some or all have successfully worked together on other previous projects is encouraged.

**2.8. Anti-Corruption Strategy (Optional):** Define the anti-corruption strategy that will be applied in this project to prevent the misuse of funds. Describe the financial controls that will be put in place.

**2.9 Statement of Full Disclosure:** This is intended to disclose any potential conflict in accordance with the definition of "conflict" under Section 4 of this document, if any.

**2.10 Other:** Any other comments or information regarding the bid and its implementation.

### SECTION 3: PERSONNEL

**3.1 Management Structure:** Describe the overall management approach toward planning and implementing the contract. Include an organization chart for the management of the contract, if awarded.

**3.2 Staff Time Allocation:** Provide a spreadsheet will be included to show the activities of each personnel involved in the implementation of the contract. Where the expertise of the personnel is critical to the success of the contract, UNDP will not allow substitution of personnel whose qualifications had been reviewed and accepted during the bid evaluation. (If substitution of such a personnel is unavoidable, substitution or replacement will be subject to the approval of UNDP. No increase in costs will be considered as a result of any substitution).

**3.3 Qualifications of Key Personnel.** Provide the CVs for key personnel (Team Leader, Managerial and general staff) that will be provided to support the implementation of this project. CVs should demonstrate qualifications in area of expertise relevant to the Contract. Please use the format below:

<b>Name:</b>		
<b>Role in Contract Implementation:</b>		
<b>Nationality:</b>		
<b>Contact information:</b>		
<b>Countries of Relevant Work Experience:</b>		
<b>Language Skills:</b>		
<b>Education and other Qualifications:</b>		
<b>Summary of Experience:</b> <i>Highlight experience in the region and on similar projects.</i>		
<b>Relevant Experience (From most recent):</b>		
<b>Period: From – To</b>	<b>Name of activity/ Project/ funding organisation, if applicable:</b>	<b>Job Title and Activities undertaken/Description of actual role performed:</b>
<i>e.g. June 2010-January 2011</i>		
<i>Etc.</i>		
<i>Etc.</i>		
<b>References (minimum of 3):</b>	<i>Name Designation Organization Contact Information – Address; Phone; Email; etc.</i>	
<b>Declaration:</b>		
<p>I confirm my intention to serve in the stated position and present availability to serve for the term of the proposed contract. I also understand that any wilful misstatement described above may lead to my disqualification, before or during my engagement.</p> <p>_____</p> <p>_____</p> <p>Signature of the Nominated Team Leader/Member <span style="float: right;">Date Signed</span></p>		

## Section 7: Price Schedule Form<sup>15</sup>

The Bidder is required to prepare the Price Schedule as indicated in the Instruction to Bidders.

The Price Schedule must provide a detailed cost breakdown of all goods and related services to be provided, from unit price to lot prices. Separate figures must be provided for each functional grouping or category, if any.

Any estimates for cost-reimbursable items, such as travel of experts and out-of-pocket expenses, should be listed separately.

The format shown on the following pages is suggested for use as a guide in preparing the Price Schedule. The format includes specific expenditures, which may or may not be required or applicable but are indicated to serve as examples.

### A. Cost Breakdown per Deliverable Items\*

No.	Deliverables <i>[list them as referred to in the ITB]</i>	Expected Date of Delivery/Completion	Percentage of Total Price	Price (Lump Sum, All Inclusive)
	A. Equipment supply and delivery:			
1	Upon delivery of all equipment	31 <sup>st</sup> January 2015	70%	
2	Upon Installation and testing of Early Warning System	31 <sup>st</sup> March 2015	30%	
	Total		100%	
	B. Services			
1	Upon rendering of the services.		100%	

\* This shall be the basis of payment tranches

### B. Cost Breakdown by Cost Component:

The Bidders are requested to provide the cost breakdown for the above given prices for each deliverable based on the following format. UNDP shall use the cost breakdown for the price reasonability assessment purposes as well as the calculation of price in the event that both

<sup>15</sup> No deletion or modification may be made in this form. Any such deletion or modification may lead to the rejection of the Bid.

parties have agreed for additional set of goods and/or related services.

