



**REQUEST FOR PROPOSAL (RFP)**  
**For Conducting the Baseline Assessment and Survey of a proposed**  
**GCF funded project “Protecting Livelihoods and Assets at Risk from**  
**Climate Change Induced Flooding in Glaciated River Basins of Nepal”**

NAME & ADDRESS OF FIRM	DATE: October 1, 2019
	REFERENCE: UNDP/RFP/11/2019

Dear Sir / Madam:

We kindly request you to submit your Proposal for **Conducting the Baseline Assessment and Survey of a proposed GCF funded project “Protecting Livelihoods and Assets at Risk from Climate Change Induced Flooding in Glaciated River Basins of Nepal”**.

Please be guided by the form attached hereto as Annex 2, in preparing your Proposal.

Proposals may be submitted on or before **Friday, October 25, 2019** and via courier mail to the address below:

**United Nations Development Programme**  
**UNDP/RFP/11/2019**  
**UNDP Registry, UN House**  
**Pulchowk, Lalitpur, Nepal**

Your Proposal must be expressed in the English, and valid for a minimum period of 90 days.

In the course of preparing your Proposal, it shall remain your responsibility to ensure that it reaches the address above on or before the deadline. Proposals that are received by UNDP after the deadline indicated above, for whatever reason, shall not be considered for evaluation.

Services proposed shall be reviewed and evaluated based on completeness and compliance of the Proposal and responsiveness with the requirements of the RFP and all other annexes providing details of UNDP requirements.

The Proposal that complies with all of the requirements, meets all the evaluation criteria and offers the best value for money shall be selected and awarded the contract. Any offer that does not meet the requirements shall be rejected.

Any discrepancy between the unit price and the total price shall be re-computed by UNDP, and the unit price shall prevail, and the total price shall be corrected. If the Service Provider does not accept the final price based on UNDP's re-computation and correction of errors, its Proposal will be rejected.

No price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted by UNDP after it has received the Proposal. At the time of Award of Contract or Purchase Order, UNDP reserves the right to vary (increase or decrease) the quantity of services and/or goods, 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.

Any Contract or Purchase Order that will be issued as a result of this RFP shall be subject to the General Terms and Conditions attached hereto. The mere act of submission of a Proposal implies that the Service Provider accepts without question the General Terms and Conditions of UNDP, herein attached as Annex 3.

Please be advised that UNDP is not bound to accept any Proposal, nor award a contract or Purchase Order, nor be responsible for any costs associated with a Service Providers preparation and submission of a Proposal, regardless of the outcome or the manner of conducting the selection process.

UNDP's vendor protest procedure is intended to afford an opportunity to appeal for persons or firms not awarded a Purchase Order or Contract in a competitive procurement process. In the event that you believe you have not been fairly treated, you can find detailed information about vendor protest procedures in the following link:

<http://www.undp.org/content/undp/en/home/operations/procurement/business/protest-and-sanctions.html>


UNDP encourages every prospective Service Provider to prevent and avoid conflicts of interest, by disclosing to UNDP if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, cost estimates, and other information used in this RFP.

UNDP implements a zero tolerance on fraud and other proscribed practices, and is committed to preventing, identifying and addressing all such acts and practices against UNDP, as well as third parties involved in UNDP activities. UNDP expects its Service Providers to adhere to the UN Supplier Code of Conduct found in this link :

[https://www.un.org/Depts/ptd/sites/www.un.org.Depts.ptd/files/files/attachment/page/pdf/unscclconduct\\_english.pdf](https://www.un.org/Depts/ptd/sites/www.un.org.Depts.ptd/files/files/attachment/page/pdf/unscclconduct_english.pdf)

Thank you and we look forward to receiving your Proposal.

Sincerely yours,

  
Niraj Shrestha

Assistant Resident Representative (Operations)

10/1/2019

## Description of Requirements

Context of the Requirement	<p>The main objective of this assignment is to establish and document baseline data at the either watershedscale or Impact zone for the project indicators through primary and secondary information from field- based survey conducted in the sites which are (positively and/or negatively) affected by the glacial lakes, glacial lake outbursts, flooding, and other climate induced disasters.</p> <p>The survey will also identify the impacts of climate change on various sectors, including water resources, agriculture, infrastructure, forest and biodiversity and the overall livelihood of the communities. It is to be ensured that there is equal, meaningful and logical participation of local government, and NGOs/CSOs, private sectors and their organizations/networks during the survey from the field to district, province and federal level who are (positively/negatively) affected by the glacial lakes, glacial lake outbursts, flooding, and other climate induced disasters, their effects and impacts from upstream to downstream. The baseline provides a reference point with which to compare future changes. Information on the baseline can be drawn from the activities undertaken during the scoping analysis. In the log frame, the baseline is a measure of the current situation for a specific indicator. The baseline value/condition affects the way the target is expressed (e.g. percentage of population served, or percentage increase from the baseline condition).</p> <p>Based on the information gathered from the survey, potential on-ground and other climate risks management interventions required to protect and save the lives and livelihoods of the communities from climate change induced disasters in a sustainable manner will be proposed and the targets will be set to achieve during the project period.</p> <p>The findings of the baseline survey will be presented for review and discussion at a stakeholder consultation.</p>
Implementing Partner of UNDP	Not Applicable
Brief Description of the Required Services	As mentioned in the ToR
List and Description of Expected Outputs to be Delivered	<ul style="list-style-type: none"> <li>• Inception Report with detailed timelines and the methodologies;</li> <li>• Raw data and Analysis of the data of the survey done during the consultation and field survey;</li> <li>• Consultation workshop to review and present key findings and recommendations</li> </ul>

Person to Supervise the Work/Performance of the Service Provider	Advisor – Resilience and Environment Pillar in close coordination with the Senior Project Officer – Integrated Climate Risk Management through Portfolio Manager, Resilience and Environment Pillar, UNDP Country Office, Nepal.
Frequency of Reporting	<i>As needed and mentioned in the ToR</i>
Progress Reporting Requirements	<i>As needed and mentioned in the ToR</i>
Location of work	<input checked="" type="checkbox"/> At Contractor's Location
Expected duration of work	280 working days (person days-a total of all team members)
Target start date	October 2019
Latest completion date	March 2020
Travels Expected	Yes
Special Security Requirements	
Facilities to be Provided by UNDP (i.e., must be excluded from Price Proposal)	<input checked="" type="checkbox"/> Sharing Workshop
Implementation Schedule indicating breakdown and timing of activities/sub-activities	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required
Names and curriculum vitae of individuals who will be involved in completing the services	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required

Currency of Proposal	<input checked="" type="checkbox"/> Local Currency <i>Nepalese Rupees</i>																	
Value Added Tax on Price Proposal	<input checked="" type="checkbox"/> must be inclusive of VAT and other applicable indirect taxes <input type="checkbox"/> must be exclusive of VAT and other applicable indirect taxes																	
Validity Period of Proposals (Counting for the last day of submission of quotes)	<input type="checkbox"/> 60 days <input checked="" type="checkbox"/> 90 days <input type="checkbox"/> 120 days  In exceptional circumstances, UNDP may request the Proposer to extend the validity of the Proposal beyond what has been initially indicated in this RFP. The Proposal shall then confirm the extension in writing, without any modification whatsoever on the Proposal.																	
Partial Quotes	<input checked="" type="checkbox"/> Not permitted																	
Payment Terms	<table border="1"> <thead> <tr> <th>Outputs</th> <th>Percentage</th> <th>Timing</th> <th>Condition for Payment Release</th> </tr> </thead> <tbody> <tr> <td>Submission and finalization of the Inception Report with detailed work plan and methodology</td> <td>30%</td> <td>Within 10 days</td> <td rowspan="3"> Within thirty (30) days from the date of meeting the following conditions:  a) UNDP's written acceptance (i.e., not mere receipt) of the quality of the outputs; and  b) Receipt of invoice from the Service Provider. </td> </tr> <tr> <td>Upon submission of the <b>Draft</b> Baseline Survey Report, including actual field reports with annexes</td> <td>50%</td> <td>10 Dec 2019</td> </tr> <tr> <td>Upon submission of the <b>final</b> baseline report incorporating inputs from UNDP and GCF Project Formulation Advisory Committee</td> <td>20%</td> <td>15 Feb 2020</td> </tr> </tbody> </table>				Outputs	Percentage	Timing	Condition for Payment Release	Submission and finalization of the Inception Report with detailed work plan and methodology	30%	Within 10 days	Within thirty (30) days from the date of meeting the following conditions: a) UNDP's written acceptance (i.e., not mere receipt) of the quality of the outputs; and b) Receipt of invoice from the Service Provider.	Upon submission of the <b>Draft</b> Baseline Survey Report, including actual field reports with annexes	50%	10 Dec 2019	Upon submission of the <b>final</b> baseline report incorporating inputs from UNDP and GCF Project Formulation Advisory Committee	20%	15 Feb 2020
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Person(s) to review/inspect/ approve outputs/complete d services and authorize the disbursement of payment	Advisor – Resilience and Environment Pillar in close coordination with the Senior Project Officer – Integrated Climate Risk Management through Portfolio Manager, Resilience and Environment Pillar, UNDP Country Office, Nepal.																	

Type of Contract to be Signed	<input checked="" type="checkbox"/> Purchase Order <input checked="" type="checkbox"/> Institutional Contract
Criteria for Contract Award	<input checked="" type="checkbox"/> Highest Combined Score (based on the 70% technical offer and 30% price weight distribution) <input checked="" type="checkbox"/> Full acceptance of the UNDP Contract General Terms and Conditions (GTC).
Criteria for the Assessment of Proposal	<p><b><u>Technical Proposal (70%)</u></b></p> <input checked="" type="checkbox"/> Expertise of the Firm [250] <input checked="" type="checkbox"/> Methodology, Its Appropriateness to the Condition and Timeliness of the Implementation Plan [450] <input checked="" type="checkbox"/> Management Structure and Qualification of Key Personnel [400] <p><b><u>Financial Proposal (30%)</u></b>  To be computed as a ratio of the Proposal's offer to the lowest price among the proposals received by UNDP.</p>
UNDP will award the contract to:	<input checked="" type="checkbox"/> One and only one Service Provider
Contract General Terms and Conditions <sup>1</sup>	<input checked="" type="checkbox"/> General Terms and Conditions for contracts (goods and/or services) <p>Applicable Terms and Conditions are available at:  <a href="http://www.undp.org/content/undp/en/home/procurement/business/how-we-buy.html">http://www.undp.org/content/undp/en/home/procurement/business/how-we-buy.html</a></p>

<sup>1</sup> Service Providers are alerted that non-acceptance of the terms of the General Terms and Conditions (GTC) may be grounds for disqualification from this procurement process.

Annexes to this RFP	<input checked="" type="checkbox"/> Form for Submission of Proposal (Annex 2) <input checked="" type="checkbox"/> General Terms and Conditions (Annex 3) <input checked="" type="checkbox"/> Detailed TOR (Annex 4)
Contact Person for Inquiries (Written inquiries only) <sup>2</sup>	<p><i>UNDP Nepal</i>  <i>Procurement Unit</i>  <a href="mailto:query.procurement.np@undp.org">query.procurement.np@undp.org</a></p> <p>Written inquiries must be submitted mentioning RFP Ref: UNDP/RFP/11/2019, on or before 5:00PM, 21 October 2019. UNDP shall respond to the inquiries by posting queries and responses in UNDP Website: <a href="http://np.undp.org/content/nepal/en/home/procurement.html">http://np.undp.org/content/nepal/en/home/procurement.html</a>. Inquiries received after the above date and time shall not be entertained.</p> <p>Any delay in UNDP's response shall be not used as a reason for extending the deadline for submission, unless UNDP determines that such an extension is necessary and communicates a new deadline to the Proposers.</p>
Other Information <i>[pls. specify]</i>	<p>The Financial evaluation will be carried out only for the technically qualified submission that pass the minimum technical score of 70% (770 points) of the obtainable score of 1100 points in the evaluation of the technical proposals.</p> <p><b>The Financial Proposal and the Technical Proposal Envelopes <u>MUST BE COMPLETELY SEPARATE</u> and <u>each of them must be submitted sealed individually</u> and clearly marked on the outside and as either "TECHNICAL PROPOSAL" or "FINANCIAL PROPOSAL", as appropriate. Each envelope MUST clearly indicate the name of the Proposer. Failing to submit the Technical and Financial Proposals in separately sealed envelopes will be treated as non-responsive.</b></p>

<sup>2</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 received.

