

# Protecting livelihoods and assets at risk from Glacial Lake Outburst Floods (GLOFs) and climate change-induced flooding in glacial river basins of Nepal

## Environmental and Social Management Framework

1 May 2025

### QUALITY INFORMATION

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### Revision History

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0 - 6	20 September 2021 to 6 April 2023	Development of ESMF
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**Appendix 9:** Indicative Outline of an ESMP

### LIST OF ABBREVIATIONS

<b>CBO</b>	Community-based organisation
<b>CEDAW</b>	Convention on the Elimination of all Forms of Discrimination Against Women
<b>DHM</b>	Department of Hydrology and Meteorology
<b>DRR</b>	Disaster Risk Reduction
<b>EbA</b>	Ecosystem-based Adaptation
<b>Eco-DRR</b>	Eco-Disaster Risk Reduction
<b>EE</b>	Executing Entity
<b>EIA</b>	Environmental Impact Assessment
<b>ESMF</b>	Environmental and Social Management Framework
<b>ESMP</b>	Environmental and Social Management Plan
<b>EWS</b>	Early Warning System
<b>FAO</b>	Food and Agriculture Organization
<b>FPIC</b>	Free, Prior, Informed, Consent
<b>GAP</b>	Gender Action Plan
<b>GCF</b>	Green Climate Fund
<b>GDP</b>	Gross domestic product
<b>GEF</b>	Global Environment Facility
<b>GESI</b>	Gender Equity and Social Inclusion
<b>GHGs</b>	Greenhouse gases
<b>GLOF</b>	Glacial Lake Outburst Flood
<b>GoN</b>	Government of Nepal
<b>HDI</b>	Human Development Index
<b>IP</b>	Indigenous Peoples
<b>IPPF</b>	Indigenous Peoples Planning Framework
<b>IPP</b>	Indigenous Peoples Plan
<b>IT</b>	Information Technology

<b>IWRM</b>	Integrated Water Resource Management
<b>LAP</b>	Land Acquisition Plan
<b>LAPA</b>	Local Adaptation Programmes of Action
<b>LDC</b>	Least Developed Country
<b>LDCF</b>	Least Developed Countries Fund
<b>LRP</b>	Local Resource Person
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MDGs</b>	Millennium Development Goals
<b>METAR</b>	Meteorological Aviation Report
<b>MoAD</b>	Ministry of Agriculture Development
<b>MoE</b>	Ministry of Environment
<b>MoEWRI</b>	Ministry of Energy, Water Resources and Irrigation
<b>MoFE</b>	Ministry of Forests and Environment
<b>MoHA</b>	Ministry of Home Affairs
<b>NAP</b>	National Adaptation Plan
<b>NAPA</b>	National Adaptation Programme of Action
<b>NBSAP</b>	National Biodiversity Strategy and Action Plan
<b>NDC</b>	Nationally Determined Contribution
<b>NGOs</b>	Non-governmental organisations
<b>NbS</b>	Nature-based Solutions
<b>NSDRM</b>	National Strategy for Disaster Risk Management
<b>O&amp;M</b>	Operations and Maintenance
<b>PDGL</b>	Potentially Dangerous Glacial Lakes
<b>PPE</b>	Personal Protective Equipment
<b>SDGs</b>	Sustainable Development Goals
<b>SNRM</b>	Sustainable Natural Resource Management
<b>SOI</b>	Southern Oscillation Index
<b>SOP</b>	Standard Operating Procedure

<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Programme
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>WHO</b>	World Health Organisation

### EXECUTIVE SUMMARY

Increasing atmospheric temperature is causing glaciers to melt worldwide. Glacier melting leads to the formation of glacial lakes. Many of these lakes are considered extremely dangerous as their dams are unstable and have the potential to burst — resulting in devastating Glacial Lake Outburst Floods (GLOFs). In Nepal, there are ~3,800 glaciers and ~2,000 glacial lakes, of these, 47 are considered potentially dangerous.

The Government of Nepal with support from UNDP, is formulating a project on adaptation to climate change impacts **“Protecting livelihoods and assets at risk from Glacial Lake Outburst Floods (GLOFs) and climate change-induced flooding in glacial river basins of Nepal”** for submission to the GCF. The project will seek to improve the resilience of vulnerable communities to climate change impacts.

Specifically, direct investments from the GCF combined with co-financing will be used to: i) reduce the impacts of a GLOF and its residual impacts on vulnerable communities; ii) promote the adoption of GLOF EWS measures among national- and local-level decision-makers to enhance rapid response to an impending GLOF; and iii) strengthen the technical and institutional capacity of the Government of Nepal and local communities to implement GLOF risk reduction measures through targeted training and awareness raising. The combined effect of project interventions will result in the adoption and implementation of a climate-resilient, integrated approach to GLOF risk reduction and flood management.

Four glacial lakes in Nepal have been prioritised for urgent adaptation action: Thulagi Glacial Lake in the Manang district; Lower Barun Glacial Lake in the Sankhuwasabha; Lumding Tsho Glacial Lake and Hongu 2 Glacial Lake in Solukhumbu district.

The proposed project will have the following activities:

- Output 1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.
- Activity 1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.
- Activity 1.2. Develop public-private partnerships for sustainable investment in GLOF and flood risk information services.
- Output 2. Improved hazard monitoring and the generation of early warnings, including the dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events.
- Activity 2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk.
- Activity 2.2. Develop and implement early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards in vulnerable sectors and communities.
- Output 3. Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds.
- Activity 3.1. Lower the levels of four of the highest risk glacial lakes.
- Activity 3.2. Construction of structural and non-structural measures (Civil and NbS/ Bioengineering) for the risk reduction of GLOF and flash flood.
- Activity 3.3. Implement Eco-disaster Risk Reduction and nature-based solutions to reduce the impact of GLOFs and flash floods.

As part of the project development and GCF funding proposal, initial assessments of environmental and social risks have been undertaken. Based on the risk assessment the project has been determined to be of Substantial risk, (GCF Category B) whereby 3 of the 14 identified risks have been rated as Substantial, specifically those relating to construction impacts on natural ecosystems (Risk 3), climate change vulnerability (Risk 7), and structural failure leading to destructive flooding (Risk 9). To manage the environmental and social risks and potential impacts, an Environmental and Social Management Framework (ESMF) has been developed.

The ESMF documents the environmental and social context in which the project will take place. It lists legislation, policies and treaties that are likely to apply to the project. Potential risks and impacts are identified, and the required management actions provided, including processes for screening sub-activities and the development of detailed Environmental and Social Management Plans.

The following tables summarise the potential impacts and proposed mitigation measures for each of the three outputs and sub-activities.



Output 1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development. I	
Potential Adverse Impacts	Mitigation Measures
<i>Activity 1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.</i>	
OHS risks associated with field data collection	<p>Contracts include OHS requirements</p> <p>The project will support the procurement of safety equipment</p> <p>Trainers/extension staff supporting the implementation of activities will be trained on OHS good practices, protocols, and equipment</p>
Discrimination of women	<p>At least 50% of project beneficiaries will be women, including proportional representation from indigenous groups and marginalized communities (including Dalits)</p> <p>Gender Action Plan includes measures to promote women's empowerment and gender equality within the framework of the project. Diverse groups of women need to be included, such as indigenous women, dalit women, non-dalit and non-IP women etc.</p>
Discrimination or limited engagement of Indigenous Peoples, Dalits, and other marginalized groups.	<p>Indigenous peoples and social inclusion planning Framework include measures for the engagement and participation of indigenous peoples.</p> <p>Invitation of indigenous federations, Dalit organizations and ethnic minority organizations to participate within the project management platform, as well as in the role of project partners supporting awareness raising, training processes and implementation activities. This would include the use of customary institutions of Indigenous Peoples.</p> <p>Promotion of proportional representation within project beneficiaries of indigenous peoples, Dalits, women from diverse groups, and marginalized communities.</p> <p>Knowledge and communication focused activities will include information from national experiences, international best practices as well as local and indigenous knowledge. The integration of knowledge from diverse actors into extension and knowledge sharing platforms will promote social inclusion and allow diverse groups to build on local experiences and knowledge.</p>
Trained staff may not be retained by Department, resulting in a loss of corporate knowledge.	<p>Train the trainer program will allow additional staff to be trained, thereby increasing the pool of talent in the government. Selection of staff/participants to consider inclusiveness and diversity.</p> <p>Training can also be extended to communities where appropriate and would be inclusive, considering the needs of women, minorities, and other disadvantaged groups.</p>
<i>Activity 1.2. Develop public-private partnerships for sustainable investment in GLOF and flood risk information services.</i>	
Additional sectors that could benefit may be missed.	<p>Stakeholder engagement to be broad and inclusive. Engagement to include government, private sector, and communities.</p> <p>Incentives to private sector participation should not be limited to specific sectors, but rather to anywhere benefits can be derived and willingness to participate is demonstrated.</p>

Messaging may not meet needs of beneficiaries, in particular vulnerable groups	<p>Stakeholder Engagement Plan to be developed and messaging to be based on broad beneficiary consultation and participation.</p> <p>A GRM provides a mechanism for anyone to raise concerns about the project. The GRM systemises the receipt, management and close out of complaints.</p> <p>Information to be accessible to multiple levels of user</p>
Anticipated private sector investments may not be realized in a timely manner to support implementation.	Cooperation and coordination with the private sector will begin from project inception, and the project will implement awareness raising programs to help engage private sector actors.

<b>Output 2. Improved hazard monitoring and the generation of early warnings, including the dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events</b>	
<b>Potential Adverse Impacts</b>	<b>Mitigation Measures</b>
<i>Activity 2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk</i>	
<p>Impacts associated with installation of equipment ie construction impacts:</p> <ul style="list-style-type: none"> <li>Physical issues: air, water, noise pollution, sed/erosion</li> <li>Biological issues: impacts on flora and fauna</li> <li>Socio-economic: GESI, labour force etc</li> </ul>	<p>Existing sites and/or public land to be utilised – land requirements for DHM infrastructure small (eg 4x6m or 10x10m) thus providing flexibility in site selection.</p> <p>LAP will be prepared to clearly outline the steps required to utilise public or private land. If private land required (ie for installation of EWS equipment), the process of negotiation and compensation will occur. Land acquisition will be based on willing buyer/willing seller and the following conditions: (i) land markets or other opportunities for the productive investment of the sales income exist; (ii) the transaction occurs with the seller's informed consent; and (iii) the seller will be provided with fair compensation based on prevailing market values No compulsory acquisition will occur. In some instances, private partners have offered use of their private land for installation of EWS equipment as a form of co-finance, but it is not anticipated that there will be any change of ownership in these cases.</p> <p>ESIAs will be prepared for each watershed. ESIAs will assess potential impacts associated with the project including physical, biological, and social. The ESIAs will be prepared by a team with appropriate qualifications and experience eg flora and fauna specialists from National Parks, GESI and IP experts, engineering specialists from ICIMOD and government.</p> <p>Based on the outcomes of the ESIAs, ESMPs will be developed (one for each watershed) to ensure appropriate monitoring is in place.</p> <p>Gender and Social Inclusion Plan</p> <p>IPPs will be developed to ensure coverage of IP issues</p> <p>GRM</p>
Training -selection of staff to be inclusive/equitable	<p>Training of trainers for the for the implementation of project activities should include men and women from indigenous groups, Dalit communities and other marginalized groups.</p> <p>LRPs who speak local languages should support trainers as well as awareness raising and information dissemination processes</p>

Maintenance costs and management may not be appropriately budgeted for	<p>Responsible parties are to be engaged in discussion regarding design and maintenance.</p> <p>O&amp;M budgets to be determined and agreed</p> <p>Responsibilities for budget and implementation of work to be clear and transparent</p>
OHS issues associated with in-field maintenance of equipment	<p>ESMPs will include OHS requirements</p> <p>The project will support the procurement of safety equipment</p>
<i>Activity 2.2. Develop and implement early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards in vulnerable sectors and communities</i>	
Selection of trainees within DHM discriminates	<p>Training to be inclusive and non-biased.</p> <p>Gender and Social Inclusion Action Plan and IPPF to be implemented.</p>
Information dissemination may not reach all people including illiterate people	<p>To ensure the widest dissemination local and accessible disclosure tools including audio-visual materials as well as flyers, brochures, videos and community radio broadcasts, and publications will be utilized in addition to other tools. The use of local/ethnic languages will be a focus of outreach documents. Furthermore, particular attention will be paid to farmers, indigenous peoples, illiterate or technologically illiterate people, people with hearing or visual disabilities, people with limited or no access to internet and other groups with special needs.</p> <p>Board/ committee members of community-based organizations, customary institutions, and Local Resource Persons will be local focal points who are able to facilitate ongoing communication with project beneficiaries.</p> <p>Local CSOs and project partners will be important to support information dissemination and communications at the local level, using locally accepted practices such as community-meetings, workshops, among other practices.</p>
OHS associated with field maintenance	<p>Operation and maintenance plan will include OHS requirements.</p> <p>The project will support the procurement of safety equipment.</p>
Lack of culturally appropriate practices, technical assistance and information dissemination for the implementation of Activity	<p>Indigenous Peoples Planning Framework includes measures to the engagement and participation of indigenous peoples within the framework of the project.</p> <p>Invitation of indigenous federations, Dalit organizations and other organizations representing marginalized communities, among other CSOs to participate within the project management platforms.</p> <p>Training of trainers for the consultations and workshops, as well as extension support should include men and women from indigenous groups, Dalit communities and other marginalized groups.</p> <p>The project GRM provides a mechanism by which anyone can raise concerns about the project.</p>
Physical impacts associated with installation of equipment eg towers and sirens	<p>The sites are relatively small, so significant adverse impacts are not expected, none the less, if any new accessways are required, then these will be assessed as part of the ESIs by appropriately experienced specialists. Existing Rights of Way would be used.</p> <p>ESMPs will be developed to ensure appropriate mitigation measures and monitoring is in place.</p>

Community-based disaster response plans fail to be inclusive or take into account local issues/variables	<p>Plans to be developed in a participatory way with communities and ward leader. Participatory planning will help ensure that plans empower and engage highly vulnerable households, including indigenous peoples and Dalits.</p> <p>Emergency Response Procedures would include both workers and communities. The project activities include updating existing disaster response plans, which will benefit from the improved early warning systems that the project will provide as well as the physical structures that will reduce the risk of GLOFs and lessen the impacts of floods.</p> <p>Project to develop SEP.</p> <p>IPPF to ensure inclusion of IPs.</p>
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Output 3. Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds	
Potential Adverse Impacts	Mitigation Measures
Activity 3.1. Lower the levels of four of the highest risk glacial lakes.	
The lowering of the glacial lakes and the construction of flood structures may result in the diversion of surface or water that could be destructive	<p>Design assessment, including hydrologic modelling, has been undertaken. The structural measures proposed have been vetted, designed and specifications are based on thorough dam breach models and safety protocols. These measures have all been vetted by officials of DHM. An independent technical review and site assessment will be conducted prior to construction of these structural measures and adjustments will be made, as necessary. During implementation, the engineers of DHM will be placed on-site to supervise and monitor construction activities.</p> <p>The purpose of the lake lowering is to reduce the risk to populations downstream in the event of a GLOF, the beneficiaries are all those who live adjacent to the rivers downstream of the glacial lake. In terms of populations potentially impacted by construction, as the project sites are located away from the settlements, project activities during construction period will not bring adverse impact on the community regards to disruption of local water supply system. Based on the experience of lake lowering work in Imja, lake water is gradually drained out through a controlled drainage system to be built.</p> <p>Water flows currently occur downstream of the terminal moraines due to runoff and meltwater. The lowering of lakes would be controlled release, similar to flood events, until the design depth is reached. At that point the moraines will operate as a 'run of river dam' naturally allowing water that flows onto the lake to continue flowing downstream.</p> <p>Activities 3.1 and 3.2 involve physical structures to help mitigate flooding, including diversion of flood waters. Flood structures must not result in destructive diversion.</p> <p>Operation and maintenance plan for lowering to be prepared</p>
Construction impacts (physical, biological and socio-economic)	<p>ESIAs will be undertaken to identify and assess potential impacts. ESIAs to include all components of the lake lowering activity, eg physical works in terminal moraine, downstream works, access tracks, resource supply and stockpiling, worker accommodation and conditions. The ESIAs will be prepared by appropriately experienced and qualified professionals. ESIAs and ESMPs will be submitted to GCF for review.</p>