Deliverables and Sub-Components	Qty	Unit Price (a)	Total Price (b)
<b><u>Item A: Automatic Weather Station</u></b>			
Wind Speed and Director Sensor	1		
Temperature and RH Sensor	1		
Weighting Type Precipitation Gauge with Wind Shield	1		
Net Radiometer	1		
Pressure Sensor	1		
Snow Depth Sensor	1		
Water level sensor (pressure type)	1		
Wireless Remote Terminal Unit	1		
Protection Pipe	1		
Data Logger for recording and restoring data	1		
Communication Module	1		
Solar Panel, Battery, Charge controller and accessories	1 set		
Mast	1		
Weather proof housing system complete set	1		
Factory assembling and testing	LS		
Delivery and Installation at site	LS		
<b>Sub –Total (A)</b>			
<b><u>Item B: GLOF Sensing Equipment</u></b>			
<b>Automatic GLOF Sensors for Upstream - 1 unit</b>			
Volumetric Water Content Sensor	1		
Moraine Dam Movement Sensor	2		
Wireless Remote Terminal Unit	5		
<b>Automatic GLOF Sensors for downstream - 1 unit</b>			
Water level Sensor (Radar Type)	1		
Volumetric Water Content Sensor	3		
Digital Sound Metering Sensor	1		
Camera for Harsh Environment	1		
Wireless Remote Terminal Unit	4		
Data logger	2		
Communication Module	2		
Solar Panel, Battery, charge controller and accessories	2 set		
Weather proof housing system complete set	2		
Mast	2		
Factory assembling and testing	LS		
Delivery and Installation at site	LS		
<b>Sub –Total (B)</b>			

<b><u>Item C: Wireless Local Area Network</u></b>			
<b>Repeater Station at Kongde</b>			
Wireless Bridge (Namche, Chukung Ri and Dingboche)	3		
Switch	1		
Remote Terminal Unit	1		
Communication Module	1		
Solar Panel, Battery, charge controller and accessories	1 set		
Tower mast	1		
Remote Terminal Unit	1		
<b>Sub –Total</b>			
<b>Base Station at Dingboche</b>			
Wireless Bridge to connect to Kongde	1		
Distribution Base Station	2		
Distribution Base Antenna X 2	1		
Tower Mast	1		
Switch	1		
Remote Terminal Unit	1		
Communication Module	1		
Solar Panels, Batteries & Charge Controllers	1 set		
<b>Sub –Total</b>			
<b>Base Station at Chukung Ri</b>			
Wireless Bridge to connect to Kongde	1		
Distribution Base Station	2		
Distribution Base Antenna X 2	1		
Tower Mast	1		
Switch	1		
Remote Terminal Unit	1		
Communication Module	1		
Solar Panels, Batteries & Charge Controllers			
<b>Sub –Total</b>			
Factory assembling and testing	LS		
Delivery and Installation at site	LS		
<b>Sub –Total (C)</b>			
<b><u>Item D: Audio Emergency Notification system</u></b>			
Remote Terminal Unit with Audio Codec	5		
Horn Speakers Array	5		
Audio Amplifier	5		
Communication Module	5		
Power Supply	5		
Weather proof Housing System complete set	5		
Mast	5		
Factory assembling and testing	LS		

Delivery and Installation at site	LS		
<b>Sub –Total (D)</b>			
<b><u>Item E: Server and Software</u></b>			
Server Computer	1		
Online UPS	1		
Customized Software	2		
Delivery and Installation at site	LS		
<b>Sub –Total (E)</b>			
<b><u>Item F: Equipment for Community Based Early Warning System</u></b>			
Hard Operated Siren	32		
PA Megaphones	32		
Manual Staff Gage	32		
Delivery and Installation at site	LS		
<b>Sub –Total (F)</b>			
<b><u>Item G: Services</u></b>			
Documentation	LS		
Communication Charges	LS		
Training	LS		
Operation & Maintenance regular and as per requirement for one year.	LS		
Operation & Maintenance for on-call (per site visit)	1		
<b>Sub –Total (G)</b>			
<b><u>Item H: Others</u></b>			
<b>Sub -Total (H)</b>			
<b>VAT and taxes if applicable</b>			
<b>Grant total (A+B+C+D+E+F+G+H)</b>			