<b>I. Expertise of firm / organisation submitting proposal (Points obtainable 250 Points)</b>	
1.1 Reputation of Organisation and Staff (Competence / Reliability)	20
1.2 Litigation and Arbitration history	15
1.3 General Organisational Capability which is likely to affect implementation (i.e. loose consortium, holding company or one firm, size of the firm / organisation, strength of project management support e.g. project financing capacity and project management controls)	50
1.4 Extent to which any work would be subcontracted (subcontracting carries additional risks which may affect project implementation, but properly done it offers a chance to access specialised skills.	15
1.5 Quality assurance procedures, warranty	20
<b>Sub total (1.1 to 1.5)</b>	<b>120</b>
1.6 Relevance of: <b>(Points - 137)</b>	
- Specialised Knowledge	30
- Experience on Similar Programme / Projects	50
- Experience on Projects in the Region	20
- Work for UNDP/ major multilateral/ or bilateral programmes	30
<b>Sub Total for 1.6</b>	<b>130</b>
<b>Total for Expertise of firm / organisation submitting proposal (I)</b>	<b>250</b>
<b>II. Proposed Work Plan and Approach (Points obtainable 450 Points)</b>	
2.1 To what degree does the Offeror understand the task?	50
2.2 Have the important aspects of the task been addressed in sufficient detail?	30
2.3 Are the different components of the project adequately weighted relative to one another?	20
2.4 Is there evidence that the proposal been prepared based on an in-depth understanding and prior knowledge of the project environment?	50
2.5 Is the conceptual framework adopted appropriate for the task?	50



2.6 Is the scope of task well defined and does it correspond to the TOR?	100
2.7 Is the presentation clear and is the sequence of activities and the planning logical, realistic and promise efficient implementation to the project?	150
<b>Total for Proposed Work Plan and Approach (II)</b>	<b>450</b>
<b>III. Personnel (Points obtainable 400 Points)</b>	
3.1 Team leader	
Master's Degree in Social Sciences, economics, anthropology and relevant field	20
At least 10 Years of Professional experiences in the areas of baseline survey, data analysis, report writing on climate change, DRR and development	60
Knowledge of the region	10
Language Qualifications/ Publications	10
<b>Sub Total for Task Leader</b>	<b>100</b>
3.2 Statistician	
Master's Degree in Statistics and relevant field	20
at least 10 Years of Professional experiences in conducting baseline survey, endline survey in the areas of climate change and development	60
Knowledge of the region	10
Language Qualification	10
<b>Sub Total for Statisticians</b>	<b>100</b>
3.3 Associate Researcher	
Bachelor's Degree in Social Sciences and relevant field	20
at least 10 Years of Professional experiences in conducting baseline survey, endline survey in the areas of climate change and development	60
Knowledge of the region	10
Language Qualification	10
<b>Sub Total for associate researchers</b>	<b>100</b>
3.4 Enumerators	

Intermediate degree in relevant field	20
at least 3 years of working experiences	60
Knowledge of the region	10
Language Qualification	10
<b>Sub Total for Enumerators</b>	<b>100</b>
<b>Total for Personnel (III)</b>	<b>400</b>
<b>Grand Total (A+B+C)</b>	<b>1100</b>

## FORM FOR SUBMITTING SERVICE PROVIDER'S PROPOSAL<sup>3</sup>

*(This Form must be submitted only using the Service Provider's Official Letterhead/Stationery<sup>4</sup>)*

[insert: Location]

[insert: Date]

To: [insert: Name and Address of UNDP focal point]

Dear Sir/Madam:

We, the undersigned, hereby offer to render the following services to UNDP in conformity with the requirements defined in the RFP dated [specify date], and all of its attachments, as well as the provisions of the UNDP General Contract Terms and Conditions :

### A. Qualifications of the Service Provider

*The Service Provider must describe and explain how and why they are the best entity that can deliver the requirements of UNDP by indicating the following :*

- a) Profile – describing the nature of business, field of expertise, licenses, certifications, accreditations;*
- b) Business Licenses – Registration Papers, Tax Payment Certification, etc.*
- c) Latest Audited Financial Statement – income statement and balance sheet to indicate its financial stability, liquidity, credit standing, and market reputation, etc. ;*
- d) Track Record – list of clients for similar services as those required by UNDP, indicating description of contract scope, contract duration, contract value, contract references;*
- e) Certificates and Accreditation – including Quality Certificates, Patent Registrations, Environmental Sustainability Certificates, etc.*
- f) Written Self-Declaration that the company is not in the UN Security Council 1267/1989 List, UN Procurement Division List or Other UN Ineligibility List.*

### B. Proposed Methodology for the Completion of Services

*The Service Provider must describe how it will address/deliver the demands of the RFP; providing a detailed description of the essential performance characteristics, reporting conditions and quality assurance mechanisms that will be put in place, while demonstrating that the proposed methodology will be appropriate to the local conditions and context of the work.*

<sup>3</sup> This serves as a guide to the Service Provider in preparing the Proposal.

<sup>4</sup> Official Letterhead/Stationery must indicate contact details – addresses, email, phone and fax numbers – for verification purposes

**C. Qualifications of Key Personnel**

*If required by the RFP, the Service Provider must provide :*

- a) Names and qualifications of the key personnel that will perform the services indicating who is Team Leader, who are supporting, etc.;*
- b) CVs demonstrating qualifications must be submitted if required by the RFP; and*
- c) Written confirmation from each personnel that they are available for the entire duration of the contract.*

**D. Cost Breakdown per Deliverable\***

	<b>Deliverables</b> <i>[list them as referred to in the RFP]</i>	<b>Percentage of Total Price</b> <i>(Weight for payment)</i>	<b>Price</b> <i>(Lump Sum, All Inclusive)</i>
1	Deliverable 1		
2	Deliverable 2		
3	....		
	Total	100%	

*\*This shall be the basis of the payment tranches*

**E. Cost Breakdown by Cost Component:**

<b>Description of Activity</b>	<b>Remuneration per Unit of Time</b>	<b>Total Period of Engagement</b>	<b>No. of Personnel</b>	<b>Total Rate</b>
<b>I. Personnel Services</b>				
1. Team Leader	days	25	1	
2. Statistician	days	15	1	
3. Associate Researcher	days	20	3	
4. Enumerators	days	30	6	
<b>II. Out of Pocket Expenses</b>				
1. Travel Costs				
2. Communications				
3. Others				
<b>III. Other Related Costs</b>				

*[Name and Signature of the Service Provider's  
Authorized Person]  
[Designation]  
[Date]*

***General Terms and Conditions of Contract***

<http://www.undp.org/content/undp/en/home/procurement/business/how-we-buy.html>

## Terms of Reference

### Conducting the Baseline Assessment and Survey of a proposed GCF funded project “Protecting Livelihoods and Assets at Risk from Climate Change Induced Flooding in Glaciated River Basins of Nepal”

<b>Project: Protecting Livelihoods and Assets at Risk from Climate Change Induced Flooding in Glaciated River Basins of Nepal</b>	
<b>Geographic Coverage</b>	Selected glaciated watershed/sub-watershed of Koshi, Gandaki and Karnali Basins- a) Lower Barun, b) Hongu 2, c) Thulagi and d) Lumding Tsho Glacial Lakes
<b>Organizational Unit:</b>	Resilience and Environment, UNDP CO Nepal
<b>Reporting to:</b>	Assistant Resident Representative, UNDP Nepal, and Regional Technical Advisor (Adaptation), Asia Pacific Regional Centre, UNDP through Portfolio Manager and Senior Project Officer – ICRMP, UNDP CO Nepal
<b>Type of Contract:</b>	Institutional Contract
<b>Contract Period(s):</b>	<b>October 2019 to March 2020</b>
<b>Duration:</b>	<b>280 working days</b> (person days-a total of all team members)
<b>Duty Station:</b>	Kathmandu based with field-based events

#### Background:

United Nations Development Programme (UNDP) is collaborating with the Ministry of Finance – the National Designated Authority (NDA) for the Green Climate Fund (GCF), the Department of Hydrology and Meteorology (DHM), the Ministry of Forests and Environment (MOFE) to formulate a five-year project proposal on “**Protecting Livelihoods and Assets at Risk from Climate Change Induced Flooding in Glaciated River Basins of Nepal**”. The Department of Forests and Soil Conservation (DOFSC), The Ministry of Forests and Environment (MOFE), the Department of National Park and Wildlife Conservation (DNPWC), and other relevant ministries and departments are some of the key partners that will support in the formulation and implementation of the project.

A Concept Note was submitted to the Green Climate Fund Secretariat on 13<sup>th</sup> February 2018. A detailed funding proposal is currently under development for submission to the GCF.

The UNDP is seeking a qualified and experienced team with multi-disciplinary background to conduct a baseline study for the proposed project in selected glaciated watersheds of Koshi, Gandaki and Karnali river basins. The information and data gathered in the baseline survey will constitute a critical input of the funding proposal and the feasibility study.

#### Context:

Nepal is home to 8 of the 10 highest mountain peaks in the world, including Mount Everest (8,848 m), whose snowpack and glaciers maintain the perennial flow of major domestic rivers and the Ganges in India. As glaciers retreat, they leave behind weak moraine and ice dams, behind which glacial lakes are formed.

A breach of these dams could lead to the discharge of large volumes of water and debris in a few hours, which can cause catastrophic flooding, mudflow and landslides downstream. There are 3,808 glaciers and 1,466 glacial lakes in the Nepal Himalaya draining to 4 major river basins. 21 of these lakes, draining to two river basins, are identified as a serious threat to 327,500 people in downstream communities.

All the major rivers of Nepal are snow and glacier melt-fed and accommodate significant volumes of water flow throughout the year. However, 75% of the annual volume of water is discharged during the monsoon season (June–September) resulting in significant annual flooding.

The observed maximum temperature increases in the high Himalayas in Nepal (0.86 °C per decade) is higher than in the lower parts of Nepal (0.2°C per decade) and above the global average of 0.15-0.20°C per decade. Consequently, the melt rate of Himalayan glaciers is intensifying, the number of glacial lakes is increasing, and existing glacial lakes are expanding. The Glaciated area decreased by 24% and the volume of ice reserve decreased

by 29 % from 1977 to 2010 in Nepal<sup>5</sup>, forcing some mountain communities to migrate due to scarcity of water for their livelihood.

Due to climate change-induced accelerated melting of the Himalayan glaciers, the instance of highly destructive GLOFs that decimate communities and assets downstream is increasing. These outburst floods are likely to trigger cumulative disaster events such as flash floods, mudflows and landslides downstream. As climate change continues to accelerate the rate of glacial melt, the livelihoods of millions of people, as well as the growing hydropower industry and other critical assets, are increasingly at risk of devastation from GLOFs and other climate related hazards in Nepal.

Nepal has experienced at least 24 GLOF events in the past. Impacts from GLOFs include loss to lives, agriculture, hydropower, transportation and tourism, among other sectors. Impacts extend to 100 km and more downstream. Nepal is also highly susceptible to floods during the monsoon rains, patterns of which are impacted by climate change. Floods and landslides have caused approximately 8,400 deaths in Nepal from 1983 to 2013, with an average of 269 deaths per year (DWIDP 2013).