	<p>Critical habitats will be avoided by the project. The area where lake lowering works would be undertaken (the terminal moraines) consists entirely of rock, sediments and ice, there is limited habitat diversity in these areas ESIA's will include assessment of biodiversity and identify any management and mitigation measures required. Based on the findings of the ESIA's, ESMPs will be developed to ensure appropriate monitoring is in place. In the unlikely event that the need for a Biodiversity Action Plan is identified then it would be prepared by specialists.</p> <p>Project sites are located away from the settlements, project activities during construction period will not bring adverse impact on the community regards to disruption of local water supply system.</p> <p>All construction activities will take place during the dry season, to limit damage due to monsoon rains and to limit soil erosion and sedimentation.</p> <p>A Chance Finds Procedure shall be applied in the event of discovery of cultural heritage items during construction.</p>
Lake lowering structures have a negative visual impact on the landscape	<p>Stakeholder engagement should include discussions on potential visual impacts. Visual aids to be used to communicate likely impacts.</p> <p>Local materials to be used where possible to reduce visual impact.</p> <p>Designs to consider inclusion of culturally appropriate elements, such as mani walls/stones, prayer wheels, stupas or prayer flag poles.</p>
Residual risk of GLOF remains	<p>The purpose of the lake lowering is to reduce the risk to populations downstream in the event of a GLOF, the beneficiaries are all those who live adjacent to the rivers downstream of the glacial lake.</p> <p>Interventions will not totally remove risk of GLOFs but will reduce significantly.</p> <p>Designs take account of likely climate change scenarios.</p> <p>Dam break modelling to determine areas of impact if catastrophic failure and assist in identifying mitigation measure designs and identifying 'safe zones'/escape pathways as part of EWS.</p> <p>Communities to be consulted on level of risk that will remain and trained in EWS action plans (capacity building for EWS included as part of Activity 2.2)</p> <p>Additional interventions aim to address some of residual risk.</p> <p>Periodic safety inspections will be undertaken as part of monitoring and maintenance regime.</p> <p>Information from Output 3 to be provided to agencies to allow update of existing DRR plans</p>
OHS risks associated with construction and maintenance	<p>ESMPs to include requirements for OHS management.</p> <p>Earthquakes and landslides are an ever-present risk in the high Himalayas. This risk is recognised in the National Park Management Plans. ESMPs to include Emergency Response Procedures.</p> <p>Labour management procedure to be put in place. Responsible parties and project contractors must:</p> <ul style="list-style-type: none"> <li>not employ workers under minimum age for employment as determined by national law for applicable parties subject to national law and consistent with the ILO Convention No. 138</li> </ul>

	<ul style="list-style-type: none"> <li>• not allow children under the age of 18 to perform work in connection with or arising from the project activities which, by its nature or the circumstances in which it is carried out, is likely to harm his/her health, safety or morals,</li> <li>• not allow children under the age of 18, in connection with project activities, perform work that is likely to interfere with their compulsory education or be harmful to their physical, mental, spiritual, moral or social development.</li> <li>• take immediate steps to correct and remedy any cases where child labour is identified.</li> </ul> <p>Guidance on hazardous work to be prohibited in connection with the project shall derive from the ILO Worst Forms of Child Labour Convention, 1999 (No. 182) and ILO Worst Forms of Child Labour Recommendation, 1999 (No. 190).</p> <p>Examples of hazardous work activities prohibited for children include work: (a) with exposure to physical, psychological or sexual abuse; (b) underground, underwater, working at heights or in confined spaces; (c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads; (d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or (e) under particularly difficult conditions such as work for long hours, during the night or in unreasonable confinement on the premises of the employer.</p> <p>To this end, the project shall ensure that contractors have adequate systems in place to check workers' ages and keep records of the dates of birth of all employees and ensure that these requirements are complied with.</p> <p>Further, the project shall:</p> <ul style="list-style-type: none"> <li>• screen the capacity of locally available pool of workforce with aim to avoid or reduce labour influx by hiring from the local pool of workforce,</li> <li>• ensure Environmental Manager responsibilities regarding oversight of, and reporting on, labour influx and workers' camps (if any),</li> <li>• provide influx workers with training on prevention and response to Gender-Based Violence,</li> <li>• develop effective reporting and response protocol and referrals for safe and confidential survivor assistance,</li> <li>• allow workers to raise their concerns (safety, discontent, maltreatment or else) through the Grievance Mechanism, complaints forms are to be present on the construction site, and promptly investigate allegations of Gender-Based Violence related to project activities</li> </ul> <p>Workers to use appropriate PPE and appropriate training to be provided</p> <p>Contractors to prepare Construction Emergency Medical Plans</p> <p>Operation and maintenance plan to be prepared</p> <p>Institutional arrangements for periodic safety inspections, emergency procedures, and overall operation and maintenance (O&amp;M) of GLOF risk reduction, flood risk reduction, and plantation activities will be integrated within existing mandates of DHM and DoFSC. A structured coordination mechanism will be established to ensure effective collaboration among these agencies, local governments, and community-based organizations.</p> <p>The budget for safety inspections, security measures, and emergency</p>
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	<p>procedures will be incorporated within the existing O&amp;M costs, leveraging available resources without requiring additional allocations. Additionally, existing emergency response health facilities at the sites and other emergency protocols will be utilized to enhance preparedness and response during the project period as well as for O&amp;M activities. Periodic capacity-building programs and inter-agency coordination will be set up for the post project scenario and will be clearly reflected in the Exit Strategy.</p>
<p>IPs could be adversely impacted due to the importance of lakes and other landscape features to them culturally</p>	<p>Early and ongoing engagement with national indigenous bodies (eg Nepal Federation of Indigenous Nationalities (NEFIN) and National Indigenous Women's Federation (NIWF). IPs have been engaged in the project development and continue to do so.</p> <p>IPPF to ensure appropriate engagement of IPs and their inclusion in project planning and implementation.</p> <p>As communities consider lakes and mountains as abodes of gods and goddesses, they have deep respect and a spiritual connection with their environment. Therefore, respecting their beliefs and seeking permission and advice on how to ensure that deities believed to be living in the lakes are not disturbed will be obtained prior to undertaking any work. It is critical that local customs are adhered to and that local sentiments are respected.</p> <p>The following is an example of some of the actions that were undertaken during the field investigations undertaken for the design phase:</p> <ul style="list-style-type: none"> <li>• consultation with community leaders during planning of field trips to determine concerns and actions required</li> <li>• religious figures from the community, local leaders, and community members invited to help perform rituals to appease the goddess (Nhepu) and seek her blessings.</li> <li>• only start work after carrying out the rituals.</li> <li>• undertake daily rituals eg burning incense and juniper leaves as part of a cleansing ceremony.</li> </ul> <p>Enumerating the total number of IPs associated with the project, will be an ongoing task as detailed site selection and design of infrastructure. Further discussions with IPs and the development of IPPs will occur as part of implementation. The IPPs will detail the measures (as identified by the IPs) that will be required to be undertaken to protect cultural heritage – physical and spiritual.</p>
<p>Sourcing of materials and generation of waste</p>	<p>ESIAs to include consideration of materials and waste generated. Waste to be managed (removed) from construction sites in accordance with National Parks Management Plan. ESMPs to include Waste Management Sub-Plans.</p> <p>Materials to be sourced locally where possible. Lake lowering will include reusing materials excavated, so no loose spoil dumps will remain. Design includes downstream bank stabilisation and/or armouring. Area of disturbance will also be minimal. It is anticipated that rock material removed from the moraines to lower the lakes will be utilised within other works such as spillways, training wall, accessways etc. This will reduce the material needed to be sourced.</p> <p>Only authorised/legal sources of material to be used.</p> <p>Procurement to comply with the Nepal Public Procurement Act 2063 (2007), which addresses issues such as transparency, competitiveness and accountability, and financial administration. A labour management plan will also be prepared.</p>

	ESMPs would include a Waste Management Plan. Water quality impacts will be managed via Sediment and Erosion Management sub-plans. The ESMPs, and their sub-plans, would be based on the findings of the ESIAs
Project activities could have a negative impact on the two National Parks in which works will occur.	<p>National Park Plans of Management will be reviewed and confirmed to include works to lakes. If any amendments are required, the amendment will follow National Parks processes and will be done in such a way so that revision does not result in other unintended exploitation or damaging activities within the park ie revision will be specific to the proposed GCF works.</p> <p>ESIAs will be undertaken to assess the impacts of the proposed works to ensure that any impacts are acceptable and manageable. Based on the findings of the ESIAs, ESMPs will be developed to ensure appropriate mitigation and monitoring is in place.</p>
Social impacts associated with influx of workers (construction)	<p>Local workers to be used where possible. A Labour Management Plan will be prepared.</p> <p>Demands on local infrastructure to be considered prior to importing workers – contractor may be required to provide additional facilities (eg medical, accommodation or food).</p> <p>All activities will be closely monitored in coordination with the Department of National Parks and Wildlife Conservation potentially with support from the Nepal Army as per the government policy. This will reduce risk of poaching and increase readiness in event of natural disaster.</p> <p>GRM includes mechanism for managing GBV/SEAH</p>
<i>Activity 3.2. Construction of structural and non-structural measures (Civil and NbS/ Bioengineering) for the risk reduction of GLOF and flash flood</i>	
Rights holders, particularly IPs, may not have the capacity to claim their rights.	<p>Implement SEP and GRM</p> <p>Confirm land tenure at all project sites as part of detailed site survey during implementation stage (public land proposed to be used).</p> <p>A Land Acquisition plan (LAP) will be prepared. LAP to describe process for identification of tenure and process for obtaining legal use of land (note, there will be no compulsory land acquisition). The application of the LAP and IPP will ensure that land is unencumbered and that restriction of access to natural resources or traditional uses is not adversely impacted.</p> <p>In the case of use of public lands in the project, some sites legally belong to the local government but are managed by the IPs as prevailing customary rights of the IPs on the land. In a very few instances, where communities have customary user rights (but not legal ownership rights) these areas will be avoided, as far as possible. In cases where it is unavoidable, the local government will facilitate consultations with affected communities and use land for project activities only upon agreement of the affected communities. UNDP will work closely with the IP and other users who depend on public land to ensure that any public land used by the project is unencumbered and/or not land on which local livelihoods depend.</p> <p>IPPs to be developed for each catchment</p>
Increased flows could damage interventions and/or downstream infrastructure	<p>Designs have taken account of likely climate change parameters</p> <p>Modelling to test effectiveness of interventions under different scenarios has been undertaken</p> <p>Apply lessons learnt from Imja Lake project eg water to gradually drain out through a controlled drainage system.</p>



	Periodic safety inspections will be undertaken as part of monitoring and maintenance regime.
Construction impacts (physical, biological, socio-economic)	<p>Project sites are located away from the settlements, project activities during construction period will not bring adverse impact on the community regards to disruption of local water supply system.</p> <p>ESMPs to be developed.</p> <p>ESMPs to include a sediment and erosion plan.</p> <p>Heritage items, such as mani walls, stupas etc to be protected</p>
Sourcing of materials and generation of waste	<p>ESIAs to include consideration of materials and waste generated.</p> <p>Materials to be sourced locally where possible. As much as possible excavated material will be reused in the construction of the structural elements of the project. – mainly in filling open areas and gullies and in stabilization of river channel embankments, including with bio-engineering measures and plantation on embankments.</p> <p>Only authorised/legal sources of material to be used.</p>
Land required for installation of infrastructure	<p>Public land to be prioritised. The majority (&gt;95%) of construction activities will be on public land. Use of private land would be a last resort and due to sites on public land not being technically feasible. The sites where actual lake lowering work will be conducted are away from human settlements and the land there belongs to the government. So, there is no issue of land acquisition and compensation.</p> <p>For physical small-scale interventions downstream – these areas fall mostly in government-owned land. However, where private land is required for construction work, standard practices will be followed, as in the case for other projects – i.e. local governments will facilitate community negotiations, especially engaging affected private landowners.</p> <p>Public lands where communities have customary user rights (but not legal ownership rights) will be avoided, as far as possible. In cases where it is unavoidable, the local government will facilitate consultations with affected communities and use land for project activities only upon agreement of the affected communities. UNDP will work closely with the IP and other users who depend on public land to ensure that any public land used by the project is unencumbered and/or not land on which local livelihoods depend.</p> <p>LAP to be prepared which will outline processes required for use of public land, communal land and private land. Where access to private land required, the negotiations by PMU will be conducted and appropriate compensation agreed. Use/ acquisition of private land will be based on willing buyer/willing seller and the following conditions will be followed: (i) land markets or other opportunities for the productive investment of the sales income exist; (ii) the transaction took place with the seller's informed consent; and (iii) the seller was provided with fair compensation based on prevailing market values.</p> <p>No forced private land acquisitions.</p> <p>Community will be involved and provide approval to the use of any communal lands. Where it is indigenous peoples customary land, then FPIC mechanism to be applied.</p>
Potential conflicts over the selection of priority intervention areas.	<p>Stakeholder Engagement Plan will be developed.</p> <p>Decision making is transparent and supporting studies and information (reports, minutes from consultations and workshops) are made publicly available.</p>

	<p>Strong focus on capacity building within all project activities will help raise awareness of climate risks and the link between climate change and natural disasters with unsustainable natural resource management, as well as the benefits of climate-resilient infrastructure.</p> <p>In the case where any household/ person feels discriminated against or has a problem with the project, they can access the project's grievance redress mechanism.</p>
<i>Activity 3.3. Implement Eco-disaster Risk Reduction and nature-based solutions to reduce the impact of GLOFs and flash floods.</i>	
Land required for installation of eco-DRR and nature-based solutions	<p>Public land to be prioritised.</p> <p>No forced private land acquisitions.</p> <p>Community should be involved and agree to the use of any communal lands. LAP will be developed to describe the processes for obtaining legal right to use land use. Where it is indigenous peoples customary land, then FPIC mechanism to be applied. The application of the LAP and IPP will ensure that land is unencumbered and that restriction of access to natural resources or traditional uses is not adversely impacted,</p>
Construction impacts (physical, biological, and socio-economic)	<p>Scoped ESIA's to assess potential impacts</p> <p>ESMPs to be developed.</p>
Site-specific impacts due to the inappropriate planting of tree species based on site conditions.	<p>Guidance on site-species matching will be developed for project sites, providing information on key tree species that are adapted to the area and their ideal site-conditions. In addition to native species, the project will only promote tree species which are already locally adapted and do not pose a risk to the local biodiversity. It will ensure compliance with Nepal's Forestry Policy (2015).</p> <p>If required, a Biodiversity Action Plan will be prepared.</p>
In practice in may be challenging to have equal participation due to gender discrimination, especially against women from indigenous groups and marginalized minority groups	<p>At least 50% of project beneficiaries will be women, promoting proportional representation from indigenous groups, Dalit communities and other marginalized groups.</p> <p>Gender and Social Inclusion Action Plan includes measures to promote women's empowerment and gender equality within the framework of the project. The plan includes detailed measures that target women and aims to empower them within the project, whilst considering their differentiated contexts and vulnerabilities.</p> <p>PMU M&amp;E specialist and PPSU staff will regularly monitor the implementation of the GAP and work together with CSOs and other actors to strengthen the engagement of women within the project.</p>
Sourcing of materials eg trees and shrubs, rock	<p>The establishment of small-scale community-based nurseries will comply with relevant national legislation (Forest Policy, Environmental Protection Act), and will promote equitable hiring policies ensuring equitable employment opportunities for women, indigenous peoples, Dalits and other marginalized households.</p> <p>Existing legal quarries or other sources of rock only to be used.</p>

The ESMF lists the following additional safeguard measures that will apply to the project during the implementation, including but not limited to:

- Gender Action Plan (prepared)
- Environmental and Social Impact Assessments (planned)
- Environmental and Social Management Plans (planned)



- Stakeholder Engagement Plan (prepared)
- Grievance Redress Mechanism (prepared)
- Indigenous Peoples Planning Framework (prepared)
- Indigenous Peoples Plans (planned)
- Operation and Maintenance Plans (planned)
- OHS plan (planned)
- Labour Management Plan (planned)
- Land Acquisition Plan (planned)
- Contractor Medical Emergency Management Plan (planned)
- Additional sub-plans anticipated to be included as part of the ESMP are:
  - Sediment and erosion management plan
  - Monitoring plan
  - Biodiversity Action Plan
  - Waste Management Plan
  - GBV/SEAH Management Plan (may be included as part of the GAP)
  - Heritage Management Plan
  - Emergency Response Plan

The ESMF identifies the need for ongoing stakeholder engagement and provides an outline of the Stakeholder Engagement Plan as well as a Grievance Redress Mechanism. Important stakeholders in the project include indigenous peoples who live in and around the project areas. An Indigenous Peoples Planning Framework outlines the actions that will be required to ensure that the project is inclusive of indigenous peoples.

Through the application of the ESMF and its required sub-plans, the potential adverse impacts of the project can be minimised and managed within acceptable limits. The visible implementation of the safeguard measures and practices described in the ESMF provides the opportunity for awareness raising and capacity building with respect to good environmental and social practices within the stakeholder groups associated with this project.

# 1 INTRODUCTION

1. This Environmental and Social Management Framework (ESMF) has been prepared in support of a project proposal for “Protecting livelihoods and assets at risk from Glacial Lake Outburst Floods (GLOFs) and climate change-induced flooding in glacial river basins of Nepal” by the Government of Nepal to the Green Climate Fund (GCF). As this project is supported by UNDP in its role as a GCF Accredited Entity, the project has been screened using UNDP’s Social and Environmental Screening Procedure and deemed a Substantial Risk project.
2. The ESMF enables facilitates the integration of environmental and social management into the development cycle of the project. While the exact location of some of the interventions (lake lowering – Activity 3.1) are known, the exact locations and interventions for other outputs (eg Activities 2.1, 2.2, 3.2 and 3.3) will be finalised during implementation, and thus an ESMF was selected as the most suitable instrument.
3. The ESMF provides a summary of the proposed project activities, a description of the environmental and social context that the activities will take place in, and an initial assessment of potential impacts. Sub-activities where possible environmental and social risks have been identified will develop environmental and social management plans (ESMP) that include information on the mitigation measures, indicators, responsibilities, and timeframes where the completion of such measures is expected.