## Section 8: FORM FOR PERFORMANCE SECURITY<sup>16</sup>

***(This must be finalized using the official letterhead of the Issuing Bank. Except for indicated fields, no changes may be made in this template.)***

---

To: UNDP

*[Insert contact information as provided in Data Sheet]*

WHEREAS *[name and address of Contractor]* (hereinafter called “the Contractor”) has undertaken, in pursuance of Contract No. Click to enter dated Click to enter , to deliver the goods and execute related services [Click here to enter text](#). (hereinafter called “the Contract”):

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract:

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of *[amount of guarantee]* *[in words and numbers]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[amount of guarantee as aforesaid]* without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

This guarantee shall be valid until a date 30 days from the date of issue by UNDP of a certificate of satisfactory performance and full completion of services by the Contractor.

### SIGNATURE AND SEAL OF THE GUARANTOR BANK

Date .....

Name of Bank .....

Address .....

---

<sup>16</sup> If the RFP requires the submission of a Performance Security, which shall be made a condition to the signing and effectivity of the contract, the Performance Security that the Bidder's Bank will issue shall use the contents of this template

## **Section 9: General Terms and Conditions of Purchase Order**

---

### **1. ACCEPTANCE OF THE PURCHASE ORDER**

This Purchase Order may only be accepted by the Supplier's signing and returning an acknowledgement copy of it or by timely delivery of the goods in accordance with the terms of this Purchase Order, as herein specified. Acceptance of this Purchase Order shall effect a contract between the Parties under which the rights and obligations of the Parties shall be governed solely by the terms and conditions of this Purchase Order, including these General Conditions. No additional or inconsistent provisions proposed by the Supplier shall bind UNDP unless agreed to in writing by a duly authorized official of UNDP.

### **2. PAYMENT**

2.1.1 UNDP shall, on fulfillment of the Delivery Terms, unless otherwise provided in this Purchase Order, make payment within 30 days of receipt of the Supplier's invoice for the goods and copies of the shipping documents specified in this Purchase Order.

2.1.2 Payment against the invoice referred to above will reflect any discount shown under the payment terms of this Purchase Order, provided payment is made within the period required by such payment terms.

2.1.3 Unless authorized by UNDP, the Supplier shall submit one invoice in respect of this Purchase Order, and such invoice must indicate the Purchase Order's identification number.

2.1.4 The prices shown in this Purchase Order may not be increased except by express written agreement of UNDP.

### **3. TAX EXEMPTION**

3.1 Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the United Nations, including its subsidiary organs, is exempt from all direct taxes, except charges for utilities services, and is exempt from customs duties and charges of a similar nature in respect of articles imported or exported for its official use. In the event any governmental authority refuses to recognize UNDP's exemption from such taxes, duties or charges, the Supplier shall immediately consult with UNDP to determine a mutually acceptable procedure.

3.2 Accordingly, the Supplier authorizes UNDP to deduct from the Supplier's invoice any amount representing such taxes, duties or charges, unless the Supplier has consulted with UNDP before the payment thereof and UNDP has, in each instance, specifically authorized the Supplier to pay such taxes, duties or charges under protest. In that event, the Supplier shall provide UNDP with written evidence that payment of such taxes, duties or charges has been made and appropriately authorized.

### **4. RISK OF LOSS**

Risk of loss, damage to or destruction of the goods shall be governed in accordance with DDU Incoterms 2000, unless otherwise agreed upon by the Parties on the front side of this Purchase Order.

### **5. EXPORT LICENCES**

Notwithstanding any INCOTERM 2000 used in this Purchase Order, the Supplier shall obtain any export licences required for the goods.



**6. FITNESS OF GOODS/PACKAGING**

The Supplier warrants that the goods, including packaging, conform to the specifications for the goods ordered under this Purchase Order and are fit for the purposes for which such goods are ordinarily used and for purposes expressly made known to the Supplier by UNDP, and are free from defects in workmanship and materials. The Supplier also warrants that the goods are contained or packaged adequately to protect the goods.

**7. INSPECTION**

1. UNDP shall have a reasonable time after delivery of the goods to inspect them and to reject and refuse acceptance of goods not conforming to this Purchase Order; payment for goods pursuant to this Purchase Order shall not be deemed an acceptance of the goods.