With GCF funding, this project aims to safeguard the lives and livelihoods of tentatively above 300,000 people in the Gandaki and Koshi River Basins and their physical and economic assets from the climate-induced threat of glacial lake outburst floods (GLOFs) and related hazards through the two following outputs:

***Output 1 - Institutions strengthened to deliver climate risk information, monitoring and early warning services to local populations and productive sectors of economy***

***Output 2 - Investment in GLOF and Flood risk reduction strategies at the watershed level scaled-up.***

### **Objective of the Assignment:**

The main objective of this assignment is to establish and document baseline data at the either watershedscale or Impact zone for the project indicators through primary and secondary information from field- based survey conducted in the sites which are (positively and/or negatively) affected by the glacial lakes, glacial lake outbursts, flooding, and other climate induced disasters.

The survey will also identify the impacts of climate change on various sectors, including water resources, agriculture, infrastructure, forest and biodiversity and the overall livelihood of the communities. It is to be ensured that there is equal, meaningful and logical participation of local government, and NGOs/CSOs, private sectors and their organizations/networks during the survey from the field to district, province and federal level who are (positively/negatively) affected by the glacial lakes, glacial lake outbursts, flooding, and other climate induced disasters, their effects and impacts from upstream to downstream. The baseline provides a reference point with which to compare future changes. Information on the baseline can be drawn from the activities undertaken during the scoping analysis. In the log frame, the baseline is a measure of the current situation for a specific indicator. The baseline value/condition affects the way the target is expressed (e.g. percentage of population served, or percentage increase from the baseline condition).

Based on the information gathered from the survey, potential on-ground and other climate risks management interventions required to protect and save the lives and livelihoods of the communities from climate change induced disasters in a sustainable manner will be proposed and the targets will be set to achieve during the project period.

The findings of the baseline survey will be presented for review and discussion at a stakeholder consultation.

### **Scope of Work:**

After a systematic study of glacier and glacial lakes, a new inventory of glacial lakes has been prepared. In addition, the lakes which are at critical situation have also been identified. The scope of consultations and survey work will vary between the watersheds, districts, municipalities, and wards in two basins namely: Koshi and Gandaki in the downstream areas of (Map attached as Annex);

- a) Lower Barun,
- b) Hongu 2,
- c) Thulagi and,
- d) Lumding Tsho

The project will have the following proposed interventions in each basin:

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<sup>5</sup> International Centre for Integrated Mountain Development (ICIMOD) 2014 (Bajracharya et al., 2014)

**Koshi Basin:**

- GLOF Risk Reductions with appropriate structural measures
- Installation of Monitoring Stations for Hydro-met/ climate data/ information
- Installation of Early Warning Systems
- Community Based Climate Risk Management Initiatives

**Gandaki Basin:**

- GLOF Risk Reductions with appropriate structural measures
- Installation of Monitoring Stations for Hydro-met/ climate data/ information
- Establishment of Early Warning Systems

**Karnali Basin:**

- Installation of Monitoring Stations for Hydro-met/ climate data/ information

Based on the logical framework and its indicators, the consulting firm will primarily determine the baseline value(s) for outcomes, outputs and activity indicators while carrying out the baseline survey as input to the project proposal for submission to GCF.

**Detail Tasks (Potential Thematic Areas to be Studied in the Baseline)****A. Social-Cultural-Economic**

- Identification, review and analysis of policies, strategies, infrastructures, tools and practices related to *climate resilient technologies and their adoptions in Nepal*, particularly linked with the proposed geographical areas;
- The identification, review and analysis of the three levels of government's (federal, provincial and local government) policies, strategies, guidelines, and practices *in delivering goods and services related to climate risk management*, including the glacial lakes and glacial lake outbursts flooding and climate change related effects and impacts and possible interventions to cope or adapt with such impacts;
- Find out the GESI responsive values of indicators at all levels;
- Identify and prioritize the roles and involvement of communities including indigenous peoples (Including women) and their organizations/networks, NGOs/ CSOs, private sectors and local government to address various types of vulnerability, potential risks and hazards likely to be (positively or negatively), exposed to or actual affected due to the glacial lakes, glacial lake outbursts, flooding, and other climate induced disasters, their effects and impacts from upstream to downstream and suggestions for local ownership of the intervention for sustainability after the project closure;
- Assess the level of understanding and perception of climate change amongst local communities, including women and indigenous communities, their observed weather patterns and its impacts on migration or displacement (economic or physical), if any.
- Socio-economic profile of the proposed project villages/ watershed areas, including access to infrastructure, supported by gender and persons with disabilities disaggregated data.
- List the existing livelihood activities in different villages, sources of primary and secondary income, dependency on natural resources, their perceived vulnerability and climate change impacts



- Capacity of the communities of the proposed projects sites (map- Annex) to feed and accommodate future project construction workforce;
- Based on the above, identify the key interventions likely to be introduced at community level or sites that will enhance climate resilience and define the role of indigenous people and their organizations/networks on implementation and sustainability;
- Identify and document the traditional and indigenous knowledge and skills on climate change adaptation, coping with climate change disasters etc. that have been practiced by CSOs/ NGOS, Private Sectors and government agencies in the proposed geographical areas;

## **B. Bio physical Environment:**

### **Site Description**

- Provide community based maps showing locations of proposed activities
- Provide descriptions of the site in terms of based on primary/ or and secondary literatures:
  - character (rural, urban, etc),
  - topography,
  - vegetation status (forest, farm, cleared, etc)
  - road or other access (including where foot traffic only)

## **C. Climate Change (CC) / C C Adaptation and CC data**

- Identify the impacts of climate change in the Project areas and how these impacts will affect various sectors, including water resources, agriculture, infrastructures, tourism, forest and biodiversity and overall livelihood of the communities. In addition, find the overall impression on situation of watershed from potential glacial environment which can be at potential risk.
- Document climate change impacts in multi- sectors and quantify as much as possible in relevant units for at least last 10 years,
- Identify and propose the key interventions likely to be introduced at community level or sites to enhance climate resilience
- People's perception on sustainability of the interventions (for O&M) after the installation/construction of structures for prioritized watershed/sub-watershed management, equipment and facilities for early warning systems, and climatological stations for monitoring purposes;
- Identify the role of women beyond the household chores that should encompass, but not be limited to, being stewards of natural and household resources, and positions them well to contribute to livelihood strategies adapted to changing environmental realities;
- Provide a summary only of key climate parameters for last 5 years ( trend and perception )

## **D. Geology, and soils in the project area/s**

Provide descriptions and where possible provide maps of the soil types and underlying geology of the sites and areas to be affected by project activities. Also identify where these are not available.

## **E. Surface water resources and infrastructure**

- Describe water bodies eg rivers, streams, lakes near or potentially affected by the project activities
- Describe the water quality of above

- Determine the existing users and the volume of water currently used. Describe how much water the communities and farmers need/ use. Comment on whether proposed interventions might increase or decrease availability or timing of availability?)
- Locate (gps), map and describe any surface infrastructure such as dams, offtakes, lakes, ponds, berms, levy's, diversion weirs or channels

## **F. Groundwater**

Identify, locate (gps) and map any groundwater sources, hot springs etc that may be affected by project activities

## **G. Ecology and Environment**

- What flora and/or fauna are found on or near the site/s?
- Are any known threatened or protected flora or fauna from the area?
- Are there any sensitive eco-systems at or near the sites?
- Are there any protected areas eg National Parks or reserves nearby? Are the nearby communities dependent on these PAs for their sustenance? Do the nearest PAs have Management Plan? Date of publication? Does the Mgmt. Plan include GLOF Risk Reduction and other floods/landslides risk reduction measures?

### **Air Quality**

- Describe the air quality at the sensitive receptors and obtain information regarding circumstances that reduce air quality (e.g. home fires, wildfire, factories, other pollutants)

### **Noise and Vibration**

- Note any locations where noise or vibration is currently reported as an issue and identify and describe the causes of these.
- For intervention work activities note the distance of the works to the nearest sensitive receptors and what are they (e.g. house, schools, monasteries, medical facilities, etc) to determine likely impacts of project activities.

### **Waste Management**

- Identify how waste is being managed, note any separation and or reuse/recycling practices. Mention the areas where waste is not managed and pollutes the environment.

## **H. Cultural Heritage**

Are there any sites of archaeological or cultural heritage significance near intervention sites that may be adversely impacted by project activities?

## **I. Watershed Management**

- Document existing and potential Watershed Management interventions in the proposed project areas particularly on:
  - Embankment along the riverbanks
  - Check dams
  - Multi-purpose Water reservoir or damming
  - Erosion and/or Landslide control (bioengineering) structures
  - Diversion of flood or rainwater from the vulnerable sites/locations
  - Netting and/or vegetative propagation on slopes
  - Plantations of perennial and multi-purpose species

- Identify the potential interface analysis at watershed scale where natural resources and Glacial lake environment have direct influences;
- Land use, past, present and future practices, Land tenure
  - For the selected wards, describe and map past, present and any known future land uses and management practices.
  - Identify the land ownership and tenure of intervention sites.

**J. Disaster Risk Reduction/Management**

- History of disasters (year and month) and losses of life and property in the four selected glacial lakes and its downstream areas (disaggregated data where possible)
- Most potential threatened communities, structures and other economically viable areas from disasters due to glacial lakes breaching
- Awareness amongst communities, esp women, PWD and other vulnerable groups, on disaster risk reduction strategies and climate change
- Disaster risk management efforts/structures and non-structures in the selected glacial lake and its downstream areas
- Possible locations where disaster risk management structures and non-structures are required or recommended

**K. Stock-taking of Hydromet Stations/ Early Warning System (EWS)**

- Existing EWS and their condition (both technical and management/functioning)
- Renovation or repair/maintenance of existing Hydro-met Stations / EWS
- Establishment of new Hydromet Stations and EWS with management system
- Understanding and awareness of communities on early warning and alert systems

**L. Economic Promotion**

- Existing situation of NTFP/MAPs (non-timber forest product/Medicinal and Aromatic Plants) in community forests and/or high mountain areas and its status of collection, processing and marketing and its benefits to local community/people
- Potential NTFPs/MAPs promotion, plantation, processing and marketing at commercial scale
- Identify methods of transport (including the use of people to carry goods), routes taken, route conditions (noting seasonal variances)

**M. Private Sector Involvement**

- Stock taking of potential private sector involvement areas/sub-areas mainly hydro-electricity and tourism in upstream and downstream area of glacial lakes; current scenario of private sector (hydro-electricity and tourism) engagement in similar or related initiatives
- Present policy/strategy and legal framework, guidelines and goods/services/information required for the engagement and contribution of private sector in upstream and downstream of glacial lakes;
- Potential location (district, municipality, Ward/community) of engagement of private sector engagement in upstream and downstream of glacial lakes;

#### **N. National Parks and Wildlife Conservation**

- Potential areas and location of the engagement of national parks in the upstream and downstream of 4 selected glacial lakes;
- Types of engagement of national parks in upstream and downstream of 4 glacial lakes;
- Status of Management Plan update of the protected areas in the proposed study areas;
- Areas that can hinder the project interventions in the national park areas and their potential recommendations for solution.
- Status of eco-tourism in these sites and number of tourists that visit these parks (annually/monthly)
- Dependency of local communities on the tourism sector and contribution to HH income.
- Any casualty of the tourists during their visit to this area?