## 1.1 PURPOSE OF THE ESMF

4. This ESMF is a management tool to assist in managing potential adverse social and environmental impacts associated with project activities, in line with the requirements of UNDP’s Social and Environmental Standards (SES).
5. The Implementing Partner of the project and the relevant members of the project management unit will follow this ESMF during project implementation to ensure the environmental and social risks and impacts are assessed and management measures are in place prior to the implementation of the relevant project activities.
6. This ESMF identifies the steps for the assessment of the project’s potential, identified social and environmental risks, and for preparing and approving the required management plans for avoiding, and where avoidance is not possible, reducing, mitigating, and managing the identified adverse impacts. Its scope covers all components of the project, with additional targeted assessments.
7. The ESMF also references the additional safeguard measures that apply to the project during the implementation, including but not limited to:
  - Gender Action Plan (prepared)
  - Environmental and Social Impact Assessments (planned)
  - Environmental and Social Management Plans (planned)
  - Stakeholder Engagement Plan (prepared)
  - Grievance Redress Mechanism (prepared)
  - Indigenous Peoples Planning Framework (prepared)
  - Indigenous Peoples Plans (planned)
  - Operation and Maintenance Plans (planned)
  - OHS plan (planned)
  - Labour Management Plan (planned)
  - Land Acquisition Plan (planned)
  - Contractor Medical Emergency Management Plan (planned)
  - Additional sub-plans anticipated to be included as part of the ESMP are:
    - Sediment and erosion management plan
    - Monitoring plan
    - Biodiversity Action Plan
    - Waste Management Plan
    - GBV/SEAH Management Plan (may be included as part of the GAP)
    - Heritage Management Plan

- Emergency Response Plan

8. This ESMF will be publicly disclosed in line with UNDP's Information Disclosure Policy and SES and GCFs Disclosure Policy
9. The ESMF will be updated from time to time by the implementing Project Management Unit (PMU) in consultation with the UNDP to incorporate changes that may occur during project implementation.

### 1.2 BACKGROUND

10. Nepal is a landlocked country located between India to the east, south, and west and Tibet to the north. It extends roughly 800 km from east to west and 200km north to south. Nepal's topography varies dramatically, from the Himalayan heights (Everest 8,850m) to the Gangetic Plains of the Terai, however roughly 75% of the country is covered by mountains<sup>1</sup>.
11. Increasing atmospheric temperature is causing glaciers to melt worldwide. Glacier melting leads to the formation of glacial lakes. Glacial lakes are formed when a glacier erodes the underlying terrain and subsequently melts, filling the depression with fresh water<sup>2</sup>. The resulting lakes are either dammed on the downstream end by moraines<sup>3</sup> or ice. Many of these lakes are considered extremely dangerous as their dams are unstable and have the potential to burst — resulting in devastating Glacial Lake Outburst Floods (GLOFs). In Nepal, there are ~3,800 glaciers and ~2,000 glacial lakes, of these, 47 are considered potentially dangerous<sup>4</sup>.
12. Historically, GLOFs have had catastrophic consequences in Nepal through the direct impacts of flooding and secondary impacts such as landslides, erosion, and sedimentation in river valleys. Since 1970s, 26 GLOF events have been recorded across 47 potentially dangerous glacial lakes, resulting in catastrophic consequences that have ranked Nepal, alongside Bhutan, as the most economically impacted country by glacial flood impacts. GLOFs cause severe flooding, landslides, and mudflows that damage infrastructure and private assets, and disrupt transportation networks, agricultural production, power supply from hydropower plants and tourism activities. In addition, floods often have substantial health impacts, with water- and vector-borne diseases spreading widely after flood events. Damage from GLOFs are often irreparable for decades, with considerable economic costs, particularly to downstream populations.
13. In addition to GLOFs, Nepal is susceptible to floods resulting from extreme rainfall events, which have similar but less intense impacts on the population in comparison to GLOFs. During heavy monsoon cloudbursts, flash floods occur in the mountains, while in the southern plains, water breaches riverbanks and inundates large areas of land. Furthermore, given the steepness of slopes and the swift flow of water bodies, heavy rains and flash floods often trigger landslides<sup>5</sup> that cause extensive loss of life and damage to infrastructure and the environment<sup>6</sup>.
14. To address the risk of GLOFs and the associated impacts on downstream communities, there is an urgent need in Nepal to shift away from reactive and uncoordinated response to GLOFs towards a proactive, sustainable, and integrated approach to GLOF risk reduction that combines implementing tangible upstream and downstream risk reduction measures with improved technical and institutional capacity at the national and local levels to respond to an impending GLOF event.
15. The Government of Nepal with support from UNDP, is formulating a project on adaptation to climate change impacts "Protecting livelihoods and assets at risk from Glacial Lake Outburst Floods (GLOFs) and climate change-induced flooding in glacial river basins of Nepal" for submission to the GCF. The project will seek to improve the resilience of vulnerable communities to climate change impacts.
16. Specifically, direct investments from the GCF combined with co-financing will be used to: i) reduce the impacts of a GLOF and its residual impacts on vulnerable communities; ii) promote the adoption of GLOF EWS measures among national- and local-level decision-makers to enhance rapid response to an impending GLOF; and iii) strengthen the

<sup>1</sup> <https://www.britannica.com/place/Nepal>

<sup>2</sup> Yao, X., Liu, S., Han, L., Sun, M. and Zhao, L., 2018. Definition and classification system of glacial lake for inventory and hazards study. *Journal of Geographical Sciences*. 28(2), pp. 193-205.

<sup>3</sup> A moraine is any glacially formed accumulation of unconsolidated glacial debris that occurs in both currently and formerly glaciated regions on Earth, through geomorphological processes.

<sup>4</sup> Bajracharya, S.R., Maharjan, S.B., Shrestha, F., Sherpa, T.C., Wagle, N., Shrestha, A.B. (2020). Inventory of glacial lakes and identification of potentially dangerous glacial lakes in the Koshi, Gandaki, and Kamali River Basins of Nepal, the Tibet Autonomous Region of China, and India. Research Report. ICIMOD and UNDP.

<sup>5</sup> Bhandari, B.P. and Dhakal, S., 2019. Topographical and geological factors on gully-type debris flow in Malai River catchment, Siwaliks, Nepal. *Journal of Nepal Geological Society*, 59, pp.89-94.

<sup>6</sup> DAHAL, R.K., 2012. Rainfall-induced landslides in Nepal. *International Journal of Erosion Control Engineering*, 5(1), pp.1-8.



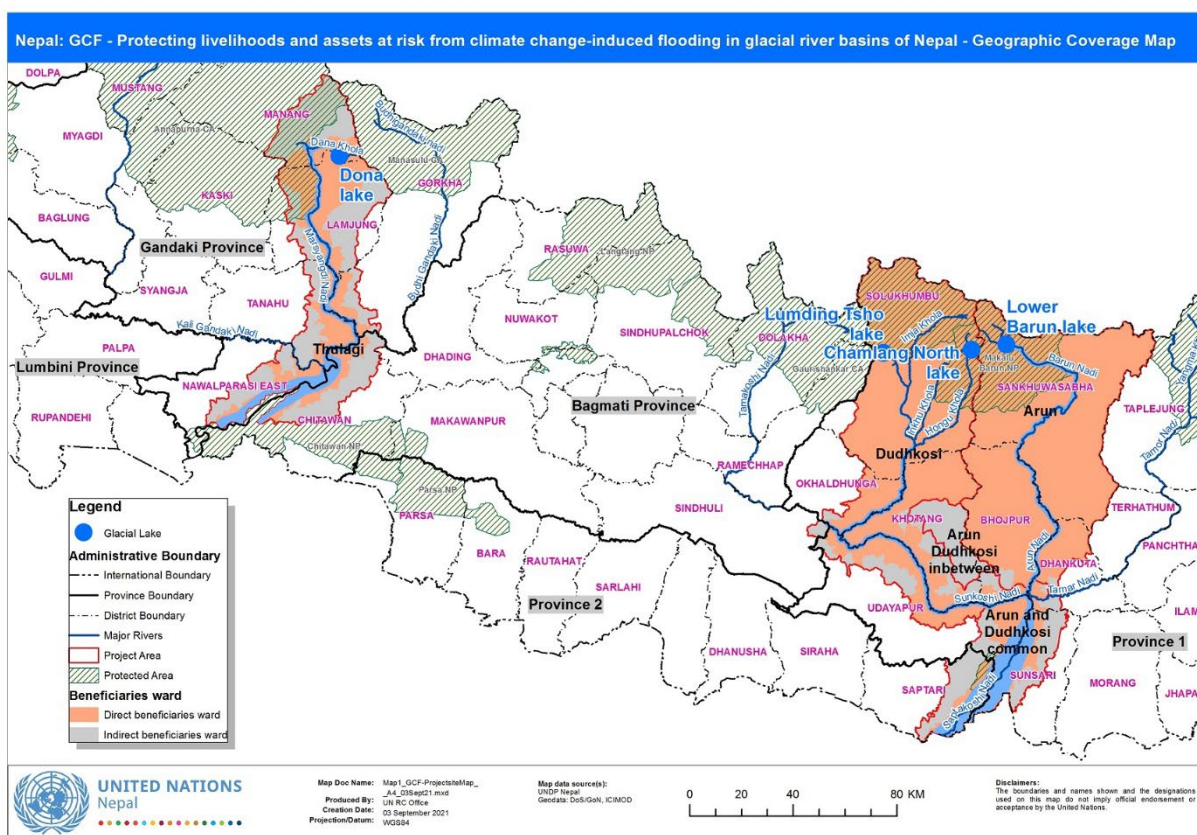
technical and institutional capacity of the Government of Nepal and local communities to implement GLOF risk reduction measures through targeted training and awareness raising. The combined effect of project interventions will result in the adoption and implementation of a climate-resilient, integrated approach to GLOF risk reduction and flood management that can be readily scaled up and replicated nationally and across South Asia.

## 1.3 DESCRIPTION OF THE PROJECT

### 1.3.1 Project Location

17. Fourty seven glacial lakes in Nepal are currently considered potentially dangerous, four of which (namely the Thulagi, Lower Barun, Lumding Tsho and Hongu 2 Glacial Lakes) have been prioritised for urgent adaptation action. Thulagi Glacial Lake is in the Manang district, Lower Barun Glacial Lake is in the Sankhuwasabha, Lumding Tsho Glacial Lake and Hongu 2 Glacial Lake are in Solukhumbu district (Figure 1).

Figure 1 Locations of each of the target glacial lakes



### 1.3.2 Summary of Activities

18. The proposed project will have the following activities:

#### Output 1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.

19. Output 1 will improve DHM's technical and institutional capacity to develop and disseminate tailored climate risk information and establishing public-private sector partnerships to encourage investment into GLOF risk reduction in Nepal. The project activities that will be implemented under Output 1 are described below.

*Activity 1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.*

20. Activity 1.1 will strengthen DHM's institutional and technical capacity for implementing sustainable GLOF risk reduction strategies in Nepal. Methods and SOPs for the inventory and development of a spatial digital database (GIS) of glaciers and glacial lakes will be developed and institutionalised in DHM. The SOPs for the GIS database will focus on:
- data acquisition and frequency of data collection
  - database management
  - methodologies/standard procedures for analysis and quality control
  - reporting and publication formats
  - online geoportal management for the dissemination of reports.
21. The establishment of the GIS database will be supported by geophysical investigation, as well as topographic and bathymetric surveys. SOPs for the investigation and surveys will focus on:
- pre-field planning of logistics, including equipment checks and survey layouts
  - human resources management
  - stepwise procedures for conducting field work
  - Monitoring and Evaluation protocols
  - report generation and publication formats for bathymetric, DGPS, GPR, ERT and other surveys.
22. Methods and tools will be introduced into DHM's operating procedures for GLOF hazard prioritization and mapping other extreme events. This hazard prioritisation will use the established GIS database, remote-sensing and satellite data, as well as ground-truthing and socio-economic vulnerability assessments.
23. Methodologies and SOPs for implementing integrated GLOF risk reduction in vulnerable watersheds will be developed, informed by the GIS database and hazard mapping that will also be undertaken under this activity. The relevant staff in DHM's Remote Sensing and GIS and Snow Survey and Glacier Lake Departments will be trained on regular/operational monitoring for risk prioritisation, as well as how to use the risk information generated to implement GLOF risk reduction strategies in Nepal's high-risk areas.

*Activity 1.2. Develop public-private partnerships for sustainable investment in GLOF and flood risk information services*

24. This activity will contribute to improving GLOF and flood risk reduction in Nepal by improving DHM's capacity to develop and disseminate climate risk information to major economic sectors (such as tourism and hydropower) and enhancing public-private sector partnerships to encourage future investment into GLOF risk reduction strategies in Nepal.
25. Under this project activity, policy provisions will be made, and extensive stakeholder consultations will be held with the relevant representatives from the target sectors to formalise and institutionalise long-term agreements to support the sustainable uptake of GLOF risk reduction in Nepal.

**Output 2. Improved hazard monitoring and the generation of early warnings, including the dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events**

26. Output 2 will strengthen Nepal's GLOF early warning system (EWS) as well as the capacity of Nepal's Department of Hydrology and Meteorology (DHM) to facilitate rapid information sharing and early action preceding a GLOF.
27. EWS coverage in the Gandaki Basin, and Dudhkosi and Arun Sub-basins will be extended to cover downstream communities that would be affected should the Thulagi, Lower Barun, Lumding Tsho and Hongu 2 Lakes breach.
28. Specific details on the project activities that will be implemented under Output 2 are presented below.

*Activity 2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk.*

29. Under this activity, hydrological and meteorological stations will be installed across high-risk GLOF watersheds to fill gaps in the current observational network. In response to the existing gaps in Nepal's observational network, the following interventions will be implemented under Activity 2.1:
- six base stations at Pangboche, Jayaram Ghat - Middle Hill, Tumlingtar (Turkighat), Chatara, Dharapani and Muglin (4 in the Marsyangdi Basin, 2 in the Dudhkosi Sub-basin and 3 in the Arun Sub-basin) to perform intensive monitoring that will produce high quality hydrology, sediment and water quality data.



- Twenty-four automatic weather stations (AWS) at key locations in GLOF watersheds (7 AWS in the Marsyangdi Basin, 5 in the Dudhkosi Sub-basin and 12 in the Arun Sub-basin) to collect temperature, atmospheric pressure, humidity, horizontal wind and snow depth data.
  - Nine Precipitation gauges (PCP) at key locations in GLOF watersheds (2 in the Marsyangdi Basin and 7 in the Dudhkosi Sub-basin) to measure precipitation in the form of snow and rain.
  - Twenty-seven radar-based water level sensors (RLS) at key locations in GLOF watersheds (11 in the Marsyangdi Basin, 8 in the Dudhkosi Sub-basin and 8 in the Arun Sub-basin).
30. The real-time data acquired from this critical infrastructure will be used by DHM to: i) observe and monitor GLOF risk; ii) support EWS; and iii) assist with glacier modelling. Additionally, the real-time data acquisition system will integrate data from existing hydrology stations. EWS coverage, and the dissemination of warnings, will be expanded throughout Nepal to support real-time contact with communities vulnerable to GLOFs, using mobile phones, as well as to supplement insufficient coverage of vulnerable communities. To achieve this, all new meteorological and hydrological equipment installed under the project will be integrated into the existing EWS network and will use GCM technologies provided by service providers under Nepal Telecom Authority<sup>7</sup>. Furthermore, the observation of basic meteorological variables by the AWS will enable these stations to be included in the Global Basic Observing Network (GBON).

*Activity 2.2. Develop and implement early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards in vulnerable sectors and communities.*

31. Activity 2.2 will improve Nepal's EWS to strengthen adaptive capacity and response among vulnerable communities in the target districts of Manang, Sankhuwasabha and Solukhumbu to GLOFs, rain-induced floods and other climate hazards.
32. The technical and institutional capacity of DHM will be strengthened to enhance the rapid dissemination of early warnings to: i) critical national and local entities involved in disaster response (including the National Emergency Operation Command (NEOC), District Emergency Operation Command (DEOC), Municipal Emergency Operation Command (MEOC), national stakeholders, district and local stakeholders, Local Emergency Operation Command (LEOC), Community Disaster Management Committee (CDMC)/Task Force, and local communities); ii) key actors in productive sector networks; and iii) vulnerable communities in the target districts and throughout Nepal. This will be achieved by training relevant technical staff at DHM in efficient and effective ways to generate and disseminate early warnings to improve community response to GLOFs. To ensure that the observation network remains operational, training will also be provided to the relevant staff on operating and maintaining the existing and newly installed hydrological and meteorological stations in the target basins.
33. Information dissemination session and awareness about the early warning system will be provided to vulnerable communities including Indigenous Peoples, poor, Dalits who reside in flood prone areas.
34. Finally, low-cost towers with a free air satellite mode system will be installed, accompanied by the installation of 9 siren towers across the GLOF watersheds (4 towers in the Marsyangdi Basin, 2 in the Dudhkoshi Sub-basin and 3 in the Arun Sub-basin).
35. To ensure sufficient understanding among target communities of how to access and respond to early warnings, community-based disaster response plans will be developed for 10 districts in the target basins (namely Bhojpur, Dhankuta, Khotang, Okhaldhunga, Sankhuwasabha, Saptari, Sindhuli, Solukumbu, Sunsari and Udayapur). These plans will be developed in a participatory way with communities and ward leaders<sup>8</sup> in the target districts and provide step-by-step guidance on how to access early warning and what actions to take once an early warning is received, in line with CDMC protocols. Workshops and training will be delivered by representatives from NEOC, LEOC and CDMC on how to implement the actions contained in the response plans and response drills will be organised.