2. Inspection prior to shipment does not relieve the Supplier from any of its contractual obligations.

**8. INTELLECTUAL PROPERTY INFRINGEMENT**

The Supplier warrants that the use or supply by UNDP of the goods sold under this Purchase Order does not infringe any patent, design, trade-name or trade-mark. In addition, the Supplier shall, pursuant to this warranty, indemnify, defend and hold UNDP and the United Nations harmless from any actions or claims brought against UNDP or the United Nations pertaining to the alleged infringement of a patent, design, trade-name or trade-mark arising in connection with the goods sold under this Purchase Order.

**9. RIGHTS OF UNDP**

In case of failure by the Supplier to fulfil its obligations under the terms and conditions of this Purchase Order, including but not limited to failure to obtain necessary export licences, or to make delivery of all or part of the goods by the agreed delivery date or dates, UNDP may, after giving the Supplier reasonable notice to perform and without prejudice to any other rights or remedies, exercise one or more of the following rights:

- a) Procure all or part of the goods from other sources, in which event UNDP may hold the Supplier responsible for any excess cost occasioned thereby.
- b) Refuse to accept delivery of all or part of the goods.
- c) Cancel this Purchase Order without any liability for termination charges or any other liability of any kind of UNDP.

**10. LATE DELIVERY**

Without limiting any other rights or obligations of the parties hereunder, if the Supplier will be unable to deliver the goods by the delivery date(s) stipulated in this Purchase Order, the Supplier shall (i) immediately consult with UNDP to determine the most expeditious means for delivering the goods and (ii) use an expedited means of delivery, at the Supplier's cost (unless the delay is due to Force Majeure), if reasonably so requested by UNDP.

**11. ASSIGNMENT AND INSOLVENCY**

11.1. The Supplier shall not, except after obtaining the written consent of UNDP, assign, transfer, pledge or make other disposition of this Purchase Order, or any part thereof, or any of the Supplier's rights or obligations under this Purchase Order.

11.2. Should the Supplier become insolvent or should control of the Supplier change by virtue of insolvency, UNDP may, without prejudice to any other rights or remedies, immediately terminate this Purchase Order by giving the Supplier written notice of termination.

**12. USE OF UNDP OR UNITED NATIONS NAME OR EMBLEM**

The Supplier shall not use the name, emblem or official seal of UNDP or the United Nations for any purpose.

**13. PROHIBITION ON ADVERTISING**

The Supplier shall not advertise or otherwise make public that it is furnishing goods or services to UNDP without specific permission of UNDP in each instance.

**14. CHILD LABOUR**

The Supplier represents and warrants that neither it nor any of its affiliates is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

**15. MINES**

The Supplier represents and warrants that neither it nor any of its affiliates is actively and directly engaged in patent activities, development, assembly, production, trade or manufacture of mines or in such activities in respect of components primarily utilized in the manufacture of Mines. The term "Mines" means those devices defined in Article 2, Paragraphs 1, 4 and 5 of Protocol II annexed to the Convention on Prohibitions and Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects of 1980.

Any breach of this representation and warranty shall entitle UNDP to terminate this Purchase Order immediately upon notice to the Supplier, without any liability for termination charges or any other liability of any kind of UNDP.

**16. SETTLEMENT OF DISPUTES**

**16.1 Amicable Settlement**

The Parties shall use their best efforts to settle amicably any dispute, controversy or claim arising out of, or relating to this Purchase Order or the breach, termination or invalidity thereof. Where the Parties wish to seek such an amicable settlement through conciliation, the conciliation shall take place in accordance with the UNCITRAL Conciliation Rules then obtaining, or according to such other procedure as may be agreed between the Parties.

**16.2 Arbitration**

Unless, any such dispute, controversy or claim between the Parties arising out of or relating to this Purchase Order or the breach, termination or invalidity thereof is settled amicably under the preceding paragraph of this Section within sixty (60) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred by either Party to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining, including its provisions on applicable law. The arbitral tribunal shall have no authority to award punitive damages. The Parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such controversy, claim or dispute.

**17. PRIVILEGES AND IMMUNITIES**

Nothing in or related to these General Terms and Conditions or this Purchase Order shall be deemed a waiver of any of the privileges and immunities of the United Nations, including its subsidiary organs.