#### **O. Governance, Participation and Capacity of Institutions for Sustainability:**

- Identify the existing NGOs/CSOs and private sectors and their organizations/networks in the proposed project areas with their strength in terms of possible partnering for implementation of the project and the sustainability of the interventions after the project period;
- Identify the areas of sustainability of the intervention after the ending of the project and programme funding and holistic perspective of integrating climate change into a broad range of socio-economic, cultural, and ecological issues;
- Identify the areas of participation, collaboration, cooperation and coordination with government agencies, productive sectors, indigenous people and their organizations/networks for the long-term sustainability of the interventions during and after the ending of the project;
- Identify ways to ensure ownership of communities including of indigenous peoples and their organizations/networks, productive sectors and 3 levels of government;
- Identify the proposed areas of capacity development for the government institutions at all levels, NGOs/CSOs, private sectors and their organizations/networks for project implementation and sustainability of the proposed project for climate adaptations and resiliency of the communities;
- Stock taking of capacity development of NGOs/ CSOs, local government, provincial and federal government, productive sectors, private sector and their organizations/networks for long-term sustainability to introduce and run and interventions smoothly including, but not limited to, technological area, software, handling of the tools to be installed etc;
- Mapping (what, who, duration, location and budget) of ongoing interventions of institutions (I/NGOS, CBOs and Govt. agencies) related to a) Climate Change Adaptations/ Disaster Risk Management and b) Others;
- SWOT analysis of the institutions (NGOs/ CSOs, Private Sector and local government bodies) in the perspectives of implementation of Climate Risk Management related projects and its sustainability;
- Identify and prioritize the key risks, issues and concerns of local government, provincial government, federal government and private sectors (including NGOs, CBOs, local communities) related to actual effects/impacts or likely to be affected by glacial lakes, glacial lake outbursts, flooding and other climate change related;

### **Previous Studies**

The study team will take a reference of previous studies under the project, namely; a) IP engagement study; b) CSO/ PS and Local Government engagement study; c) Updated Glacial Lake Inventory and identification of critical glacial lakes and some other project completion reports and assessment reports.( Draft Gender Assessment and Action Plan) etc.

### **Documentation and Reporting**

Document, analyse and summarise the key findings for the full Green Climate Fund proposal with final annexes in consultation with the Project Formulation Team Leader and Nepal CO;

- Analyse all the documents of the baseline survey from various locations/ municipalities and districts, watershed/sub-watershed area, geographical areas;
- Based on outcomes of the survey and data, identify and recommend climate resilient interventions in the project villages in response to the different levels of vulnerabilities and needs of the stakeholders;
- Summarize the key findings which will be required for the full Green Climate Fund proposal with final annexes;
- Determine the values of outcome, outputs and activities indicators, ongoing climate resilient initiatives and future interventions in the proposed geographical areas;
- Review the secondary information of the related indicators and triangulate from the various sources:
  - Collect the information from the various sources and triangulate them
  - Find out the gaps and to collect the primary data from the field
  - Summarize the key findings with gender disaggregated data/information and annexes

### **Methodology:**

Survey sample size is to follow the methods outlined in **Annex 4** .

The selected institution will adopt a variety of methodologies, as required, using a combination of qualitative and quantitative approaches through primary and secondary data. However, consultations should be carried out at various levels including with UNDP, government agencies at all levels (Local, Province and Federal), private productive sectors, non-government organizations who have been engaged in glacial lake and GLOF Risk Reduction related programmes . / projects/ initiatives.

The team will adopt the focused group discussion (FGD), Key Informant Interview (KII), Sample surveys and questionnaires etc. among others to conduct the stakeholder consultations. The sample size of the survey will not be less than 25 per cent of the total number of project beneficiaries adequately representing the affected downstream population, with 40 per cent representation by women.

In terms of qualitative survey, the participants should include a range of stakeholders covering local communities from project sites, civil society organisations, decision-makers at different levels and relevant departments, etc. But the team has the liberty to develop the appropriate methodology using varieties of widely accepted and scientific methods to accomplish the given tasks.

They should keep themselves informed of the relevant studies that have already been completed by various organizations in the given context. The team will thoroughly review existing reports, plan etc. prepared by GoN as well as other agencies and use this information in the report as secondary data, and however, it should be kept in mind that this study demands fresh primary data as much as possible. In order to do this, consultative workshops and focus group discussions should be held (where the participation of women and excluded groups should be ensured).

The selected institution will consult the GoN authorities at all levels including DCC, DAO etc. and respective officials of municipalities and wards as required.

### **Expected Outcomes and Deliverables**

The final outputs of the assignment include:

- Inception Report with detailed timelines and the methodologies;
- Raw data and Analysis of the data of the survey done during the consultation and field survey;
- Consultation workshop to review and present key findings and recommendations

For timely submission of the above deliverables with the highest quality, the consulting firm is expected to;

- Consult with experts involved in preparation of different studies, including, but not limited to, the CSO consultation report, indigenous people's report, gender assessments and action plan, Environment and Social Safeguards (ESS) etc, that worked on different studies to obtain the expected inputs and incorporate relevant findings into the baseline report.
- Liaise with the Team Leader of the Funding Proposal and provide relevant inputs to the main funding proposal, as required
- Consider Gender equality and social inclusion at all level and nature of consultations;
- Validate the consultations with adequate documents;
- Develop criteria and guidelines for the selection of location, districts and National level representative of the stakeholders (both men and women) and their organizations/networks affected by glacial lakes, glacial lake outbursts, flooding and climate induced disasters or likely to be affected by them;
- Document all relevant information related to consultations with communities and submit as annex to the main report with attendees' signature;
- Share the questionnaires/ guiding questions with the Funding Proposal Team Leader and UNDP prior to conducting survey.

### Geographical Area Coverage

The consultation will be done in the downstream of glaciated river basin in which the critical glacial lakes are located. The study area covers the downstream of 4 glacial lakes. The detail of the geographical coverage area is given in the annex (Annex 3: Geographical Areas).

### Schedule of the Payments

The payments will be delivery-based on progress submitted consultant as follows:

Installments	Milestones	Payment
1st	Submission and finalization of the Inception Report with detailed work plan and methodology	30%
2nd	Upon submission of the <b>Draft</b> Baseline Survey Report, including actual field reports with annexes	50%
3rd	Upon submission of the <b>final</b> baseline report incorporating inputs from UNDP and GCF Project Formulation Advisory Committee	20%

### Time Frame

Workshop/ meetings at the local levels will be organized soon after signing the contract after submission of the inception report.

The selected institution will have to submit the report as follows:

- Draft Baseline Survey Report (Summary and Actual Field Report) - **by 10 December 2019**
- Final Baseline Report (Incorporating the Comments/Feedback) - **by 15 February 2020**

The report should be presented in the wider stakeholders for final consultation before finalizing the deliverables. The detailed timeframe will be further defined during the presentation of the inception report. The GCF Project Formulation Advisory Committee will provide its inputs at all stages of the studies until its finalizations.

### Reporting and Coordination Line

- The selected organization (Hired under UNDP's Procurement Guidelines) will report directly to Advisor – Resilience and Environment Pillar in close coordination with the Senior Project Officer – Integrated Climate Risk Management through Portfolio Manager, Resilience and Environment Pillar, UNDP Country Office, Nepal;

- The selected organization will work closely with UNDP CO, relevant government agencies particularly DHM, DoFSC, DNPWC, National and International Consultants (mainly Watershed Management Specialist), International consultants and other stakeholders towards developing and finalizing the full-size proposal in close coordination.

#### **Proposed Survey and Assessment Team**

The core team will include experts from various backgrounds having in-depth knowledge, experience in their respective fields and cross-cutting issues. The team members will provide their expertise and support the consultation by providing their technical expertise in the various areas along with management of the overall tasks, including all persons total working days as **280 as below table;**

#### **Required Human Resources for the Baseline Survey**

<b>S.N.</b>	<b>Designation</b>	<b>No. of position</b>	<b>No. of days</b>	<b>Main Responsibility</b>	<b>Desired qualification</b>
1.	Team Leader	1	25	<ul style="list-style-type: none"> <li>• Accountable for the whole baseline including defining methodologies, data collections, analysis and quality report writing, coordinate with all the stakeholders, consultations with stakeholders at central and province level;</li> <li>• Coordinate with the team members, communicate and collaborate with GoN Authorities at all levels and UNDP, manage logistic and management related issues throughout the process; design methodology; prepare questionnaires for the survey – FGDs and FIs; pre-test survey and refine as needed; analyse and interpret findings of the survey; lead and organize stakeholder consultations; supervise field survey, compile and finalize reports in coordination with the team members and submit the report at stipulated time frame.</li> </ul>	Master's Degree in Social Sciences, economics, anthropology and relevant field with at least 10 Years of Professional experiences in the areas of baseline survey, data analysis, report writing on climate change, DRR and development.
2.	Statistician	1	15	<ul style="list-style-type: none"> <li>• Responsible for preparing data collection tools and techniques, framework (questionnaires), checklist, guidelines under the</li> </ul>	Master's Degree in Statistics relevant field with at least 10 Years of Professional experiences in conducting baseline survey, endline survey in

				supervision of team leader, data entry and data analysis <ul style="list-style-type: none"> <li>Support the team for collecting data and arranging the community meetings, support preparation of methodology; conduct surveys and interviews; support stakeholder consultations; collecting literatures for all three areas namely: IPs, CSO and Local Government</li> </ul>	the areas of climate change and development
3.	Associate Researcher	3	60 for 3 persons	<ul style="list-style-type: none"> <li>Supervise the enumerators and maintain good quality of household survey information, conduct focus group discussions (FGD), key informant's interview (KII) from the field, consultations at field and municipality/rural municipality level with the concerned stakeholders</li> </ul>	Bachelor's Degree in Social Sciences and relevant field with at least 10 Years of Professional experiences in the areas of baseline and/or endline survey in climate change and development
4.	Enumerators	6	180 days for 6 persons	<ul style="list-style-type: none"> <li>Data Collection and documentation as per the methodologies defined</li> </ul>	

**Competencies of the team members:**

- Ability to communicate effectively to varied audiences;
- Ability to work under tight schedule;
- Ability to coordinate and collate information obtained from various sources;
- Ability to guide the team members to achieve better results in timely manner;
- Proven strong analytical abilities;
- Ability to work under pressure with several tasks and various deadlines;
- Actively generates creative, practical approaches and solutions to overcome challenges situations;
- A pro-active approach to problem solving

**Notes:**

1. Travel cost: Actual travel cost for public transport will be provided to the Associate Researchers and Enumerators.
2. Travel time has been included in the number of days.
3. The consultation will be carried out in parallel with three sets of team members.

**Eligibility for Expression of Interest**

1. A letter of interest / Cover Letter from eligible institutions working on the areas of Climate Change, Watershed Management baseline survey for research, community level intervention for at least 7 years
2. Summary of similar assignments undertaken previously (Name of the institution, Year and Project) ;
3. Description of the research team: including CV (Max 4 pages per person), role and responsibilities in the proposed consultancy; (The consultant should have significant experience in qualitative and quantitative research, should have a team in place to support the consultation process at different stages at local, district and central level (data collection and analysis)



- The Team Leader must have at least postgraduate degree (Master's Degree) in social science, economics, anthropology and/or related fields;
- The team members have mix of substantial relevant experiences on working with local communities, indigenous peoples and their organizations/networks, their policies, strategies and their practices in the field realities;
- Proven experience of conducting socio-economic analysis and rapid rural appraisals and applying quantitative and qualitative methods of data collection
- Experiences in social study/research at high mountain areas on glacial lake and GLOF lake outbursts, disaster risk management, mountain areas, watershed approach, upstream-downstream approach will be added value;
- Working experiences in climate change, watershed management, community forestry, NTFP management, and disaster risk management will be added value.
- Knowledge and skills of climate change process, their effects and impacts, and adaptation process;
- Documentation skills of meetings with various stakeholders and their organizations;
- Capacity to analyze and summarize the documents and draw key findings.
- Excellent communication and facilitation skills with demonstrated experience

*Desirable Criteria* (for an institution) includes:

- At least 10 years of working experience in the related field;
- Familiarity with working with local communities, indigenous people and their organizations/networks, and gender issues in Himalayan and mountains region who are primarily affected by glacial events, flooding and climate change events;
- Understanding of climate change adaptation and climate resiliency issues;
- Familiarity with conducting socio-economic analysis and rapid rural appraisals and applying qualitative methods of data collection
- Excellent communication and facilitation skills with demonstrated experience

4. Profile of the organization 5 pages maximum for organizations, related to the tasks requested for;

5. At least 3 references of previous mandates (A sample report from previous study would be appreciative)

6. Institutions should have

- Renewed certificate of registration,
- VAT/PAN Registration,
- Tax clearance, and
- Any other requirements to meet the government formalities.