**Output 3. Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds**

36. Output 3 will reduce the risk of GLOFs in the Gandaki Basin, and Dudhkosi and Arun Sub-basins.
37. To reduce the primary risk of a GLOF, the water levels will be lowered at the four priority lakes (Thulagi, Lower Barun, Lumding Tsho and Hongu 2). Lowering the water level of the lakes will reduce the potential of triggering a GLOF, as well as reducing the magnitude of a GLOF when one is triggered. Furthermore, a combination of grey

<sup>7</sup> A list of appropriate service providers that use GCM technologies is available at: <https://www.nta.gov.np/en/>.

<sup>8</sup> A ward is the smallest unit of local government in Nepal.



and green infrastructure interventions<sup>9</sup> will be implemented downstream of the lakes to reduce the residual impacts of a GLOF after lake lowering. These downstream interventions will include: i) check dams and other infrastructure to divert GLOF and flash flood flow; and ii) Eco-disaster Risk Reduction and nature-based solutions. No associated facilities (under GCF definition) are foreseen as all required work is being undertaken as part of the project.

38. The project activities that will be implemented under Output 3 are summarised below.

### *Activity 3.1. Lower the levels of four of the highest risk glacial lakes.*

39. Under this activity, the levels of the four highest-priority lakes will be physically lowered to reduce the volume of the lakes. This will involve several steps. First, detailed site-specific engineering designs will be undertaken for the lowering of the Thulagi, Lower Barun, Lumding Tsho and Hongu 2 Lakes. These designs will be informed several on-the-ground assessments and validated by engineers and the AE before construction starts.
40. Once the designs have been validated, construction will lower the Thulagi, Lower Barun and Lumding Tsho by 3 m and the Hongu 2 Lake by 1 m.
41. The conceptual design for lowering the water levels of the four target lakes are summarised below.
42. The lowering of the Thulagi, Lumding Tsho, and Lower Barun Lakes will be undertaken through a 4-step process:
  - the outlet channel will be blocked by a cofferdam.
  - a diversion channel will be constructed to divert flow while the construction for the permanent lake lowering is undertaken.
  - once the flow is diverted, a sluice gate will be constructed at an optimal location to be determined, with a trapezoidal shaped channel downstream of the original outlet channel where the temporary cofferdam is in place.
  - once the channel and sluice gate are in place, the cofferdam will be removed and the discharge channel, reinforced with boulder impact gabion walls to protect it against bank erosion, will be reopened. The diversion channel (which is at higher elevation from the main channel) will be left as an alternative channel for periods of high discharge maintaining the smooth flow in the main channel.
43. For Hongu 2, only the main channel is proposed. Since there is no outlet discharge of the lake, the end moraine itself will act as a sluice gate and no diversion canals are required. Once the main channels are built, the end moraine will be excavated to lower the glacial lake. Access tracks to be built will involve widening of existing tracks to improve access to sites. As the access track is to be funded by Government as part of the co-financing, it is considered part of the project and therefore not an associated facility. It should also be noted that the track will be built in areas that are either within the National Parks (where construction is enabled through NP Management Plans) or sites where right of way is already established (i.e. widening existing tracks).

### *Activity 3.2. Construction of structural and non-structural measures (Civil and NbS/ Bioengineering) for the risk reduction of GLOF and flash flood*

44. Under this activity, check dams and other protective infrastructure will be established at strategic locations in the Dudhkosi and Arun Sub-basins to address the residual flood risk after lake lowering. Free Prior Informed Consent (FPIC) and consultation with Indigenous Peoples and other vulnerable communities will be undertaken to develop the check dams and other protective measures if they lie in their territory or they are likely to impact in their livelihood. The specific infrastructure that will be constructed under Activity 3.2 is:
  - 3,102 m<sup>3</sup> of flood walls and RCC revetments will be built along stretches of riverbank where a high possibility of bank undercutting and inundation was identified.

67 conservation ponds will be established (38 in the Arun Sub-basin and 29 in the Dudhkosi Sub-basin) to reduce concentrated surface flow following a GLOF or during a monsoon or other extreme rainfall event and consequently prevent the formation of gullies and the triggering of shallow landslides. The conservation ponds are water detention basins designed to attenuate flows and are a common practice in Nepal. They will only fill during periods of high flow, with water flowing more slowly from them until they are dry. The ponds have also been designed to release water slowly to maximise opportunities for groundwater recharge and potentially be used by farmers for opportunistic cropping or irrigation during the dry season. The detention basins will be within

<sup>9</sup> "Green infrastructure refers to the interconnected set of natural and man-made ecological systems, green spaces, and other landscape features. It includes planted and indigenous trees, wetlands, parks, green open spaces and original grassland and woodlands, as well as possible building and street-level design interventions that incorporate vegetation, such as green roofs. Together these assets form an infrastructure network providing a wide range of services and strategic functions in the same way as traditional hard infrastructure" — State of Green Infrastructure in the Gauteng City-Region (GCRO 2013). Available at: [http://www.gcro.ac.za/media/redactor\\_files/Green%20Infrastructure%20Citylab%20information.pdf](http://www.gcro.ac.za/media/redactor_files/Green%20Infrastructure%20Citylab%20information.pdf).



floodplain areas ie areas that would periodically be inundated anyway, but as they will normally be dry they will not result in inundation of new areas. The ponds themselves are quite small and will be away from settlements and will be on public land. Farmers will be allowed access to them.

45. The infrastructure installed under this activity will provide immediate benefits to complement the long-term Eco-disaster Risk Reduction and nature-based solutions implemented under Activity 3.3.

*Activity 3.3. Implement Eco-disaster Risk Reduction and nature-based solutions to reduce the impact of GLOFs and flash floods.*

46. Under Activity 3.3, Eco-disaster Risk Reduction (Eco-DRR) and nature-based solutions will be implemented at strategic locations in the Dudhkosi and Arun Sub-basins to reduce the impacts of residual flooding from GLOFs on vulnerable communities in the basins, while simultaneously contributing to the restoration and rehabilitation of degraded ecosystems in floodplain areas.
47. Indigenous communities will be consulted for their indigenous knowledge and practices as part of nature-based solutions for GLOF and flood risk. It will be documented and integrated with the technical solutions.
48. The interventions under this activity include:
  - planting 1.1 million trees along vulnerable riverbanks, sub-watershed areas and floodplains of four river systems
  - constructing 16,414 m<sup>3</sup> of vegetative gabion walls
  - building 978 km of live check dams
  - constructing 19,310 m<sup>3</sup> of vegetative gabion revetments
  - installing 1,575 m<sup>3</sup> of vegetative gabion check dams and 9,474 m<sup>3</sup> of vegetative dry stone check dams
  - establishing 1,168 m<sup>2</sup> of vegetative stone rip-rap
  - undertaking 111,750 m of brush layering
  - planting 134,117 m<sup>2</sup> of grass seedlings.
49. These Eco-DRR and nature-based solutions will reduce soil erosion and increase the infiltration capacity of the soil in floodplain areas. This, in turn, will decrease surface runoff and reduce the sedimentation of tributaries caused by flooding in the project areas.
50. Indigenous communities who vulnerable to climate impacts will be made aware of climate change and its impact. A vulnerability assessment will be conducted and the communities provided with training on adaptation measures for livelihood diversification

## 1.4 PROJECT ALTERNATIVES

### 1.4.1 Do Nothing Alternative

51. If no action is taken to reduce the risk of GLOF at the most potentially dangerous glacial lakes would mean that the risk of a catastrophic event would persist and continue to grow. GLOFs would eventually occur, and uncontrolled releases would cause catastrophic damage to downstream communities and ecosystems. Important infrastructure, such as hydropower stations, would also be at increased risk.
52. Therefore the 'do nothing' alternative is not considered a viable option.

### 1.4.2 Alternative Locations

53. Glacial lake outburst floods by definition are associated with glacial lakes, therefore alternative locations can only involve alternate glacial lakes. In Nepal, there are ~3,800 glaciers and ~2,000 glacial lakes.
54. Of the total number of lakes, 1,410 are larger or equal to 0.02 km<sup>2</sup>, which are considered large enough to cause a glacial lake outburst flood (GLOF). To identify potentially dangerous lakes, the following criteria were used: i) characteristics of the lakes and their dams; ii) the activity of the source glacier; and iii) morphology of the surroundings. As a result of this analysis, 47 glacial lakes were identified as potentially dangerous glacial lakes (PDGLs). Of these 47 PDGLs, 21 are in Nepal, so alternative locations could have been selected. However, selection was based on the level of risk, as described below.

55. The identified PGDLs were then categorised into three ranks of hazard level based on their physical parameters. Most critical lakes are classified as Rank I. These have a greater possibility of expansion, are dammed by loose moraine material, and are at risk of snow or ice avalanches and landslides in their surroundings that may impact the lake. In Rank I lakes, a slight rise in the water levels of the lakes or reduction in strength of their dams could cause a breach, necessitating the implementation of potential measures for GLOF mitigation. The lakes classified under Ranks II and III have potential to expand and therefore require close and regular monitoring.
56. Of the 21 PDGLs identified in Nepal, four glacial lakes have been prioritized for intervention under the proposed project, namely the Thulagi, Lower Barun, Lumding Tsho and Hongu 2 Lakes. The proposed lakes are all located in the northern Himalayan region of Nepal. Each of the target glacial lakes are located on unstable surroundings, with a high risk of GLOF events that threaten communities and infrastructure downstream, causing substantial socioeconomic consequences.

## 2 DESCRIPTION OF EXISTING ENVIRONMENT

### 2.1 PHYSICAL ENVIRONMENT

57. Nepal is a landlocked country located in southern Asia, between China to the northeast and India to the southwest. Five physiographic zones broadly divide the country into east-west belts (Figure 2)<sup>10</sup> across an area of ~147,000 km<sup>2</sup>. From north to south, these zones comprise the: i) Tibetan Plateau; ii) Greater Himalaya, a mostly uninhabited mountain range with elevations up to ~9,000 m; iii) Lesser Himalaya, a mid-mountain region between the Mahābhārat Range and the Greater Himalayas, which encloses the Kathmandu and Pokhara valleys, including the capital city of Kathmandu; iv) forested Churia foothills; and v) Terai, a low, flat fertile land adjacent to India which forms the northern extension of the Gangetic Plain<sup>11</sup>. While the southern regions of the country are relatively flat, high mountain ranges are the dominant landscape across the rest of Nepal — covering approximately 75% of the country<sup>12</sup>. Of the world's 10 highest peaks, 8 of them are in the Greater Himalaya zone, including Everest as the highest and Kanchenjuna as the third highest<sup>13</sup>.

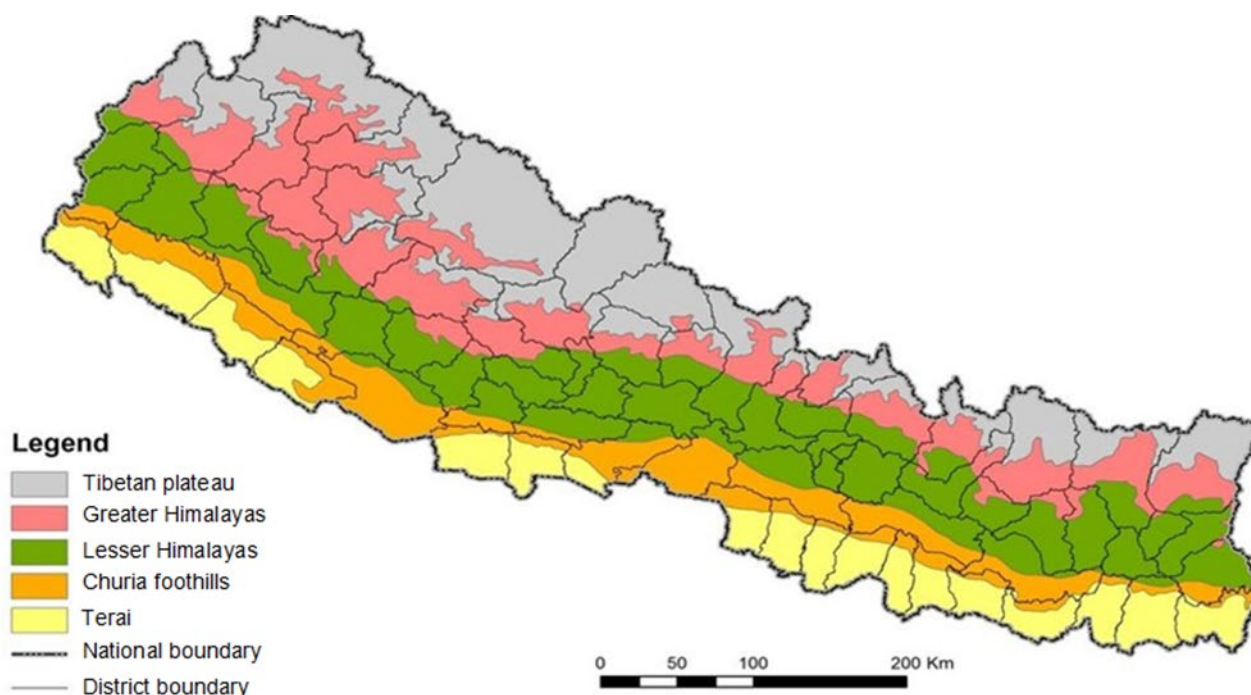


Figure 2 Physiographic regions in Nepal

#### 2.1.1 Topography, Geology and Soils

58. Complexity of topography is the major feature, and inaccessibility is the major challenge of mountainous environments. Almost half of Nepal consists of mountainous areas with elevation exceeding 1800 m whereas high mountain areas exceeding 3000 m covers almost 30 percent of Nepal.
59. Nepal is an area of geologically very young mountains. The tectonic convergence of India and Asia since their collision about 50 million years ago resulted in horizontal shortening, crustal thickening and regional metamorphism in the Himalaya and beneath southern Tibet. Under the massive heat and pressure caused by the collision, the rocks changed repeatedly. The lowest level produced is schist. Above the schist is a large outcropping of light-coloured granite, and above this a belt of shale, limestone, marble and sandstone (the Yellow Band) formed when ocean floor sediments were compressed by the collision.

<sup>10</sup> More information available at: <https://www.britannica.com/place/Nepal/The-economy>

<sup>11</sup> The Gangetic Plain is the world's largest alluvial plan and covers ~2.5 million km<sup>2</sup>, encompassing northern regions of the Indian subcontinent — including northern and eastern India, eastern parts of Pakistan, most of Bangladesh and the southern plains of Nepal.

<sup>12</sup> More information available at: <https://www.britannica.com/place/Nepal#ref23636>

<sup>13</sup> <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>

60. The mountains owe their height to two phases of uplift, the main thrust of which occurred only some 500,000-800,000 years ago. Two faults cut the Everest massif: the earlier Lhotse detachment, which has been locally folded, and the upper Qomolangma detachment which is exposed in the summit pyramid of Everest and dips north. The granite of the Everest–Lhotse–Nuptse massif consists of a massive ballooning sill of light-colored garnet/muscovite/tourmaline leucogranite up to 3,000m thick, which reaches 7,800m on the Kangshung face of Everest and on the south face of Nuptse and is the main reason for the great height of both mountains. The summit of Everest itself is a gray sandy limestone which was deep seabed of the Tethys Ocean some 325 million years ago (Searle *et al.*, 2003). India continues to push north and to slide under Asia so the uplift slowly continues, counteracted by erosion. As a result, the Himalayas are still growing at a rate of a 4mm a year and Mount Everest itself is moving about 3-6mm millimetres northeastward every year (Swiss Foundation for Alpine Research, 1999). Because of this movement, tremendous stresses build in the Earth's crust, which are periodically relieved by earthquakes throughout the region.
61. As Nepal is characterized by soft-rock mountainous country with most of its geography falling under mountains and hills, so the proposed project districts fall under fragile mountains. Various types of soil found in Nepal are alluvial soil, lacustrine soil, rocky soil and mountain soil. Alluvial soils in the terai and in river basins. This alluvial soil is very fertile in nature because it is formed by the materials deposited by rivers. The sandy and gravel soil are found in churiya where gravel and conglomerate are predominantly found. This is not fertile soil. The lacustrine soil found in the Kathmandu valley. The mountain soil is formed by where boulders, sands and stone brought by glacier are found. It is also not fertile.
62. The Land Resource Mapping Project (LMRP) carried out country-wide survey using the soil classification on Soil Taxonomy.
63. The following major orders and groups have been described in Nepal
  - Entisols: These are the youngest and least developed soils. These are the soils found on hill sides and adjacent to river courses and on the steeper, less stable slope throughout the mountain regions. These are the soils formed through deposition of colluviums and alluvium and are present throughout the country. The parent materials are not exposed to soil forming factors. Lack of clear soil horizons is the distinguishing feature of these soils. Entisols are worldwide dominant soils. Fluvents, orthents and fluvaquents are the major groups of entisols found in Nepal.
  - Inceptisols: are by far the most important soil order of Nepal. They are found in more stable landscapes than the Entisols, both agricultural and forestry uses are common on these soils. The relative stability of these landscapes permits some leaching of topsoil and weathering of the subsoil. Inceptisols show more significant profile development than Entisols but are defined to exclude soils with diagnostic horizons or properties that characterize certain other soils orders. Three major soil groups in inceptisols are: Aquepts, Ochrepts, and Udochrepts.
  - Spodosols: are rare and indicate a stable but strongly leaching environment. Spodosols have strong reddish or black subsoils in which iron and organic have been deposited after initial leaching from the surface soil layers. They occur in stable landscapes at elevations above 3,000 m where conifers dominate the forest. Spodosols have a higher proportion of organic acids which accelerates weathering. This results in leaching of base cations, so Spodosols are not fertile soils.



## Soils of Nepal

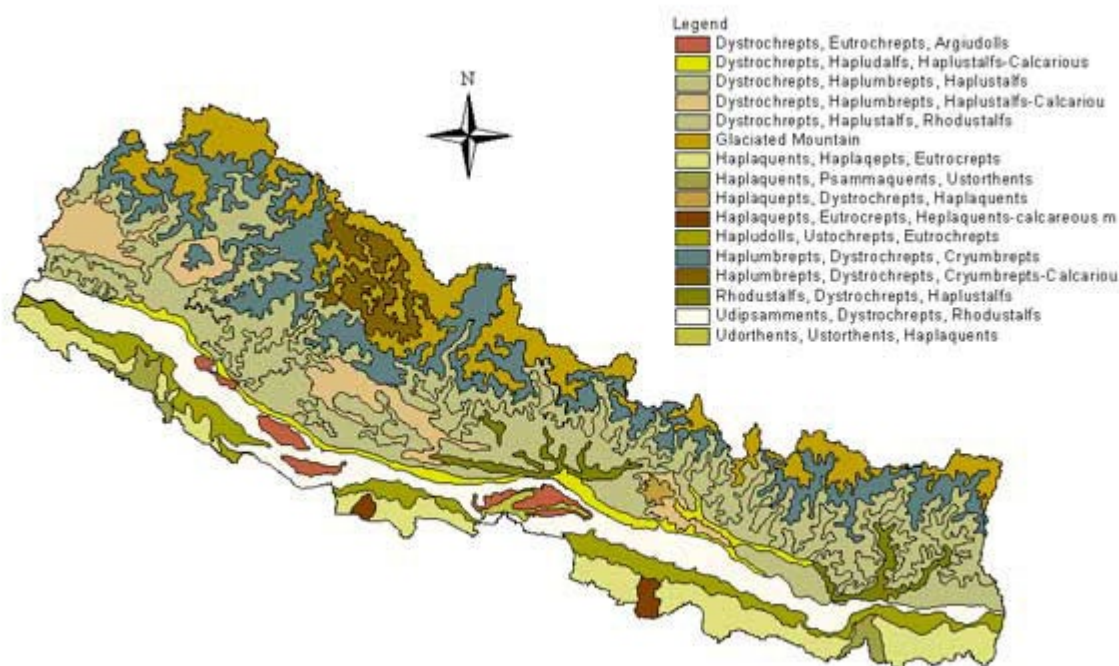


Figure 3 Soil types in Nepal

- **Mollisols:** Soils with high organic matter content, usually under thick grass or forest, dark colour and high base saturation are classified under Mollisols. They develop on basic parent materials at higher elevations. They are formed on calcium rich parent materials and throughout rapid base recycling and/or low leaching, have maintained their high base saturation. Mollisols have been found sporadically in the Sal Forest of Upper Terai and southern exposed grassland sites in western Nepal at higher elevations. Vegetation removal for cultivation results in the rapid oxidation of the organic matter in the surface of these soils and they are converted over time to Ustochrepts.
- **Alfisols:** Soils with significant pedogenetic development, with obvious translocated clay in the subsoil and a high base saturation percentage. Alfisols are characterized by a subsurface diagnostic horizon in which silicate clay has accumulated by illuviation. Alfisols are common but do not make up a large percentage of the soil. They represent the most mature landscape positions throughout the sloping lands of the mountain regions and on older alluvium.
- **Ultisols:** Only one Ultisol of any significance occurs in Nepal- Rhodudult. It has low pH and low base saturation. These soils are restricted to the old Tars in Central and Eastern Nepal, and they represent the oldest most weathered soils found in Nepal. These soils are important to distinguish because soil acidification rapidly occurs due to use of chemical fertilizers. This soil is more weathered and acidic than Alfisols but less than Spondosols.
- **Aridisols:** Water deficiency is the major characteristic of these soils. These are soils that are dry for more than nine months of the year. They exhibit very little in the way of weathering and usually have free  $\text{CaCO}_3$  and other salts at or near the surface. Aridisols are restricted to the rain shadow areas of the main Himalayan massive, where rainfall is less than 30mm. the areas north of Jomsom are aridisols. They can be productive with irrigation.

### 2.1.2 Indigenous classification of soil

64. Among the most important physical properties of soils considered by farmers is soil texture. The textural classes differentiated by farmers in the field and their equivalent USDA soil texture classes are listed in Table 2-1. Farmer's textural classifications are used primarily for crop selection and soil management.

Table 2-1 Indigenous terms for texture classification

Local name	USDA Texture Class
Pango	Silty loam/silt
Balaute	Sand
Domat	Loam
Balaute Domat	Sandy loam
Balaute Chimte	Sandy clay loam
Domat Chimte	Clay loam
Chim	Clay
Gagren	Gravelly
Masino	Fine
Chimte	Very fine (clay) soil

### 2.1.3 Seismic Activity

65. Nepal is in a seismically active area. The country lies in one of the active continental collision zones of the world; the Himalaya, where the probability of earthquake occurrence is very high. Nepal is divided, by level of shaking hazard, into three major seismic zones from south to north (Figure 4), separated by major thrusts and faults. These zones are elongated in a general east-west direction, with the middle part of the country slightly more prone to shaking than the northern and the southern parts. A study has identified 92 faults in Nepal.<sup>14</sup> Nepal on a regular interval witnesses' earthquake along the major active faults in east-west alignment. Historical data and ongoing seismological studies have clearly indicated that the entire region of Nepal is prone to earthquakes. According to Global Report on Disaster Risk, Nepal ranks the 11th position in terms of earthquake risk.<sup>15</sup>

<sup>14</sup> UNDP/UNCHS-Habitat, (1994); Seismic Hazard Mapping and Risk Assessment for Nepal, UNDP Nepal

<sup>15</sup> Nepal Disaster Risk Reduction Portal, [drportal.gov.np](http://drportal.gov.np)

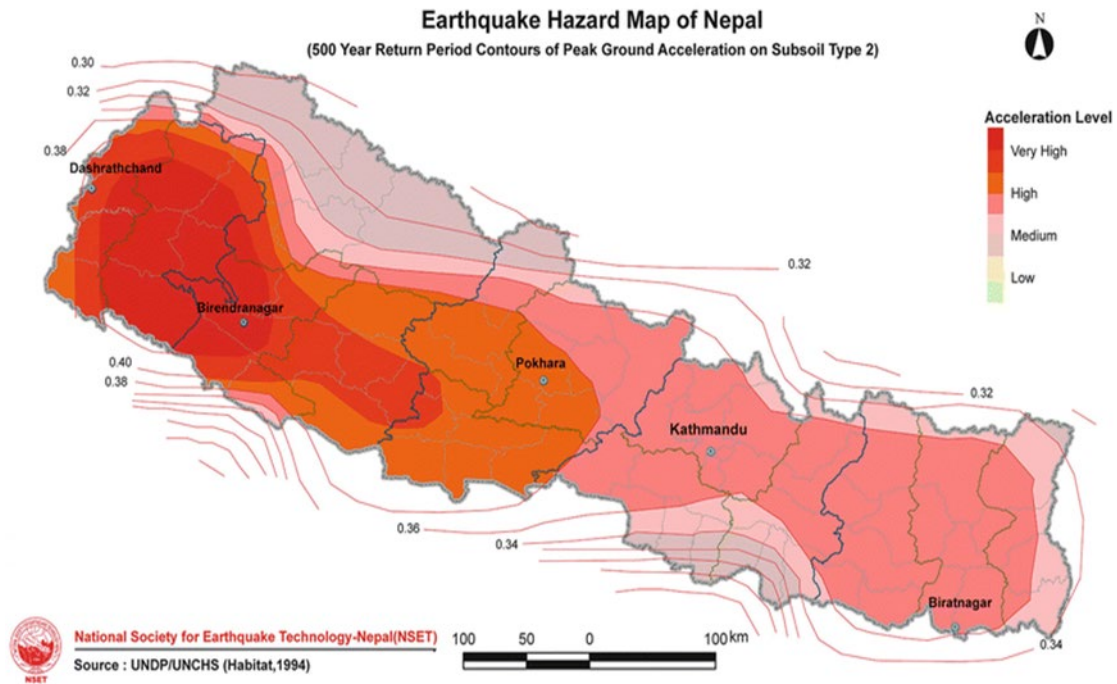


Figure 4 Earthquake hazard map of Nepal<sup>16</sup>

66. Many destructive earthquakes have been reported in the historical records within the Himalayan arc. The first documented earthquake event in the country dates to 7 June 1255, during the reign of King Abhaya Malla. The quake, measuring 7.8 on the Richter scale, took the life of the king and wiped out a third of Kathmandu's then population. Nepal has witnessed at least one major earthquake per century ever since.
67. Historical data has shown that the country witnessed three major earthquakes in 20th century namely Bihar-Nepal earthquake (1934), Bajhang earthquake (1980) and Udayapur earthquake (1988). According to Global Report on Disaster Risk, Nepal ranks the 11th position in terms of earthquake risk as earthquakes have often occurred in Nepal. In 2015, there was 7.8 Richter scale magnitude of earthquake occurred with epicentre Gorkha district west from Kathmandu. More than 10,000 lives were lost, as well as loss of animals and property.
68. Earthquakes and landslides can happen across the country, as shown in Figure 4. Generally, the project catchments lie within zones of medium to high earthquake risk. The lakes are located in Koshi Province (Koshi Basin) and the seismicity is high as shown in the figure.

#### 2.1.4 Landslides

69. Landslide is one of the very common natural hazards in the hilly region of Nepal. Both natural and human factors such as steep slopes, fragile geology, high intensity of rainfall, deforestation, unplanned human settlements are the major causes of landslide. The risk of landslide is further exacerbated by anthropogenic activities like improper land use, encroachment into vulnerable land slopes and unplanned development activities such as construction of roads and irrigation canals without proper protection measures in the vulnerable mountain belt. The hilly districts of Nepal located in the Siwalik, Mahabharat range, Mid-land, and fore and higher Himalayas are more susceptible to landslide because of steep topography and fragile ecosystem<sup>17</sup>.
70. Losses resulting from landslides are extremely high, with a negative impact on households as landslides create more permanent loss of land with a longer rehabilitation period<sup>18</sup>. These severe impacts are exacerbated by the remote locations of many communities in the Middle Hills, where most landslides occur and where transportation costs are higher, increasing the cost of delivering relief resources and services<sup>19</sup>.

<sup>16</sup> Parajuli, Ms & Jimee, Ganesh & Guragain, Ramesh. (2012). Developing and implementing emergency response plan of a zonal hospital in Nepal. 10.13140/2.1.3308.2245.

<sup>17</sup> Nepal Disaster Risk Reduction Portal, [drportal.gov.np](http://drportal.gov.np)

<sup>18</sup> Sudmeier-Rieux, K., Jaquet, S., Basyal, G.K., Derron, M., Devkota, S., Jaboyedoff, M. and Shrestha, S., 2013. A neglected disaster: landslides and livelihoods in Central-Eastern Nepal. In *Landslide Science and Practice* (pp. 169-176). Springer, Berlin, Heidelberg.

<sup>19</sup> Jones, J.N., Stokes, M., Boulton, S.J., Bennett, G.L. and Whitworth, M.R.Z., 2020. Seismic and monsoon-triggered landslide impacts on remote trekking infrastructure, Langtang Valley, Nepal. *Quarterly Journal of Engineering Geology and Hydrogeology*, 53(2), pp.159-166.



71. Landslides are a secondary risk of GLOFs as the flood water can inundate soil and destabilise masses of land, in the same way as intense rainfall events<sup>20</sup>. As the risk of GLOF occurrence grows under climate change, and if factors that contribute to landslide occurrence such as deforestation remain present, the risk of landslides in Nepal rises.
72. It is not possible to predict landslides well at the small scale associated with individual project sites, therefore this document has provided the broad context (Figure 5). None the less, it can be seen from Figure 5, that the risk of landslides is medium to high for most of the areas that the project will be operating in.

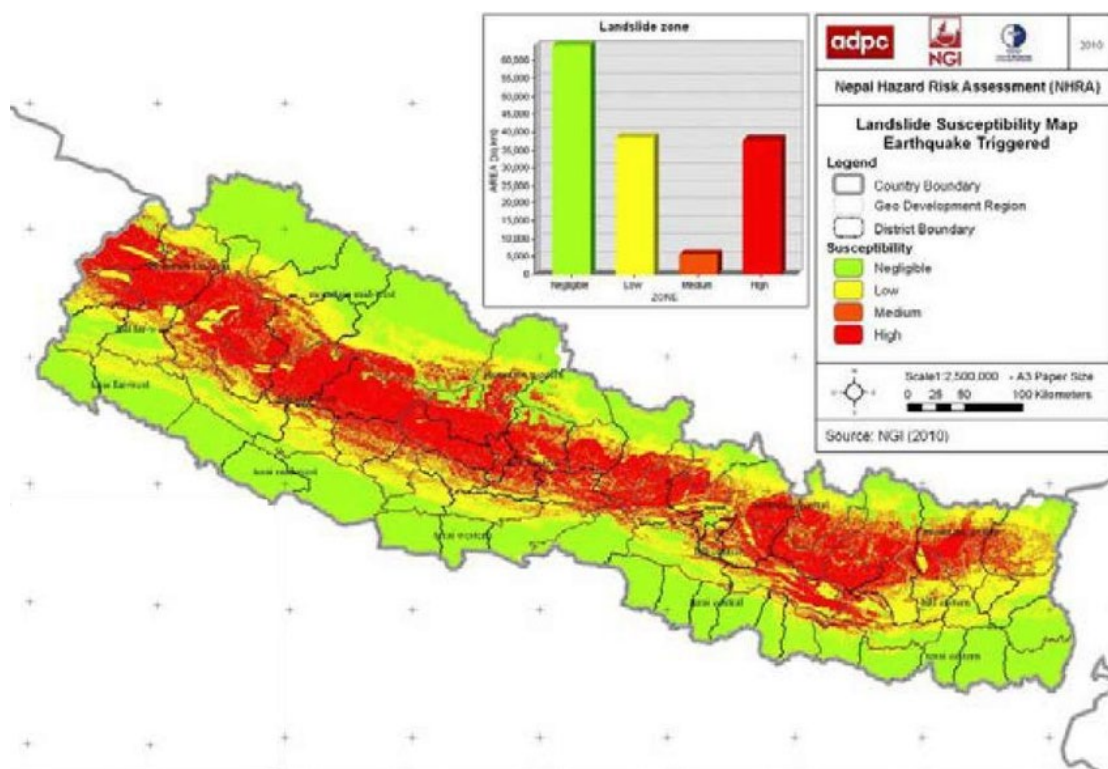


Figure 5 Landslide risk

### 2.1.5 Climate

73. Nepal's unique physiographical and topographical characteristics result in a highly variable climate across the country. Conditions range from subtropical or temperate in the southern Terai to polar frost and temperatures consistently below freezing in the northern Himalayas, despite the two regions only being ~200 km apart. Annual seasons in Nepal can be divided into a wet season, which consists of pre-monsoon season (March–May) and monsoon season (June–September), and a dry season, which consists of a post-monsoon season (October–November) and winter (December–February). In addition to the temporal variation of wet and dry seasons in Nepal, precipitation also varies spatially from southeast to northwest regions, as a result of two major weather systems. The southwest monsoon winds cause high levels of rainfall in the south-eastern parts of the country during monsoon season, while in the north-western areas the Himalayas serve as a barrier to north-eastern winds blowing from Central Asia during winter, subsequently resulting in predominantly winter rainfall.
74. While Nepal is dominated by a temperate climate with dry winters and hot summers. Polar conditions feature at higher altitudes along the northern border of the country, with intermediate cold climates south of the higher peaks, transitioning into tropical conditions along the southern border<sup>21</sup>. The country's mean annual temperature is ~12°C and average annual rainfall is ~1,360 mm<sup>22</sup> (Figure 6). Winters are generally dry and in the summer months (June–September) the monsoons drive the rainfall in Nepal as they migrate through the country. These monsoons bring

<sup>20</sup> Chahal, P., Rana, N., Bisht, P., Bagri, D.S., Wasson, R.J. and Sundriyal, Y., 2017. Identification of landslide-prone zones in the geomorphically and climatically sensitive Mandakini valley (central Himalaya), for disaster governance using the Weights of Evidence method. *Geomorphology*, 284, pp.41-52.

<sup>21</sup> Karki, R., Talchabhadel, R., Aalto, J. and Baidya, S.K., 2016. New climatic classification of Nepal. *Theoretical and applied climatology*, 125(3-4), pp.799-808.

<sup>22</sup> <https://climateknowledgeportal.worldbank.org/country/nepal/climate-data-historical>. Accessed 23 July 2020

250–450 mm of rainfall each month to most of the country — except for the north-western mountains that receive 100–150 mm/month. The monsoon season is strongly influenced by global climatic variations such as the El Niño–Southern Oscillation (ENSO) and Southern Oscillation Index (SOI), which result in variability and increased intensity of the monsoon rainfall patterns<sup>23</sup>.