#### **Evaluation Methodology:**

The evaluation will be based on the following categories :

Institution- 25%

(Governance, Capacity/ strength with Track Record of similar works, Administrative Documents clearance- Tax, size of the contracts for similar tasks etc

Proposed Human Resources: 75%

Team Leader (60%) , Statistician (20%), Research Associate ( 20%)

Academic Qualification, Relevant Work experience in the similar tasks, Familiarity of the regions and writing / survey/ calculation skills.

### Annex 1 Indicative Outline for the Baseline Report

*Note: Format and Style should generally follow the UNDP Editorial Style Manual*

**Title:** Protecting Livelihoods and Assets at Risk from Climate Change Induced Flooding in Glaciated River Basins of Nepal – Baseline Studies

Front Page: topic, submitted to, submitted by, month/year

Study Team

Acknowledgements

Abbreviations and Acronyms

Table of Contents: Content,

List of Tables

List of Figures

List of Annexes and others

1.0 Executive Summary

2.0 Introduction: background information, geographical area, objectives, justifications etc.

3.0 Methodology of the Study: Locale of the Study, Primary and Secondary Data Collection Methods, Data Analysis Methods

4.0 Key Findings: Thematic Area-wise, Glacial Lake-wise/Basin-wise, Indicator-wise,

- Supported by tables, graphs, charts, case studies, photographs, maps and other facts
- Triangulated, verified, and factual data/information from various sources
- Report writing based on analytical data/information and logical writing

5.0 Good Practices and Lessons Learned

6.0 Key Issues: Gaps and limitations

7.0 Conclusions and Recommendations with Action Plan

References

Annexures

Annex: Terms of Reference

Annex: Data files and tools, such as questionnaires used for survey

Annex: Socio-economic profile

Annex: Persons met during study with dates and location

Annex: List of documents reviewed

Annex: Baseline Values of Indicators in the Logical Framework

Annex: Glacial Lake-wise Detailed Information

Annex: Biophysical, Geophysical and Environmental Baseline findings and mapping

Annex: List and locations of affected cultural and archaeological assets impacted by the project

Annex: Any other information

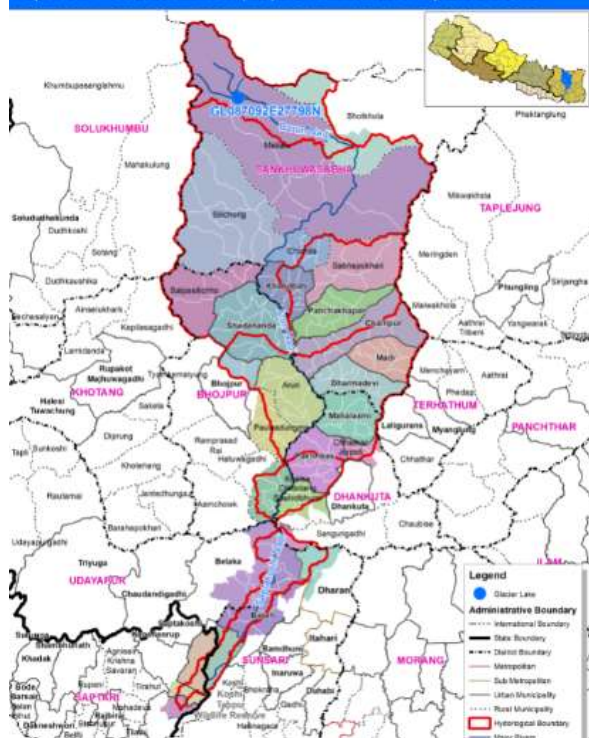
## Annex 2 Logical Framework

Logical Framework for Protecting Livelihoods and Assets at Risk from Climate Change Induced Flooding in Glaciated River Basins of Nepal

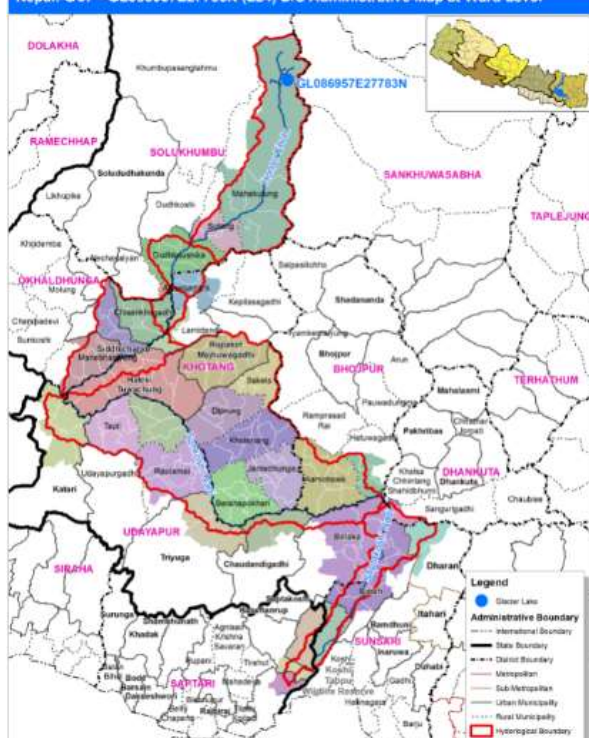
<b>Narrative Summary</b>	<b>Objectively Verifiable Indicators (OVI)</b>	<b>Means of Verification (MoV)</b>	<b>Risks/Assumptions</b>
<b>Goal</b> To contribute to safeguard lives and secure current and future economic goals undertaking climate risk management	Climate risk management reflected in five year and annual plan, policies and budget	Five-year plan and annual budget speeches	Government commitment and priorities in climate risk management to contribute to safeguard lives and secure current and future economic goals
<b>Objectives</b> 1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions. 2.0 Increased resilience of infrastructure and build environment to climate change threats.	<ul style="list-style-type: none"> <li>Number of most vulnerable people and # of communities and Number of regions adopted climate resilience technologies for their enhanced livelihoods</li> <li>Constructed # of climate smart infrastructures</li> </ul>	Annual report of the DHM and the Project	GLOF affected vulnerable people, community and regions adopted climate smart technologies and build climate resilient infrastructures
<b>Outputs</b> <b>Output 1.1:</b> Institutions strengthened to deliver climate risk information, monitoring and early warning services to local populations and productive sectors of economy	Enhanced capacity of DHM and other related institutions to deliver climate risk information, monitoring and early warning services to local populations and productive sectors of economy	DHM and other related institutions' annual and periodic report	GON commitment, policy, programs and infrastructure to deliver climate risk information, monitoring and early warning services to local populations and productive sectors of economy
<b>Output 2.1:</b> Investment in GLOF and flood risk reduction strategies at the watershed level scaled-up	GON periodic investment and commitment (in 5 year and yearly plan) in GLOF and flood risk reduction strategies at the watershed level scaled-up	5 year and yearly plan and budget	GON commitment to invest in GLOF and flood risk reduction strategies at the watershed level scaled-up
<b>Activity 1.1.1:</b> Knowledge base and technical capacities strengthened for climate research and risk reduction strategies. 1.1.1 Methods and SOPs for inventory of glaciers and glacial lakes	<ul style="list-style-type: none"> <li>Developed methods &amp; SOPs for inventory of glaciers and glacier lakes</li> <li>Developed methods for prioritization of GLOFs</li> <li>Developed methods, technology introduced</li> </ul>	Project and institutions annual progress report e.g. DHM, concerned ministry	

1.1.2 Methods of prioritization of GLOFs	for modeling and mapping GLOF, related hazards		
1.1.3 Methods, technology introduced for modeling and mapping GLOF, related hazards	<ul style="list-style-type: none"> <li>• Systematically recorded climate-induced hazard event database by the concerned organizations</li> </ul>		
1.1.4 Development of climate-induced hazard event database			
<b>Activity 1.1.2:</b> Technological capacities strengthened for monitoring and early warning: 1.2.1 Improve observation network density in GLOF watersheds 1.2.2 Multi-hazard early warning combining centralized and community-based mechanisms	<ul style="list-style-type: none"> <li>• Developed functional network of GLOF watersheds</li> <li>• Developed number of Multi-hazard early warning combining centralized and community-based mechanisms</li> </ul>	Project and institutions annual progress report e.g. DHM, concerned ministry	
<b>Activity 1.1.3:</b> Policy and financial mechanisms for sustainable GLOF and flood risk information services: 1.3.1 Climate risk information products tailored for a use by productive sectors 1.3.2 Regulatory framework and procedures for private sector co-finance for O&M 1.3.3. Improved institutions mechanisms to enforce climate risk informed watershed management principles	<ul style="list-style-type: none"> <li>• Developed tailored climate risk information systems and used by productive sectors</li> <li>• Developed regulatory framework and procedures for private sector co-finance for O&amp;M</li> <li>• Mechanism developed and enforced for water management principles</li> </ul>	Project and institutions annual progress report e.g. DHM, concerned ministry and departments	
<b>Activity 2.1.1:</b> Watershed characterization and field studies to verify the areas of priority interventions 2.1.1: Detailed, field-based investigations high risk glacial lakes 2.1.2: Priority degraded sub-watersheds upstream and downstream identified	<ul style="list-style-type: none"> <li>• Conducted detailed field based investigations of high-risk glacial lakes</li> <li>• Prioritization criteria and report of prioritized sub-watersheds of upstream and downstream area</li> </ul>	Concerned Departments and ministries annual reports	
<b>Activity 2.1.2:</b> Investment in GLOF and flash flood risk reduction for 4 priority lakes watersheds	<ul style="list-style-type: none"> <li>• Lowered levels of 4 glacial lakes have the highest priority</li> </ul>	Concerned Departments and ministries annual reports	

Nepal: GCF - GL087092E27798N (L21) D/S Administrative Map at Ward Level



Nepal: GCF - GL086957E27783N (L24) D/S Administrative Map at Ward Level

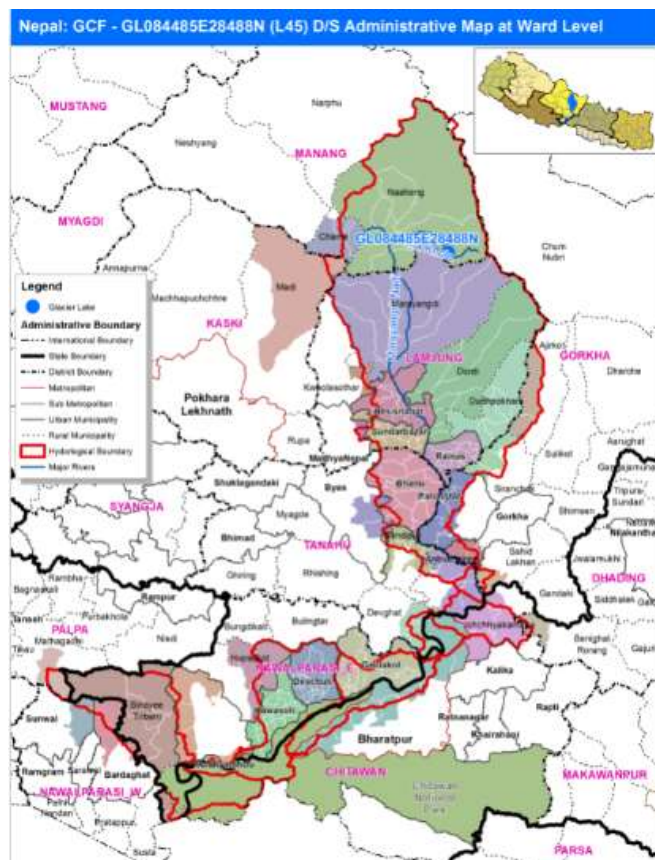
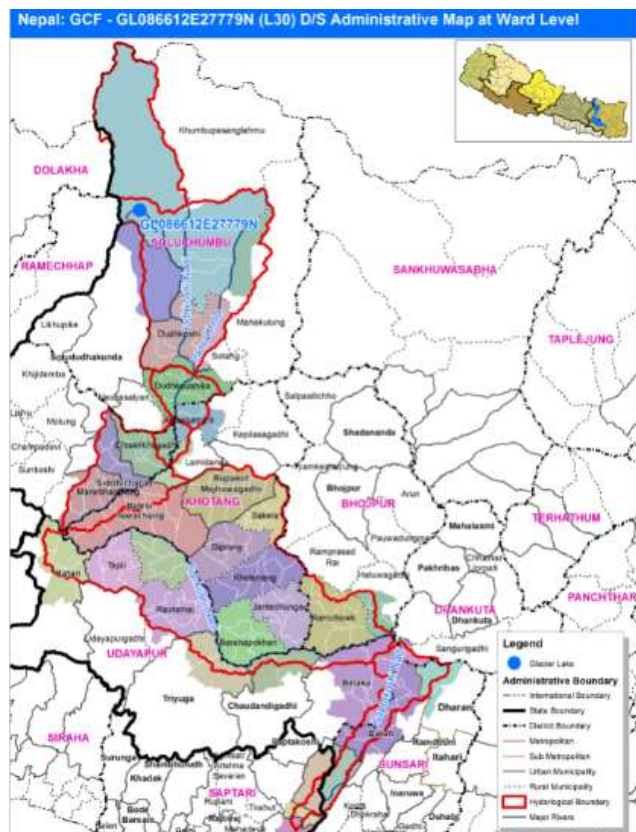