75. The country can be divided into five regions with distinct climates; these are: i) the Terai plains; ii) the Siwalik hills; iii) the Middle Mountains; iv) the High Mountains; and v) the High Himalayas<sup>24</sup>. The Terai plains lie below 300 masl with humid tropical climates and average temperatures of 30°C in the summer and 10–15°C in the winter. The more elevated areas, such as the Siwalik hills at 300–1,500 masl, have a moist tropical climate and average annual temperatures of 25°C. A temperate zone features across the Middle Mountains at elevations of 1,000–2,500 masl, with average annual temperatures of 20°C. The High Mountains located 2,200–4,000 masl, have a cool, sub-alpine climate with average summer temperatures of 5–15°C and winter temperatures below 0°C. Extreme conditions dominate the High Himalayas, an alpine to arctic zone higher than 4,000 masl with average annual temperatures of <0 to 5°C<sup>25</sup>.

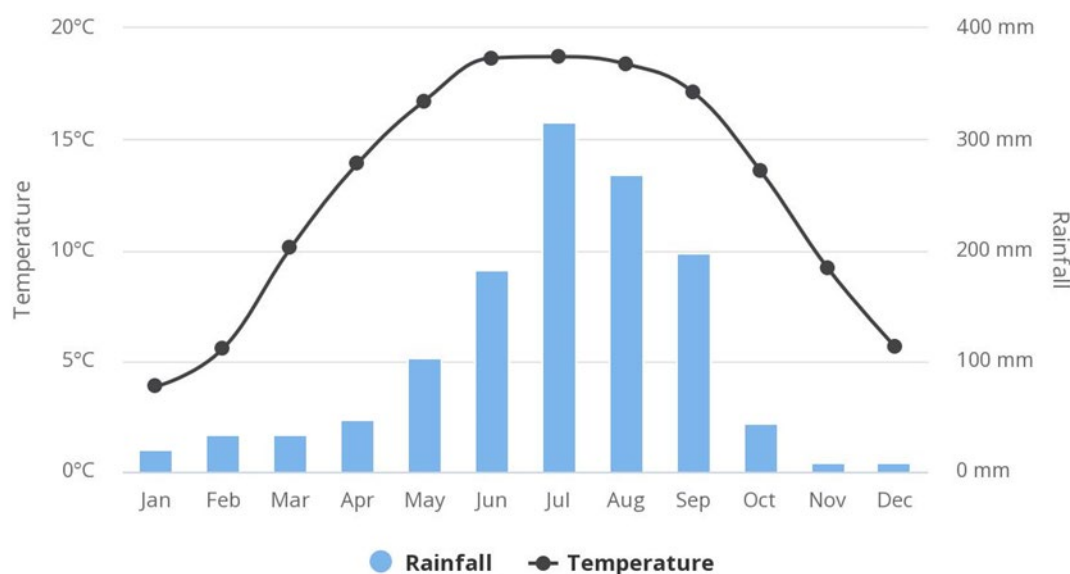


Figure 6. Average monthly temperature and rainfall of Nepal for 1991–2016<sup>26</sup>.

76. The monsoons present severe threats to Nepal, with subsequent new record downpours being recorded almost every year with a trend of increasing rainfall and the associated floods and landslides resulting in loss of life and extensive damage to infrastructure.
77. Since 1950, a total of 51 floods have been recorded in Nepal. Of these, 17 occurred within the last decade, becoming a nearly annual occurrence from 2016 to 2021. All floods in Nepal since 2010 have been attributed to monsoon rainfall<sup>27</sup>.

### 2.1.5.1 Temperature

78. Historically, Nepal's average annual temperatures have been stable, with only minor fluctuations since 1901 (Figure 7 and **Error! Reference source not found.**). Regarding the temperature trend over the last 60 years, there have been some conflicting findings with some studies reporting a decrease in dry season temperatures<sup>28</sup>, while others

<sup>23</sup> Sigdel, M. and Ikeda, M., 2012. Summer monsoon rainfall over Nepal related with large-scale atmospheric circulations. *J Earth Sci Climate Change*, 3(112), p.2.

<sup>24</sup> Karki, R., Schickhoff, U., Scholten, T. and Böhner, J., 2017. Rising precipitation extremes across Nepal. *Climate*, 5(1), p.4.

<sup>25</sup> Pokharel, B., Wang, S.Y.S., Meyer, J., Marahatta, S., Nepal, B., Chikamoto, Y. and Gillies, R., 2020. The east–west division of changing precipitation in Nepal. *International Journal of Climatology*, 40(7), pp.3348–3359.

<sup>26</sup> <https://climateknowledgeportal.worldbank.org/country/nepal/climate-data-historical/>. Accessed 23 July 2020

<sup>27</sup> UNDRR. DesInventar Sendai databank. Accessed: 5 August 2020.

<sup>28</sup> Mcsweeney, C., New, M., Lizcano, G. and Lu, X., 2010. The UNDP Climate Change Country Profiles: Improving the accessibility of observed and projected climate information for studies of climate change in developing countries. *Bulletin of the American Meteorological Society*, 91(2), pp.157–166.

indicate an increase between 0.5°C–0.6°C per decade, particularly in the northern mountains<sup>29,30,31,32</sup>. However, the frequency of cold days and nights per year has decreased significantly, by 5% and 8%, respectively<sup>33</sup>. The mean number of warm days, warm nights<sup>34</sup>, cold days and cold nights is 36.5 for all four indices for the period 1981–2010<sup>35</sup>. For the same period, the average annual number of warm spell days is 17.6 days, while the average annual number of cold spell days is 20.3<sup>36</sup>.

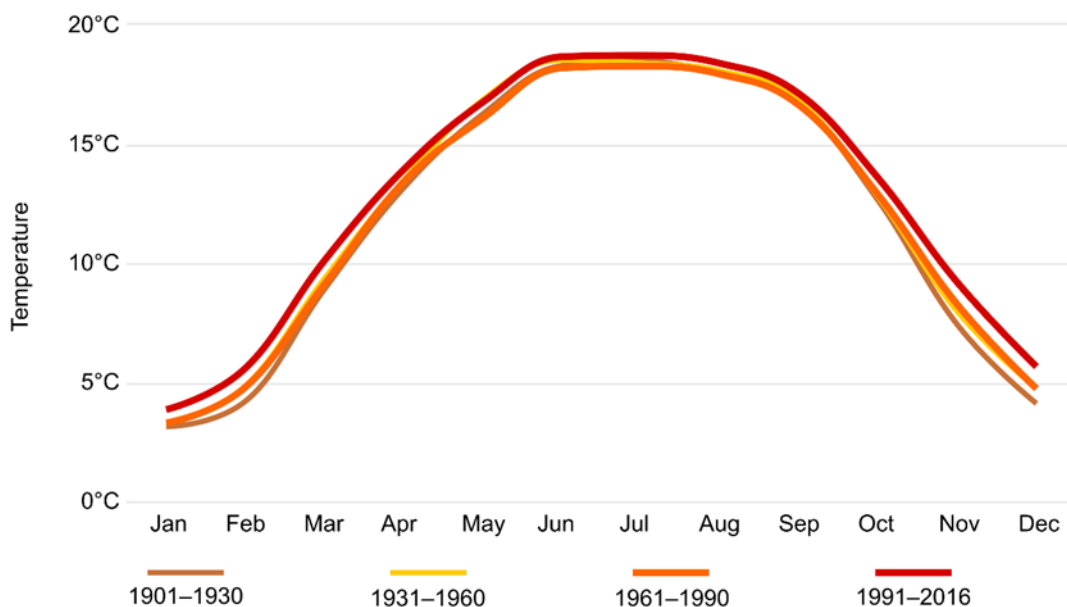


Figure 7. Average monthly temperatures in Nepal from 1901–2016<sup>37</sup>.

### 2.1.6 Air Quality

79. In the project district there is no air pollution. However, based on the World Health Organization's guidelines, the air quality in Nepal is considered unsafe - the most recent data indicates the country's annual mean concentration of PM<sub>2.5</sub> is 100 µg/m<sup>3</sup>, exceeding the recommended maximum of 10 µg/m<sup>3</sup> particularly in urban areas. Issues include open burning of refuse, dust and industry and vehicle emissions.

### 2.1.7 Hydrology

80. Over 80% of the land area of the country is drained by three major river systems, thus producing three principal river basins. These basins are Koshi basin in the east, the Karnali basin in the west and the Gandaki basin, which is a transition zone. The principal rivers of each of the three drainage systems originate in the Trans-Himalayan region and flow south fed by numerous tributaries arising in the hill region.
81. Nepal has abundant water resource availability, with natural water sources available in the form of rivers, springs, lakes, and groundwater. As a result, water is one of the most important natural resources in the country. Forming part of the larger Ganga River Basin, Nepal has an estimated 6,000 rivers and streams, which have a cumulative length of 45,000 km. Rivers in Nepal can be classified into three groups based on their origin. The first is snow fed rivers, which originate from snow and glaciated regions in the Himalayas. As a result of being fed by melting snow

<sup>29</sup> Shrestha, A.B., Wake, C.P., Mayewski, P.A. and Dibb, J.E., 1999. Maximum temperature trends in the Himalaya and its vicinity: an analysis based on temperature records from Nepal for the period 1971–94. *Journal of climate*, 12(9), pp.2775–2786.

<sup>30</sup> Dhakal, S., 2003. *One World South Asia*. Kathmandu Nepal.

<sup>31</sup> Liu, X. and Chen, B., 2000. Climatic warming in the Tibetan Plateau during recent decades. *International Journal of Climatology: A Journal of the Royal Meteorological Society*, 20(14), pp.1729–1742.

<sup>32</sup> DHM, 2017. *Observed Climate Trend Analysis of Nepal (1971–2014)*. Department of Hydrology and Meteorology, Kathmandu

<sup>33</sup> <https://climateknowledgeportal.worldbank.org/country/nepal/climate-data-historical> Accessed: 11 August 2020

<sup>34</sup> Nights when the minimum temperature is higher than the 90<sup>th</sup> percentile

<sup>35</sup> DHM, 2017. *Observed Climate Trend Analysis in the Districts and Physiographic Regions of Nepal (1971–2014)*. Department of Hydrology and Meteorology, Kathmandu.

<sup>36</sup> DHM, 2017. *Observed Climate Trend Analysis in the Districts and Physiographic Regions of Nepal (1971–2014)*. Department of Hydrology and Meteorology, Kathmandu.

<sup>37</sup> <https://climateknowledgeportal.worldbank.org/country/nepal/climate-data-historical> Accessed: 11 August 2020

and glaciers, the flow of these rivers is perennial, and their flow is sustained during the dry season. This reliable flow combined with the surrounding steep topography, provides opportunities for hydropower generation and irrigation downstream. The second group of rivers originate in Nepal's middle mountains and hilly regions and while they are affected by monsoon and precipitation patterns in the country, groundwater sources sustain flow at a low level during dry seasons. The third group of rivers originate in the Churia foothills, with flow depending on monsoon precipitation and accordingly, they can be fully depleted during non-monsoon seasons.

82. All these factors contribute to Nepal being one of the most water-rich countries in the world, accounting for 2.27% of the world's water resources<sup>38</sup>. These abundant water resources — in the form of snow cover, rivers, springs, lakes, and groundwater — amounted to a per capita water availability of 7,000 m<sup>3</sup>/yr in 2016<sup>39</sup>. The country's total renewable water resources are estimated to be 237 km<sup>3</sup>/yr, of which 225 km<sup>3</sup>/yr represents surface sources and 12 km<sup>3</sup>/yr represents groundwater sources<sup>40</sup>.
83. Another natural source of freshwater in Nepal is snow cover. Snowmelt from the Himalayas maintains the water levels in downstream rivers and wetlands, thereby providing important ecosystem services and supporting dependent livelihoods. Snow cover in the Himalayas also provides substantial natural freshwater storage in the form of glaciers, permafrost, and glacial lakes. Subsequent snow-melt discharges maintain the water levels in downstream rivers and wetlands, providing critical ecosystem services and supporting their dependent livelihoods.
84. The main hydrological features relevant to the project areas are Dana Khola, Marsyandi Nadi, Duchi Gandaki Nadi, Kali Gandaki Nadi, Tamakoshi Nadi, Inkhu Khola, Imja Khola, Hongu Khola, Baurn Nadi, Arun Nadi, Tamar Nadi, Sunkoshi Nadi and Yangma Khola (Figure 1).
85. There are 62 lakes in the project districts (Table 2-2).

Table 2-2 Number of lakes by project Districts<sup>41</sup>

District	Number of lakes
Sankhuwasabha	15
Solukhumbu	32
Bhojpur	5
Dhankuta	1
Khotang	7
Okhaldhunga	2
<b>Total</b>	<b>62</b>

86. Water pollution occurs during rainy season due to floods, surface runoff and landslides. Water pollution through natural processes is insignificant in Nepal. Domestic sewage and industrial effluents are the major contributors of water pollution in urban and industrial areas away from the project districts. Haphazard urbanisation and inadequate sewerage facilities have accelerated the discharge of domestic liquid wastes without any treatment.

### 2.1.8 Groundwater / Springs

87. Natural hot springs are in various parts of Nepal:
  - Hotiyana in Sankhuwasabha, Koshi zone, Eastern Nepal.
  - Syabrubesi and Chilime in Rasuwa, North of Kathmandu.
  - Bhurung, Do Khola, Singha, Chhumrung and Dhadkharka in Myagdi district.
  - Jomsom and Dhima in Mustang.
  - Chame and La Ta in Manang district.

<sup>38</sup> HEMS (2015). LUPWY Documentation. Developer Manual. Health and Environmental Management Society (HEMS), Chundevi, Kathmandu, Nepal.

<sup>39</sup> Nepal, S., Neupane, N., Belbase, D., Pandey, V.P. and Mukherji, A., 2019. Achieving water security in Nepal through unravelling the water-energy-agriculture nexus. International Journal of Water Resources Development, pp.1-27.

<sup>40</sup> Water Environment Partnership in Asia.

<http://www.wepa-db.net/policies/state/nepal/state.htm#:~:text=STATE%20OF%20WATER%20RESOURCES,springs%2C%20lakes%2C%20and%20groundwater>.

Accessed: 24 July 2020.

<sup>41</sup> [https://www.researchgate.net/publication/265068675\\_A\\_Map\\_Based\\_Inventory\\_of\\_Lakes\\_in\\_Nepal](https://www.researchgate.net/publication/265068675_A_Map_Based_Inventory_of_Lakes_in_Nepal)



- Bhulbhule Khar in Tanahu district.
- Tapoban in Bajhang district.
- Dhanachauri (Luma) and Tila river in Jumla.
- Srikaar, Sina and Chamlaiya in Darchula.
- Riar, Saghu Khola, Sarai Khola in Middle development region of Nepal.

88. Hotiyana of Sankhuwasabha district is the only one known from the project districts.

## 2.1.9 Flora and Fauna

89. Nepal is a small country, covering only 0.09% the Earth's land surface, but it is very important to global conservation as it is at the heart of the Himalayan Region - one of the world's top 20 hottest global biodiversity hotspots, and the many and varied habitats support a great diversity of living organisms.<sup>42</sup>

### 2.1.9.1 Flora

90. Land cover varies across the watersheds, based largely on altitude (Figure 8, Figure 9, Figure 10). The vegetation in the Himalayas can be broken up into six categories:

- Tropical (<1000m) - below 1000m, forests are dominated by sal trees. Other signature plants that you will find in the tropical zone include tall elephant grasses and acacia. Also, rosewood trees and silky cotton trees, which produce bright red flowers every spring
- Subtropical (1000m to 2000m) - gaining altitude, the sal forests give way to the more cold-tolerant species, including the distinctive chir pine. Deciduous trees include autumn-blooming chestnuts and the spring-blooming schima, a fruiting tree species distantly related to the tea bush.
- Lower temperate (1700m to 2700m) - above 1700m, evergreen oaks start to appear. Where there is sufficient water, there may also be horse chestnut, maple, walnut, alder, and birch trees. The deciduous forests are broken up by swathes of blue pines, which flourish on south-facing slopes.
- Upper temperate (2400m to 3000m) - in the upper temperate zone, the brown oaks are joined by dozens of species of rhododendron, the most distinctive plant of the Himalaya. Pin forests at this elevation are made up of blue pines, spruces, firs and hemlocks.
- Sub-alpine (3000m to 4000m) - approaching the treeline, silver fir, birch and oak trees dominate the forest. Exposed ridges and passes are dominated by shrub rhododendrons and dwarf bamboo. On dry slopes there may be stands of twisted junipers, though this species has been almost eradicated in many areas by harvesting for firewood.
- Alpine (4000m to snowline) - there are almost no trees at all above 4000m, though a few species of ground-hugging rhododendrons persist almost as far as the snowline. In the alpine meadows that define this elevation, are distinctive alpine flowers like edelweiss, gentians, anemones and stellara, which can survive up to 5500m.

91. Timber trees that occur in and around areas of habitation include: Salla (Pines), Sissau, Uttish, Tuni, Bamboo, Chilaune, Khair and Katush. While important fodder trees include: Kutmero, Khaeu, Bhimal, Dudelo, Bhimsenpati, Taki/Koiralo.

<sup>42</sup> Shrestha & Joshi, 1996



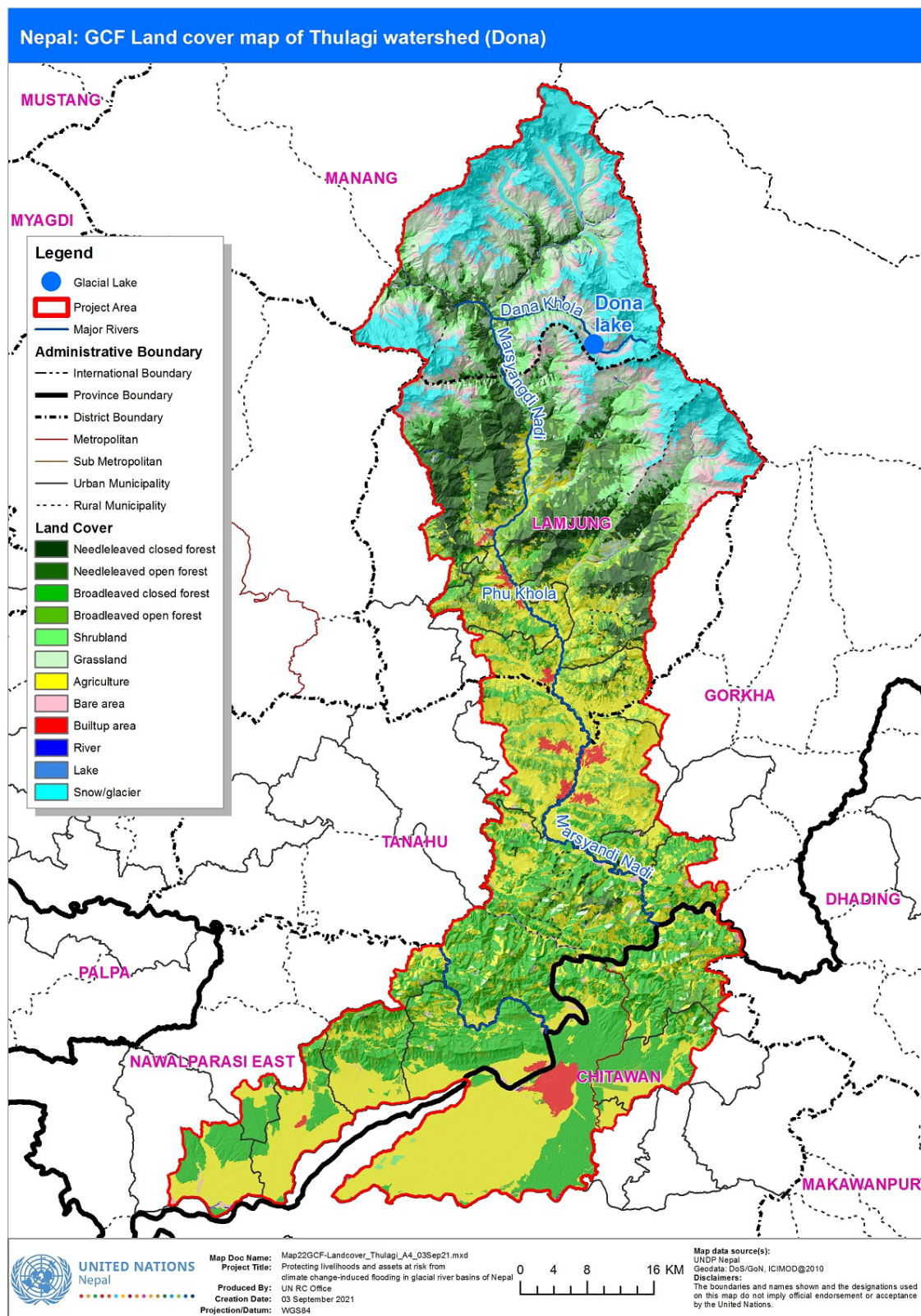


Figure 8 Land cover in the Thulagi watershed

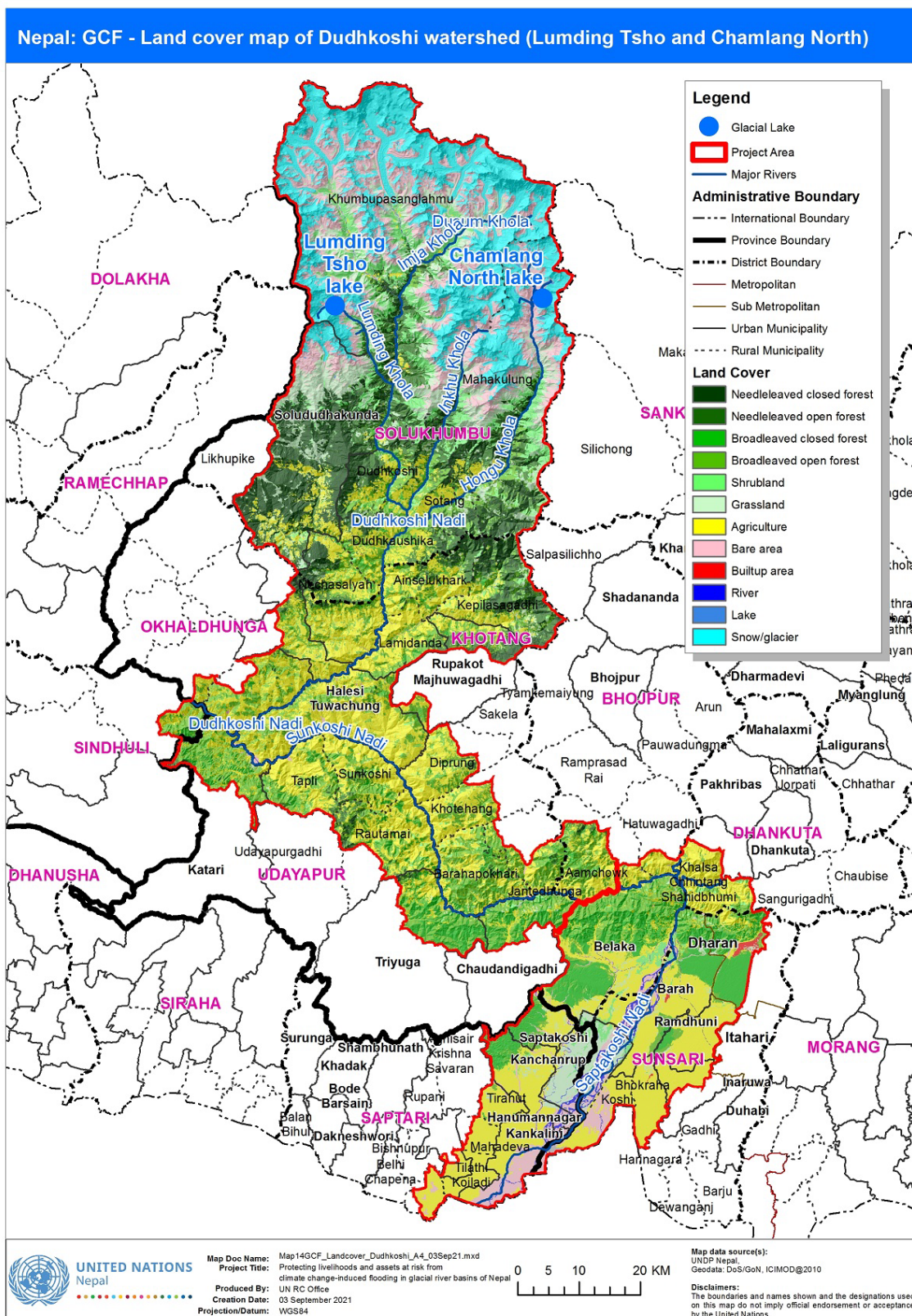


Figure 9 Land cover in the Dudhkoshi watershed



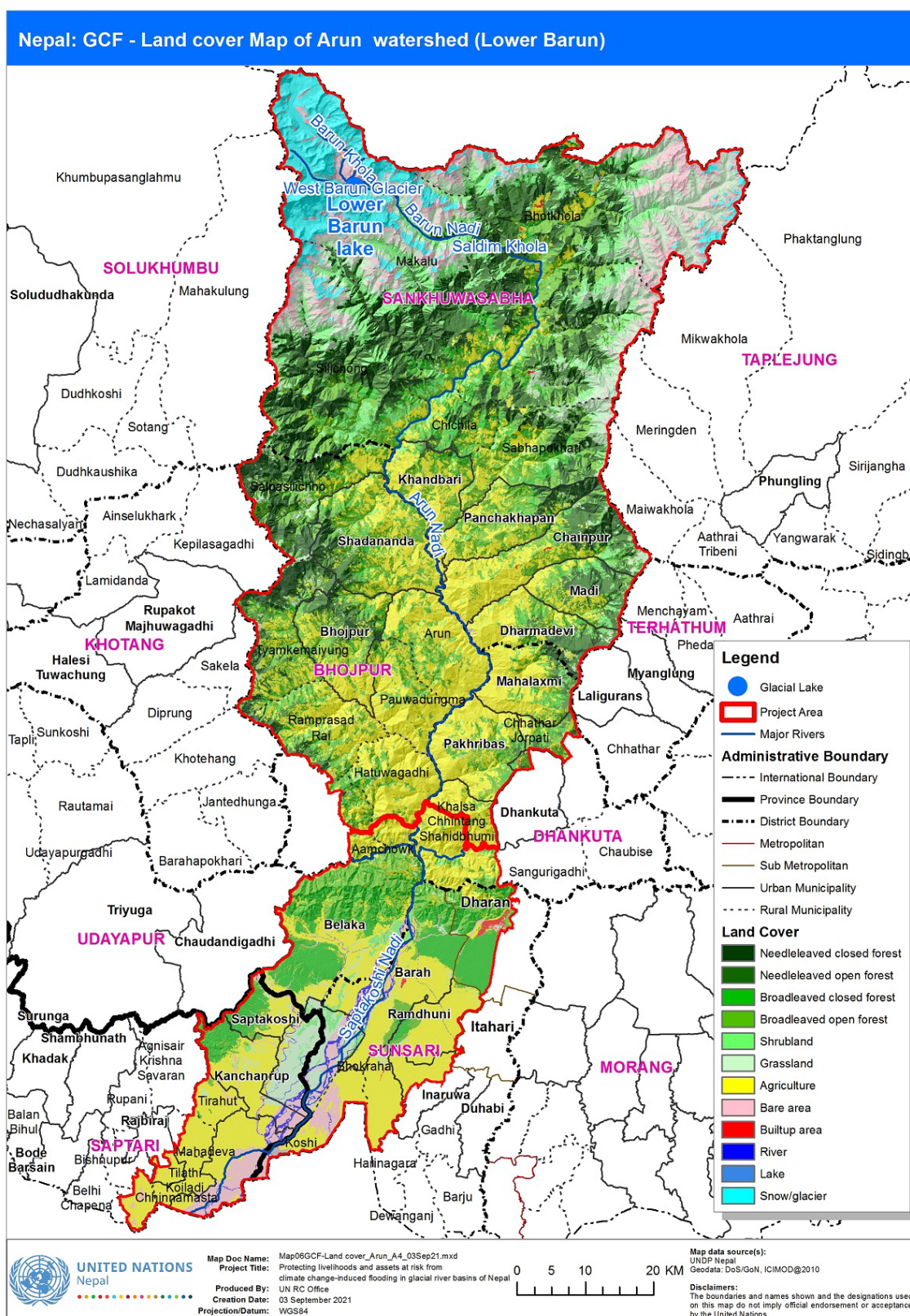


Figure 10 Land cover in the Arun watershed

### 2.1.9.1.1 Rare / Endangered Flora

92. It is estimated that 7000 higher plant species occur in Nepal, with some 300 of these only found in (endemic to) Nepal. Nine species of flowering plants are now suspected to be extinct in Nepal, eight of these were endemic species.<sup>43</sup> Table 2-3 lists the timber trees that are nationally banned from exploitation, while Table 2-4 lists the CITES listed plants in Nepal.

Table 2-3 National list of timber trees banned for felling, transportation, or export

Species	Status
Acacia catechu	IUCN status: Threatened
Bombax ceiba	
Dalbergia latifolia	
Juglans regia	
Michelia champaca	IUCN status: Endangered
Pterocarpus marsupium	
Shorea robusta	

Table 2-4 CITES listed plants in Nepal

Appendix I: threatened with extinction	
<i>Saussurea lappa</i>	
Appendix II: spp not yet threatened, but potentially endangered if trade not controlled	
<i>Ceropegia</i>	Milkworts, 7 species in Nepal
<i>Cyatheaceae</i>	tree ferns
<i>Cycadaceae</i>	cycads
<i>Dioscorea deltoidea</i>	
<i>Orchidaceae</i>	orchids, over 300 species in Nepal
<i>Podophyllum hexandrum</i>	may apple
Appendix III: spp subject to regulation and requiring international trade control.	
<i>Cycas pectinata</i>	Himalayan cycad
<i>Gnetum montanum</i>	
<i>Meconopsis regia</i>	
<i>Podocarpus neriifolius</i>	
<i>Talauma hodgsonii</i>	
<i>Tetracentron sinense</i>	

In Nepal, there are more than 500 species of medicinal plants, of which 45 species are identified as threatened, including those shown in

93. Table 2-5.

<sup>43</sup> Shrestha & Joshi, 1996

Table 2-5 Medicinal plants threatened though over-collection for the export trade.

Species	Zone of occurrence
<i>Acontium heterophyllum</i>	'Bikh', subalpine and alpine zones
<i>Aconitum spicatum</i>	'Bikh', subalpine and alpine zones
<i>Acorus calamus</i>	'Bojo', temperate zone
<i>Dactylorhiza hatagirea</i>	'Panch Aunle', subalpine and alpine zones
<i>Ephedra gerardiana</i>	'Somlata', subalpine and alpine zones
<i>Gentiana kurroa</i>	
<i>Nardostachys grandiflora</i> (syn. <i>jatamansi</i> )	'Jatamansi', subalpine and alpine zones
<i>Paris polyphylla</i>	'Satuwa', temperate zone
<i>Picrorhiza kurroa</i>	'Kutki', temperate zone
<i>Piper longum</i>	'Pipla', tropical and subtropical zones
<i>Podophyllum hexandrum</i> (syn. <i>emodi</i> )	
<i>Potentilla fulgens</i>	'Bajradanti', temperate zone
<i>Rauvolfia serpentina</i>	'Sarpagandha', tropical and subtropical zones
<i>Rheum australe</i> (syn. <i>emodi</i> )	'Padamchal', subalpine and alpine zones
<i>Rheum nobile</i>	
<i>Swertia chirayita</i>	'Chiraito', temperate zone
<i>Terminalia chebula</i>	'Harro', tropical and subtropical zones
<i>Terminalia bellirica</i>	'Barro', tropical and subtropical zones
<i>Valeriana wallichii</i>	'Sugandawal', temperate zone
<i>Zanthoxylum armatum</i>	'Timur', tropical and subtropical zones

94. The project sites for lake lowering are above the vegetation line.

### 2.1.9.2 Fauna

95. The Nepal Himalaya has a comparatively low number of mammals, probably due in part to the geologically recent origin of the range. There are 28 species. Their low density is almost certainly the result of human activity. Larger mammals include northern plains grey langur *Semnopithecus entellus*, jackal *Canis aureus*, grey wolf *Canis lupus*, Himalayan black bear *Ursus thibetanus* (VU), red panda *Ailurus fulgens* (VU), yellow-throated marten *Martes flavigula*, Siberian weasel *Mustela sibirica*, snow leopard *Panthera uncia* (EN), masked palm civet *Paguma larvata*, sambar *Rusa unicolor* (VU), Himalayan musk deer *Moschus leucogaster* (EN), southern red muntjac *Muntiacus muntjak*, Sumatran serow *Capricornis sumatraensis* (VU), Himalayan tahr *Hemitragus jemlahicus* and Himalayan goral *Naemorhedus goral*.
96. Smaller mammals include web-footed water shrew *Nectogale elegans*, Himalayan water shrew *Chimarrogale himalayica*, short-tailed mole *Talpa micrura*, woolly hare *Lepus oiostolus*, bobak marmot *Marmota bobak*, Royle's pika *Ochotona roylei*, rat *Rattus* sp. and house mouse *Mus musculus*.
97. Inskipp (1989) lists 152 species of birds, 36 of which are breeding species of which Nepal may hold internationally significant populations.
98. Approximately 200 species of fish are found in the Himalayan waters of Nepal, of which 190 are indigenous<sup>44</sup>. The most common types of fish in Nepal are Silver-carp, Grass-carp, Catla, Rohu, and Rainbow trout.

<sup>44</sup> Which Species of Fishes Are Only Found in Nepal | Indigenous Guide ([gearsforfishing.com](http://gearsforfishing.com))

99. The project sites for lake lowering are above the vegetation line and therefore offer limited habitat for fauna.

Table 2-6 Protected fauna found in the Himalayan region.