2.2.1: Directly investment in lowering of the levels of 4 of the highest risk GLOF lakes 2.2.2: Direct investment in the construction of check dams for diversion of GLOF flow	<ul style="list-style-type: none"> <li>Constructed number of checkdams and infrastructures for diversion of GLOF flow</li> </ul>		
<b>Activity 2.1.3:</b> Investment in EBA methods of watershed management to address land degradation and reduce flood risk covering xxx hectare: 2.3.1: High value community-forestry and NTFP livelihood investments carried out to benefit xxx households 2.3.2 Community-based EWS and response capacity developed.	<ul style="list-style-type: none"> <li>Number of households economically benefited from the number of management of community forestry and NTFPs</li> <li>Number of community based EWS established and managed by them</li> </ul>		

### Annex 3 Project Sites

Proposed Project sites and covered municipalities (Maps- a) Lower Barun, b) Hongu 2, c) Thulagi and d) Lumding Tsho will be provided with Excel Sheet data for better view and understanding)





## Annex 4 Sample size and sampling method for Household survey for Baseline Studies

### 1.0 Sample size and sampling method for HH survey:

The project will work on 4 glacial lakes and the result measurement of each glacial lake will be separately calculated. Thus, each lake will be considered as a domain. Hence there will be 4 domains.

The effect of glacial lake will be varied with the distance of the lake. Hence, the distance is categorized as less than 50 Km and 50 to 100 Km and it is dealt as 2 strata.

This sample size based on a statistical test of the difference of proportions (or prevalence) for an indicator (e.g., from baseline to End-line) particularly for two stage random sampling, controlling for inferential error is calculated using the formula<sup>6</sup> (\*) as

$$n = \frac{D[(Z_{\alpha} + Z_{\beta})^2 * (P_1(1 - P_1) + P_2(1 - P_2))]}{(P_2 - P_1)^2} \dots \dots \dots (*)$$

Where

n = required sample size;

D = design effect (we assume D = 2 for two stage sampling);

p<sub>1</sub> = the value of the key indicator at baseline;

p<sub>2</sub> = the planned target value of the key indicator at the end-line/final evaluation;

Z<sub>1-α</sub> = the z-score corresponding to the degree of confidence with which it is desired to be able to conclude that an observed change of size (X<sub>2</sub> - X<sub>1</sub>) would not have occurred by chance (statistical significance). The z-score corresponding to the desired confidence level (typically, we set α = .05, thus Z<sub>0.95</sub> = 1.645); and

Z<sub>1-β</sub> = the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of size (P<sub>2</sub> - P<sub>1</sub>) if one actually occurred (statistical power). The z-score corresponding to the desired power level (typically, we set β = 0.2, thus Z<sub>0.8</sub> = 0.840).

Regarding the HH level, the main indicator is number of most vulnerable people/HHs in the study area. Thus, our variable of interest is percent of most vulnerable household in the project area. It is estimated that, the existing percentage of most vulnerable household in the study area is 20%.

The initial sample size calculated in order to detect 10% progress on the indicators based on (\*) is given in 310. The sample is further increased by 5% to account for contingency such as non-responsor recording error. Hence, the sample size for each domain/lake will be 325. Since, there are 3 domains, hence the obtained sample size multiplied by 4 and the proposed sample size for the survey of all 4 glacial lakes will be 1024 (325\*3\*1.05). However, there are common watershed area of L24 and L30 in the midstream of Sunkoshi watershed area in which data collected household have been reduced to 850 from 1024.

The two stage random sampling will be used for selecting the Household/beneficiaries. Since the lowest administrative unit of the Nepal government is Ward of the municipalities/rural municipalities. Thus, it is considered as Primary sampling unit (PSU). Out of total Wards/PSUs, 13 Wards will be selected by using systematic probability proportional to size sampling method and from each ward 25 HHs<sup>7</sup> will be selected

<sup>6</sup> Sampling Guide, 1999; FANTA III, Food and Nutrition Technical Assistance III Project (FANTA); USAID

<sup>7</sup> **Thumb rule for selecting cluster and beneficiaries:** A range of 15–35 beneficiaries for each selected cluster is appropriate because, in most cases, this represents a logistically feasible number of beneficiaries per cluster to sample without inducing a design effect that is larger than roughly 2. Based on this “15–35 beneficiaries per cluster” thumb rule, one can then use the following approach to decide on the actual number of clusters and

based on Random-walk method. The method entails (1) randomly choosing a starting point and a direction of travel within a sample cluster, (2) conducting an interview in the nearest household, and (3) continuously choosing the next nearest household for an interview until the target number of interviews has been obtained. The weight is considered to each selected unit in the sample in order to estimate the parameter/indicators.

**No of household survey in In Thulagi L45:** There are 4 glacial lakes. The GCF project will only intervene on lake lowering, set up hydrological/ meteorological station and establishing early warning system particularly on Thulagi lake vicinity. It will not launch livelihood improvement activities in downstream as IUCN is working on it, thus, the GCF project will not conduct household survey in baseline and endline survey in order to avoid duplication of this activity.

Total 850 households will be surveyed in three watershed areas from 0-100 km distance of three glacial lakes (Barun, Hongu and Dudhkoshi) and its downstream. In Hongu L24, there are 18,375 households in 8 Wards and 23,660 households in 13 Wards of Dudhkoshi L30. Both rivers meet at one place make common for 50-100 km watershed area (midstream) which has 19,471 households in 41 Wards.

For sampling of the households, 325 households have been selected including 25 households in 0-50 km and 325 from 50-100 km distance in Barun L21. In Hongu L24, total 75 households have been selected and 125 households in Dudhkoshi L30 from 0-50 km distance. In the common watershed area of both Hongu L24 and Dudhkoshi L30, 325 households have been selected from 50-100 km.

Table 1: Summary of the universe and sample household for the household survey

Glacial Lake ID, glacial lake and the main river	Universe			Sample (HHS)		
	No. of HHS in 0-50 Km	No. of HHS in 50-100 Km	Total	0-50 Km	50-100 Km	Total
L21 (Barun in Arun)	1,659 (4)	26,189 (58)	27,848 (62)	25 (1)	300 (12)	325 (13)
L24 (Hongu in Sunkoshi)	18,375 (8)	19,471 (41)	18,375 (8) + 23,660 (13) + 19,471 (41) = 61,506 (62)	75 (3)	325 (13) for both L24 & L30	75 (3)+ 125 (5) + 325 (13) = 525 (21)
L30 (Dudhkoshi in Sunkoshi)	23,660 (13)			125 (5)		
L45 (Thulagi in Marsyangi-Gandaki))	IUCN has launched livelihood programme in the downstream of Thulagi lake. Thus, GCF project will not launch livelihood programme in downstream. Thus, HHS will not be conducted in Thulagi.					
Total						850 (34)

Notes: 1. Figures in bracket are the number of wards

2. District, Municipalities/Rural Municipalities, Ward Number, Population, Households and Sample Size are given in Excel File Attached herewith.

**Separate calculation for Hongu - Sunkoshi L24 and Dudhkoshi-Sunkoshi L30 for common watershed in midstream:** The following Municipalities and Rural municipalities have common watershed for both Hongu - Sunkoshi L24 and Dudhkoshi-Sunkoshi L30 in midstream area. Thus, one set of household survey will be carried out for both river systems. They are:

Table 2: Common municipality (watershed) for both Hongu L24 and Dudhkosihi L30

District	Type of Palika	Name
Solukhumbu	Rural Municipality	Dudhkaushika
	Rural Municipality	Mechasalyan

beneficiaries per cluster to choose - **Feed the Future Agricultural Annual Monitoring Indicators, Diana Maria Stukel Gregg Friedman February 2016;**



Khotang	Rural Municipality	Aiselukharka
	Rural Municipality	Lamidanda
	Municipality	Halesi Wachung
Okhaldhunga	Rural Municipality	Chisankhugadhi
	Municipality	Sidhicharan
	Rural Municipality	Manebhanjyang

**Focus Group Discussions (FGD):** At least one FGD will be conducted in 48 Wards where household survey will be conducted in downstream of three glacial lakes (L21, L24 and L30).

**Key Informant's Interview (KII):** Likewise, KII will also be conducted with the most knowledgeable persons in all the 48 Wards, and municipalities and district level.

### ***Preparation of the tools, techniques and protocols (guidelines) for the data collection***

The consulting agency will prepare tools, techniques and protocols for the data collection and submit to the UNDP in its Inception Report. This will include, but not limited to, household survey questionnaires, checklist for the consultations at various levels of stakeholders, focus group discussions, key informant's interview, community survey etc. The consultancy agency will finalize the data collection tools and techniques in consultations with UNDP and other stakeholders. The logical framework will be the prime basis for preparing the data collection tools and techniques.

### **Orientation to the Associate Researcher and Enumerators**

The team leader and statistician will orient the Associate Researchers and Enumerators on data collection tools, techniques and protocols, household selection method, checklists, respect to the local culture etc.

### **Pre-Testing of the questionnaires and other data collection tools**

Before finalizing the data collection tools and techniques, it should be pre-tested in the field to ensure sufficiency of the tools to cover all the aspects.

### **Data collection schedule**

The consultancy agency will submit a tentative data collection schedule in its Inception Report to complete the assignment on agreed time. It should include the tentative starting and completion date per municipality/rural municipality, location of data collection, responsible person and his/her mobile number, and other information.

### **Data collection quantity**

There are total 850 household survey questionnaires and 34 Wards in the upstream and downstream of three glacial lakes (L21, L24 and L30 - please see in the Annex 1-3) from 0-100 km distance from glacial lakes. In L45, consultations will be done to gather data/information on early warning system and hydrometeorology-station. There will be at least one FGD in each Ward and 25 household survey questionnaires to be filled up in one Ward. The following persons but not limited to are potential persons/officials for the KII: elected Ward Chair and its officials, Mayor/Vice Mayor, local knowledgeable persons, CSOs and former Chair/Vice Chair, *Pradhan Panch/Uppradhan Panch*, Hydro-electricity investors and their officials, community forestry officials, National Park Officials may be persons for KII at field level.

## **Annex 5: List of the District, Municipality and Wards for Data Collection**

### **Sampling in L21 Barun-Arun Watershed**

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Pop /13)	Sample size (HHS)	Total Ward Area_S QKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
SANKHUWASABHA	Makalu	RM (GP)	3	3,253	3,253	667	3,253	25	55.37	L21	58.76	25-50
SANKHUWASABHA	Makalu	RM (GP)	4	1,611	4,864	330	13,707		218.67	L21	7.37	25-50
SANKHUWASABHA	Bhotkhola	RM (GP)	5	1,396	6,260	286	24,161		61.42	L21	22.73	25-50
SANKHUWASABHA	Bhotkhola	RM (GP)	4	1,836	8,096	376	34,615		43.14	L21	42.56	25-50
SANKHUWASABHA	Sabhapokhari	RM (GP)	3	1,795	9,891	368	45,069		30.53	L21	58.80	50-75
SANKHUWASABHA	Sabhapokhari	RM (GP)	4	1,149	11,040	235	55,523		63.53	L21	18.09	50-75
SANKHUWASABHA	Sabhapokhari	RM (GP)	5	1,150	12,190	236	65,977	25	71.75	L21	16.03	50-75
SANKHUWASABHA	Makalu	RM (GP)	5	3,650	15,840	748	76,431		127.54	L21	28.62	50-75
SANKHUWASABHA	Makalu	RM (GP)	6	1,196	17,036	245	86,885		21.15	L21	56.56	50-75
SANKHUWASABHA	Makalu	RM (GP)	2	2,934	19,970	601	97,339		63.31	L21	46.34	50-75
SANKHUWASABHA	Makalu	RM (GP)	1	928	20,898	190	107,793		33.40	L21	27.78	50-75
SANKHUWASABHA	Chichila	RM (GP)	2	1,723	22,621	353	118,247		21.99	L21	78.35	50-75
SANKHUWASABHA	Chichila	RM (GP)	3	921	23,542	189	128,701		16.30	L21	56.50	50-75
SANKHUWASABHA	Chichila	RM (GP)	1	1,439	24,981	295	139,155	25	17.39	L21	82.74	50-75
SANKHUWASABHA	Chichila	RM (GP)	4	1,279	26,260	262			15.71	L21	81.40	50-75
SANKHUWASABHA	Chichila	RM (GP)	5	1,703	27,963	349			17.14	L21	99.35	50-75
SANKHUWASABHA	Silichong	RM (GP)	5	1,195	29,158	245			37.23	L21	32.10	50-75
SANKHUWASABHA	Silichong	RM (GP)	4	2,010	31,168	412			28.26	L21	71.11	50-75
SANKHUWASABHA	Silichong	RM (GP)	3	2,878	34,046	590		25	68.40	L21	42.08	50-75
SANKHUWASABHA	Sabhapokhari	RM (GP)	1	2,255	36,301	462			15.04	L21	149.96	75-100

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Pop /13)	Sample size (HHS)	Total Ward Area_S QKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
SANKHUWASABHA	Sabhapokhari	RM (GP)	2	1,947	38,248	399			15.38	L21	126.55	75-100
SANKHUWASABHA	Sabhapokhari	RM (GP)	6	2,196	40,444	450			25.86	L21	84.93	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	9	1,832	42,276	375			25.39	L21	72.15	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	8	2,069	44,345	424		25	11.82	L21	175.03	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	7	1,983	46,328	406			8.87	L21	223.58	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	3	2,341	48,669	480			17.59	L21	133.12	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	1	2,152	50,821	441			21.30	L21	101.04	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	2	1,771	52,592	363			14.08	L21	125.80	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	6	1,764	54,356	361			10.13	L21	174.09	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	5	1,450	55,806	297		25	16.50	L21	87.87	75-100
SANKHUWASABHA	Panchakhapana	UM (NP)	4	2,159	57,965	442			22.36	L21	96.57	75-100
SANKHUWASABHA	Khandbari	UM (NP)	1	4,621	62,586	947			3.93	L21	1,175.06	75-100
SANKHUWASABHA	Khandbari	UM (NP)	7	3,205	65,791	657		25	6.02	L21	532.53	75-100
SANKHUWASABHA	Khandbari	UM (NP)	3	2,921	68,712	599			4.83	L21	604.95	75-100
SANKHUWASABHA	Khandbari	UM (NP)	4	2,942	71,654	603			12.60	L21	233.43	75-100
SANKHUWASABHA	Khandbari	UM (NP)	5	1,429	73,083	293			9.28	L21	153.95	75-100
SANKHUWASABHA	Khandbari	UM (NP)	6	2,273	75,356	466		25	17.08	L21	133.11	75-100
SANKHUWASABHA	Khandbari	UM (NP)	8	2,730	78,086	559			9.77	L21	279.48	75-100
SANKHUWASABHA	Khandbari	UM (NP)	9	4,449	82,535	912			17.10	L21	260.18	75-100
SANKHUWASABHA	Khandbari	UM (NP)	2	1,731	84,266	355			10.64	L21	162.62	75-100
SANKHUWASABHA	Khandbari	UM (NP)	10	2,822	87,088	578		25	17.28	L21	163.30	75-100
SANKHUWASABHA	Khandbari	UM (NP)	11	2,054	89,142	421			14.24	L21	144.24	75-100
SANKHUWASABHA	Silichong	RM (GP)	11	2,895	92,037	593			104.99	L21	27.57	75-100
SANKHUWASABHA	Silichong	RM (GP)	2	2,828	94,865	580			54.38	L21	52.00	75-100
BHOJPUR	Salpasilichho	RM (GP)	3	2,075	96,940	425		25	17.07	L21	121.59	75-100
BHOJPUR	Salpasilichho	RM (GP)	6	2,405	99,345	493			62.98	L21	38.18	75-100

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Pop /13)	Sample size (HHS)	Total Ward Area_SQKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
BHOJPUR	Salpasilichho	RM (GP)	5	2,476	101,821	507			65.39	L21	37.86	75-100
BHOJPUR	Salpasilichho	RM (GP)	4	2,142	103,963	439			22.80	L21	93.96	75-100
BHOJPUR	Salpasilichho	RM (GP)	1	2,004	105,967	411			12.26	L21	163.45	75-100
BHOJPUR	Salpasilichho	RM (GP)	2	2,009	107,976	412		25	12.83	L21	156.59	75-100
BHOJPUR	Shadananda	UM(NP)	3	1,589	109,565	326			22.05	L21	72.06	75-100
BHOJPUR	Shadananda	UM(NP)	12	2,571	112,136	527			22.22	L21	115.70	75-100
BHOJPUR	Shadananda	UM(NP)	11	2,736	114,872	561			19.78	L21	138.30	75-100
BHOJPUR	Shadananda	UM(NP)	9	1,665	116,537	341			22.04	L21	75.56	75-100
BHOJPUR	Shadananda	UM(NP)	2	2,461	118,998	504		25	26.89	L21	91.53	75-100
BHOJPUR	Shadananda	UM(NP)	1	3,476	122,474	712			18.83	L21	184.56	75-100
BHOJPUR	Shadananda	UM(NP)	10	3,408	125,882	698			21.89	L21	155.72	75-100
BHOJPUR	Shadananda	UM(NP)	8	2,240	128,122	459		25	11.58	L21	193.48	75-100
BHOJPUR	Shadananda	UM(NP)	5	1,952	130,074	400			6.34	L21	307.84	75-100
BHOJPUR	Shadananda	UM(NP)	4	1,873	131,947	384			12.91	L21	145.05	75-100
BHOJPUR	Shadananda	UM(NP)	7	1,834	133,781	376			10.04	L21	182.75	75-100
BHOJPUR	Shadananda	UM(NP)	6	2,119	135,900	434			16.62	L21	127.46	75-100
Total								325				

**Sampling in L24 Hongu-Sunkoshi Watershed** (Note: There are common watershed from 50-100 km for Sunkoshi and Hongu)

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Popn /13)	Sample size (HHS)	Total Ward Area_SQKM	LAK E ID	Ward Population Density	Distance class from Lake in KM
SOLUKHUMBU	Mahakulung	RM (GP)	1	3,215	3,215	659	3,215	25	19.54	L24	164.52	25-50
SOLUKHUMBU	Mahakulung	RM (GP)	5	1,447	4,662	297	9,337		23.88	L24	60.59	25-50
SOLUKHUMBU	Sotang	RM (GP)	4	2,225	6,887	456	15,459		35.12	L24	63.36	25-50
SOLUKHUMBU	Sotang	RM (GP)	5	2,645	9,532	542		25	10.61	L24	249.30	25-50

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Popn /13)	Sample size (HHS)	Total Ward Area _SQKM	LAK E ID	Ward Population Density	Distance class from Lake in KM
SOLUKHUMBU	Sotang	RM (GP)	3	2,043	11,575	419			12.15	L24	168.14	25-50
SOLUKHUMBU	Mahakulung	RM (GP)	2	1,908	13,483				41.71	L24	45.74	25-50
SOLUKHUMBU	Mahakulung	RM (GP)	3	3,164	16,647	648		25	81.51	L24	38.82	25-50
SOLUKHUMBU	Mahakulung	RM (GP)	4	1,718	18,365	352			69.28	L24	24.80	25-50
	Total		8	18,365								
<b>Selection of Wards in L30 and L24 Watershed</b>												
SOLUKHUMBU	Sotang	RM (GP)	1	1,625	1,625	333	1,625	25	12.75	L24 and L30	127.47	25-50
SOLUKHUMBU	Dudhkaushika	RM (GP)	8	2,112	3,737	433	8,934		15.08	L24 and L30	140.09	25-50
SOLUKHUMBU	Dudhkaushika	RM (GP)	7	2,018	5,755	414	16,243		9.40	L24 and L30	214.61	25-50
SOLUKHUMBU	Dudhkaushika	RM (GP)	9	3,552	9,307	728	23,552	25	30.85	L24 and L30	115.14	25-50
SOLUKHUMBU	Dudhkaushika	RM (GP)	2	2,052	11,359	420	30,861		11.44	L24 and L30	179.35	50-75
SOLUKHUMBU	Dudhkaushika	RM (GP)	6	2,442	13,801	500	38,170		15.12	L24 and L30	161.53	50-75
SOLUKHUMBU	Dudhkaushika	RM (GP)	1	2,197	15,998	450	45,479	25	16.42	L24 and L30	133.80	50-75
SOLUKHUMBU	Dudhkaushika	RM (GP)	3	1,508	17,506	309	52,788		16.25	L24 and L30	92.77	50-75
SOLUKHUMBU	Dudhkaushika	RM (GP)	5	2,218	19,724	455	60,097		17.75	L24 and L30	124.92	50-75
SOLUKHUMBU	Dudhkaushika	RM (GP)	4	1,573	21,297	322	67,406		12.29	L24 and L30	127.98	50-75
SOLUKHUMBU	Nechasalyan	RM (GP)	4	2,198	23,495	450	74,715	25	7.54	L24	291.67	50-75

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Popn /13)	Sample size (HHS)	Total Ward Area _SQKM	LAK E ID	Ward Population Density	Distance class from Lake in KM
										and L30		
KHOTANG	Ainselukhark	RM (GP)	7	1,895	25,390	388	82,024		16.56	L24 and L30	114.43	50-75
KHOTANG	Ainselukhark	RM (GP)	5	2,330	27,720	477	89,333		12.89	L24 and L30	180.75	50-75
KHOTANG	Ainselukhark	RM (GP)	3	2,995	30,715	614	96,642	25	18.98	L24 and L30	157.83	50-75
KHOTANG	Ainselukhark	RM (GP)	4	2,136	32,851	438			13.85	L24 and L30	154.19	50-75
KHOTANG	Ainselukhark	RM (GP)	6	1,307	34,158	268			12.83	L24 and L30	101.84	50-75
KHOTANG	Lamidanda	RM (GP)	4	2,662	36,820	545			18.41	L24 and L30	144.63	50-75
KHOTANG	Halesi Tuwachung	UM(NP)	6	2,278	39,098	467		25	11.60	L24 and L30	196.31	75-100
KHOTANG	Halesi Tuwachung	UM(NP)	4	1,477	40,575	303			12.01	L24 and L30	123.02	75-100
KHOTANG	Halesi Tuwachung	UM(NP)	1	2,838	43,413	582			26.58	L24 and L30	106.79	75-100
KHOTANG	Halesi Tuwachung	UM(NP)	3	2,786	46,199	571		25	21.71	L24 and L30	128.31	75-100
KHOTANG	Halesi Tuwachung	UM(NP)	7	2,767	48,966	567			14.87	L24 and L30	186.06	75-100
KHOTANG	Halesi Tuwachung	UM(NP)	9	1,507	50,473	309			16.07	L24 and L30	93.76	75-100
KHOTANG	Lamidanda	RM (GP)	3	2,717	53,190	557		25	24.04	L24 and L30	113.03	75-100

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Popn /13)	Sample size (HHS)	Total Ward Area _SQKM	LAK E ID	Ward Population Density	Distance class from Lake in KM
OKHALDHUNGA	Siddhicharan	UM(NP)	5	2,846	56,036	583			21.65	L24 and L30	131.45	75-100
OKHALDHUNGA	Siddhicharan	UM(NP)	3	2,390	58,426	490			13.12	L24 and L30	182.13	75-100
OKHALDHUNGA	Siddhicharan	UM(NP)	11	3,095	61,521	634		25	6.50	L24 and L30	475.83	75-100
OKHALDHUNGA	Siddhicharan	UM(NP)	4	2,707	64,228	555			9.25	L24 and L30	292.52	75-100
OKHALDHUNGA	Siddhicharan	UM(NP)	1	1,996	66,224	409			17.49	L24 and L30	114.11	75-100
OKHALDHUNGA	Siddhicharan	UM(NP)	2	3,070	69,294	629		25	11.53	L24 and L30	266.28	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	6	2,999	72,293	615			19.05	L24 and L30	157.43	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	8	1,774	74,067	364		25	14.18	L24 and L30	125.08	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	7	1,383	75,450	283			12.55	L24 and L30	110.20	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	4	2,030	77,480	416			16.47	L24 and L30	123.25	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	5	1,611	79,091	330			9.71	L24 and L30	165.86	75-100
OKHALDHUNGA	Manebhanjyang	RM (GP)	4	2,884	81,975	591		25	21.04	L24 and L30	137.04	75-100
OKHALDHUNGA	Manebhanjyang	RM (GP)	5	3,079	85,054	631			17.19	L24 and L30	179.14	75-100
OKHALDHUNGA	Manebhanjyang	RM (GP)	1	1,909	86,963	391			16.80	L24	113.61	75-100

DISTRICT	Municipality	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Sampled Population size (Total Popn /13)	Sample size (HHS)	Total Ward Area _SQKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
										and L30		
OKHALDHUNGA	Manebhanjyang	RM (GP)	6	2,828	89,791	580		25	17.70	L24 and L30	159.79	75-100
OKHALDHUNGA	Manebhanjyang	RM (GP)	3	3,050	92,841	625			18.51	L24 and L30	164.75	75-100
OKHALDHUNGA	Manebhanjyang	RM (GP)	2	2,177	95,018	446			13.12	L24 and L30	165.87	75-100
Total								325				

Annex 3: Sampling in **L30** Dushkoshi-Sunkoshi Watershed (Note: There are common watershed from 50-100 km for Dushkoshi-Hongu)

DISTRICT	MUNICIPALITY	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Selected Population Size (Total Popn/5)	Selected Sample size (HHS)	Total Ward Area _SQKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
SOLUKHUMBU	Khumbu pasanglahmu	RM (GP)	2	1,957	1,957	401	1,957	25	53.67	L30	36.46	0-25
SOLUKHUMBU	Khumbu pasanglahmu	RM (GP)	3	1,752	3,709	359	6,689		280.42	L30	6.25	0-25
SOLUKHUMBU	Khumbu pasanglahmu	RM (GP)	1	1,828	5,537	375	11,421		71.55	L30	25.55	0-25
SOLUKHUMBU	Khumbu pasanglahmu	RM (GP)	5	1,540	7,077	316	16,153	25	431.31	L30	3.57	0-25
SOLUKHUMBU	Solududhakunda	UM (NP)	1	2,177	9,254	446	20,885		168.80	L30	12.90	0-25
SOLUKHUMBU	Dudhkoshi	RM (GP)	1	1,524	10,778	312	25,617		22.43	L30	67.95	0-25
SOLUKHUMBU	Dudhkoshi	RM (GP)	2	992	11,770	203		25	32.37	L30	30.64	25-50
SOLUKHUMBU	Dudhkoshi	RM (GP)	3	1,713	13,483	351			12.51	L30	136.97	25-50
SOLUKHUMBU	Dudhkoshi	RM (GP)	2	1,543	15,026	316			22.40	L30	68.88	25-50
SOLUKHUMBU	Dudhkoshi	RM (GP)	4	1,529	16,555	313		25	13.07	L30	116.95	25-50
SOLUKHUMBU	Dudhkoshi	RM (GP)	5	2,261	18,816	463			35.76	L30	63.22	25-50



DISTRICT	MUNICIPALITY	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Selected Population Size (Total Popn/5)	Selected Sample size (HHS)	Total Ward Area_S QKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
SOLUKHUMBU	Dudhkos hi	RM (GP)	6	2,566	21,382	526		25	20.32	L30	126.31	25-50
SOLUKHUMBU	Dudhkos hi	RM (GP)	7	2,278	23,660	467			41.18	L30	55.31	25-50
			13	23,660				125				
SOLUKHUMBU	SOTANG	RM (GP)	1	1,625	1,625	333	1,625	25	12.75	L24& L30	127.47	25-50
SOLUKHUMBU	Dudhka ushika	RM (GP)	8	2,112	3,737	433	8,934		15.08	L24& L30	140.09	25-50
SOLUKHUMBU	Dudhka ushika	RM (GP)	7	2,018	5,755	414	16,243		9.40	L24& L30	214.61	25-50
SOLUKHUMBU	Dudhka ushika	RM (GP)	9	3,552	9,307	728	23,552	25	30.85	L24& L30	115.14	25-50
SOLUKHUMBU	Dudhka ushika	RM (GP)	2	2,052	11,359	420	30,861		11.44	L24& L30	179.35	50-75
SOLUKHUMBU	Dudhka ushika	RM (GP)	6	2,442	13,801	500	38,170		15.12	L24& L30	161.53	50-75
SOLUKHUMBU	Dudhka ushika	RM (GP)	1	2,197	15,998	450	45,479	25	16.42	L24& L30	133.80	50-75
SOLUKHUMBU	Dudhka ushika	RM (GP)	3	1,508	17,506	309	52,788		16.25	L24& L30	92.77	50-75
SOLUKHUMBU	Dudhka ushika	RM (GP)	5	2,218	19,724	455	60,097		17.75	L24& L30	124.92	50-75
SOLUKHUMBU	Dudhka ushika	RM (GP)	4	1,573	21,297	322	67,406		12.29	L24& L30	127.98	50-75
SOLUKHUMBU	Dudhka ushika	RM (GP)	4	2,198	23,495	450	74,715	25	7.54	L24& L30	291.67	50-75
KHOTANG	Aishelek harka	RM (GP)	7	1,895	25,390	388	82,024		16.56	L24& L30	114.43	50-75
KHOTANG	Aishelek harka	RM (GP)	5	2,330	27,720	477	89,333		12.89	L24& L30	180.75	50-75
KHOTANG	Aishelek harka	RM (GP)	3	2,995	30,715	614	96,642	25	18.98	L24& L30	157.83	50-75
KHOTANG	Aishelek harka	RM (GP)	4	2,136	32,851	438			13.85	L24& L30	154.19	50-75
KHOTANG	Aishelek harka	RM (GP)	6	1,307	34,158	268			12.83	L24& L30	101.84	50-75
KHOTANG	LAMIDANDA	RM (GP)	4	2,662	36,820	545			18.41	L24& L30	144.63	50-75
KHOTANG	HALESHI TUWACHUNG	UM (NP)	6	2,278	39,098	467		25	11.60	L24& L30	196.31	75-100
KHOTANG	HALESHI TUWACHUNG	UM (NP)	4	1,477	40,575	303			12.01	L24& L30	123.02	75-100
KHOTANG	HALESHI TUWACHUNG	UM (NP)	1	2,838	43,413	582			26.58	L24& L30	106.79	75-100
KHOTANG	HALESHI TUWACHUNG	UM (NP)	3	2,786	46,199	571		25	21.71	L24& L30	128.31	75-100

DISTRICT	MUNICIPALITY	Municipality Type	Ward No	Total Ward Population	Cumulative Population	Total Households	Selected Population Size (Total Popn/5)	Selected Sample size (HHS)	Total Ward Area_S QKM	LAKE ID	Ward Population Density	Distance class from Lake in KM
KHOTANG	HALESHI TUWACHUNG	UM (NP)	7	2,767	48,966	567			14.87	L24& L30	186.06	75-100
KHOTANG	HALESHI TUWACHUNG	UM (NP)	9	1,507	50,473	309			16.07	L24& L30	93.76	75-100
KHOTANG	LAMIDANDA	RM (GP)	3	2,717	53,190	557		25	24.04	L24& L30	113.03	75-100
OKHALDHUNGA	Siddhicharan	UM (NP)	5	2,846	56,036	583			21.65	L24& L30	131.45	75-100
OKHALDHUNGA	Siddhicharan	UM (NP)	3	2,390	58,426	490			13.12	L24& L30	182.13	75-100
OKHALDHUNGA	Siddhicharan	UM (NP)	11	3,095	61,521	634		25	6.50	L24& L30	475.83	75-100
OKHALDHUNGA	Siddhicharan	UM (NP)	4	2,707	64,228	555			9.25	L24& L30	292.52	75-100
OKHALDHUNGA	Siddhicharan	UM (NP)	1	1,996	66,224	409			17.49	L24& L30	114.11	75-100
OKHALDHUNGA	Siddhicharan	UM (NP)	2	3,070	69,294	629		25	11.53	L24& L30	266.28	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	6	2,999	72,293	615			19.05	L24& L30	157.43	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	8	1,774	74,067	364		25	14.18	L24& L30	125.08	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	7	1,383	75,450	283			12.55	L24& L30	110.20	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	4	2,030	77,480	416			16.47	L24& L30	123.25	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	5	1,611	79,091	330			9.71	L24& L30	165.86	75-100
OKHALDHUNGA	Chisankhugadhi	RM (GP)	4	2,884	81,975	591		25	21.04	L24& L30	137.04	75-100
OKHALDHUNGA	MANEBHANJYANG	RM (GP)	5	3,079	85,054	631			17.19	L24& L30	179.14	75-100
OKHALDHUNGA	MANEBHANJYANG	RM (GP)	1	1,909	86,963	391			16.80	L24& L30	113.61	75-100
OKHALDHUNGA	MANEBHANJYANG	RM (GP)	6	2,828	89,791	580		25	17.70	L24& L30	159.79	75-100
OKHALDHUNGA	MANEBHANJYANG	RM (GP)	3	3,050	92,841	625			18.51	L24& L30	164.75	75-100
OKHALDHUNGA	MANEBHANJYANG	RM (GP)	2	2,177	95,018	446			13.12	L24& L30	165.87	75-100
		<b>Total</b>	<b>41</b>			<b>19,471</b>		<b>325</b>				

GP: RM (GP) (Rural Municipality), NP: UM (NP)(Municipality)

**Data analysis:**

Both qualitative and quantitative data analysis should be done to complement each other in writing report

**Use of the electronic device (android mobile) for the household survey**

The consultancy agency will design the household survey for electronic device (e.g. android mobile) using **KOBO Tool** and/or other programme and actual household survey will be done in it. It will save the data entry time and also the cost. Gathered data can be sent the same day to the office of the consultancy service where there are internet services. For this, the Research Associate and Enumerator should be well oriented with field practices. For the official record and safer side, the printed copy of household survey will also be taken in the field.