English Name	Scientific Name	Habitat Ecozone	Status by IUCN
Grey Wolf	<i>Canis lupus Himalayan</i>	Nepalese Himalaya	Critically Endangered
Himalayan Brown Bear	<i>Ursus arctos</i>	Manaslu Himayan region	Critically Endangered
Red Panda	<i>Ailurus fulgens</i>	Himalyan region and midhills	Endangered
Leopard Cat	<i>Felis (Prionailurus) bengalensis</i>	3000-4500 m altitude forest Makalu Barun and Kanchnjunga	Threatened
Lynx	<i>Felis lynx</i>	Himalyan region	Endangered
Snow Leopard	<i>Uncia uncia</i>	Himalayan region	Endangered
Clouded leopard	<i>Pardofelis nebulosa</i>	Himalayan region	Vulnerable
Musk Deer	<i>Moschus chrysogaster</i>	Himalayan region	Endangered
Assamese monkey	<i>Macca assamensis</i>	380 m to 2350m	Vulnerable
Chinese pangolin	<i>Manis pentadactyla</i>	Throughout Nepal	Critically endangered
Wild Yak	<i>Bos grunniens (mutus)</i>	Himalayan region	Endangered
<b>Birds</b>			
Cheer Pheasant	<i>Catreus wallichii</i>	Midhills, 1,800m and 3050m	Vulnerable
Impeyon pheasant (Danphe)	<i>Lophophorus impejanus</i>	3,300m to 4,570m	Least concern (National Birds of Nepal)
Crimson-horned Pheasant	<i>Tragopan satyra</i>	Himalayan region	Near Threatened

### 2.1.10 Protected Areas

In recognition of the magnitude of biodiversity the Government of Nepal has established a network of 20 protected areas since 1973, consisting of ten national parks, three wildlife reserves, six conservation areas and one hunting reserve (

100. Figure 11).

101. There are two national parks (Makalu Barun NP and Sagarmatha NP) and one conservation area (Annapurna Conservation Area) in the proposed project areas (Figure 12, Figure 13, Figure 14):

- **Makalu-Barun National Park:** established in 1992 as eastern extension of Sagarmatha National Park. It is the world's only protected area with an elevation gain of more than 8,000m enclosing tropical forest as well as snow-capped peaks. It covers an area of 1,500 km<sup>2</sup> in the Solukhumbu and Sankhuwasabha Districts and is surrounded by a buffer zone to the south and southeast with an area of 830km<sup>2</sup>.

The summits of Makalu (8,463m), Chamalang (7,319m), Baruntse (7,129m) and Mera (6,654m) are included in the park. The protected area extends to about 66km from west to east and to about 44km from north to south. From the Arun River valley in the southeast, located at altitudes of 344–377 m, elevation gains about 8,025 m to the peak of Makalu. The national park shares the international border with the Qomolangma National Nature Preserve of the Tibet Autonomous Region in the north.

The inaccessible valleys of the Barun river, the glacier-fed tributary to the Arun River, contain some of the last remaining pristine forests and alpine meadows. This area has been designated as a Strict Nature Reserve, the first in Nepal, to protect natural ecosystems and processes in an undisturbed state for scientific study, environmental monitoring, education, and the maintenance of genetic resources.

The Makalu Barun National Park exhibits a high diversity of forest types that are characteristic of the Eastern Himalayas, ranging from near-tropical dipterocarp monsoon forest on 400m altitude to sub-alpine conifer stands on 4,000m altitude. Forest aspects vary depending on seasonal moisture availability, temperature and snow cover at different elevations and slopes. Forests below 2,000m are strongly affected by subsistence agriculture, so that only some ecologically significant stands remain there. Above 2,000m forests are usually extensive since the cool, humid climate suppresses agricultural activity. Mountain areas with an altitude of 2,000 m fall along mid-hill range including river belts in the proposed project areas.



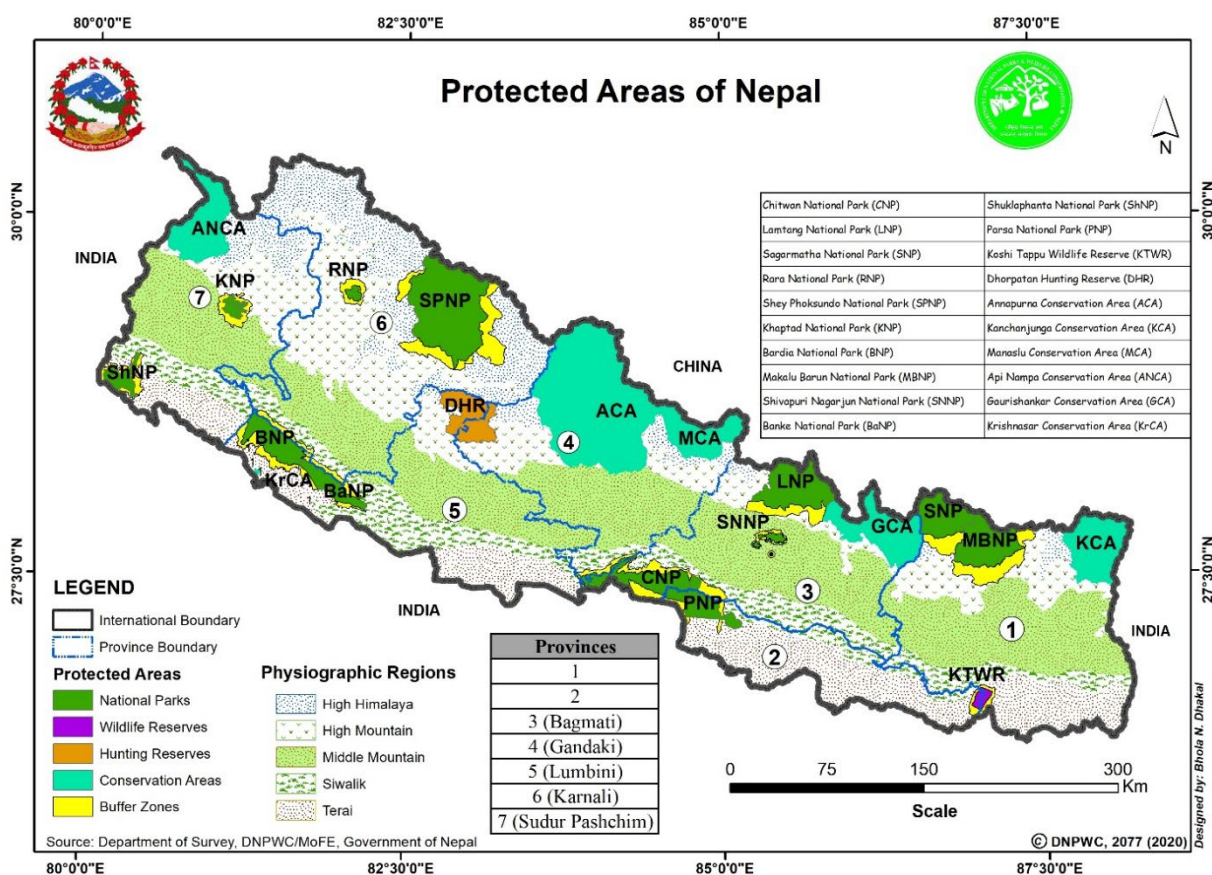


Figure 11 Protected areas in Nepal

- Sagarmatha National Park:** The Park's core area covers the upper headwaters of the Bhote Kosi, Dudh Kosi and Imja Khola rivers which fan out under the crest of the Himalaya Mountains on the Tibetan border and meet near the area's main settlement, Namche Bazar. The buffer area reaches down the Dudh Kosi valley to Lukla 18 km south of Namche. The Park is enclosed by high mountain ranges and lies over extremely rugged terrain, deeply incised valleys and glaciers culminating in Sagarmatha / Mt. Everest, the world's highest mountain. The catchments are ringed by 25 or more peaks over 6,000m, and seven - Baruntse, Lhotse, Nuptse, Pumo Ri, Guachung Kang, Cho-Oyu, and Nangpai Gosum - over 7,000m high.

The rivers are fed by the long glaciers at the head of each valley: Nangpa Glacier on the Bhote Kosi, Ngozumpa Glacier on the Dudh Kosi, Khumbu Glacier on the Lobuje Khola and the Imja Glacier, one of eight which feed the Imja Khola under Sagarmatha. The Ngozumpa Glacier, 20 km long, is bordered on the west by the four Gokyo lakes impounded behind its lateral moraine. All the glaciers show signs of retreat and several glacial lakes have formed in recent decades; one, Imja Dzo which started to form in the 1970s, is now 1,200 ha in area and 45m deep. The upper valleys are U-shaped but below about 3,000m the rivers cut steep ravines through the sedimentary rocks and underlying granites. Near Namche Bazar they join the Dudh Kosi which drains eventually into the Ganges. Except for some alluvial and colluvial deposits at lower levels, the soils are skeletal.

- Annapurna Conservation Area (ACA):** established in 1992, it is Nepal's largest conservation area covering 7,629km<sup>2</sup> in the Annapurna range of the Himalayas. It ranges in elevation from 790m to the peak of Annapurna I at 8,091m. It includes one of the most impressive mountain cirques in the world, popularly known as the Annapurna Sanctuary, which is surrounded by seven peaks over 7000 m. The conservation area stretches across Manang, Mustang, Kaski, Myagdi, and Lamjung Districts. Annapurna Conservation Area encompasses Annapurna Sanctuary and is known for several trekking routes including Annapurna Circuit. At the lowest levels of the Conservation Area (about 1000m) there are subtropical forests of broadleaved *Schima wallichii*, *Castanopsis indica*, and on dry slopes forests of Chir Pine *Pinus roxburghii*; alder *Alnus nepalensis* mainly occurs along rivers and streams. Higher up, these forests are replaced by temperate forests of mixed broadleaves, including the oaks *Quercus lamellosa*, *Q. lanata* and *Q. semecarpifolia* with

rhododendron species. In the wettest places, such as in the upper Modi Khola valley, grow bamboo jungles of *Arundinaria* species. Above these grow coniferous forests, mainly of fir *Abies spectabilis*, Blue Pine *Pinus wallichiana* and hemlock *Tsuga dumosa*. Higher up there are subalpine forests of birch *Betula utilis*, blue pine and juniper species. Finally, rhododendron and juniper scrub grow in the alpine zone.

Several other protected areas border the project areas including Manaslu Conservation Area, Chitwan National Park, Gaurishanka Conservation Area, and Katchununga National Park (

102. Figure 11).

#### 2.1.11 Transboundary Impacts.

103. It is considered that there are no transboundary impacts associated with the project as the activities will take place within catchment areas that do not drain across nearby borders.

104. During development of the project it was noted that significant GLOF risk and potential downstream impacts to Nepal exist in Tibet, however it was recognized that seeking to mitigate these risks was beyond the scope of this project, although the improved EWS provided by the project will enhance warnings of floods from transboundary rivers.



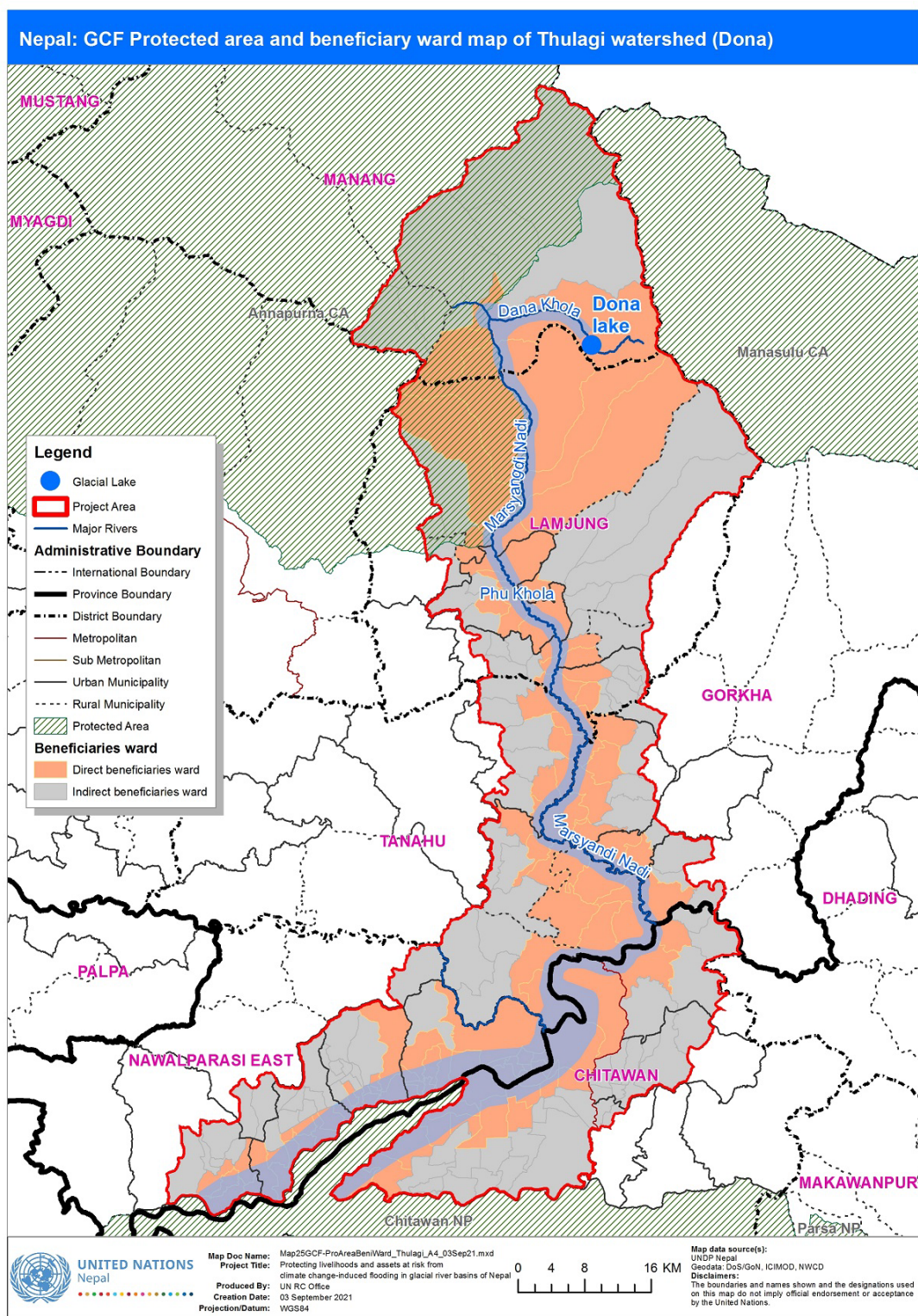


Figure 12 Location of Annapurna Conservation Area in the Thulagi watershed



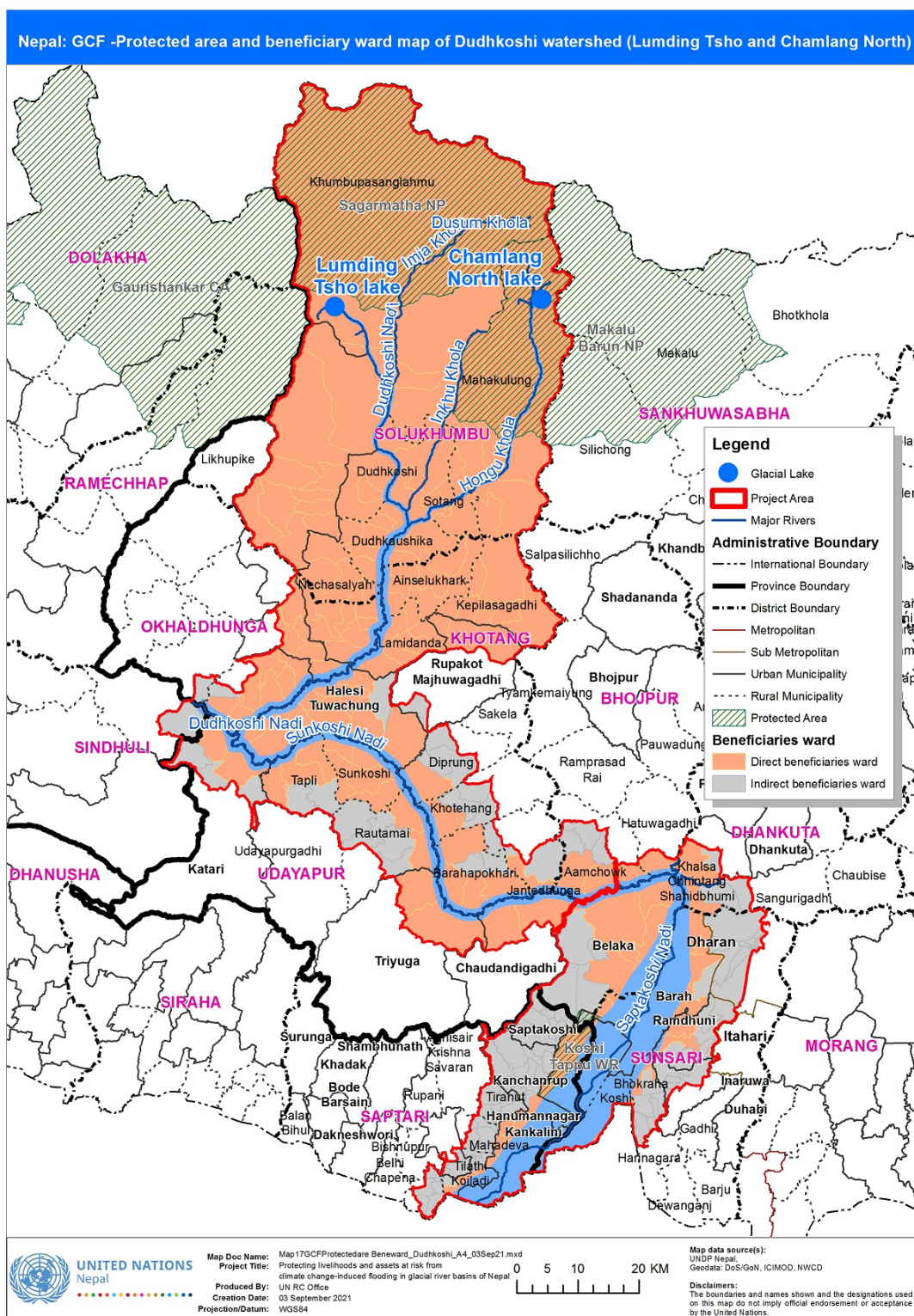


Figure 13 Location of Sagarmatha NP and Makalu NP and Dudhkoshi watershed project area



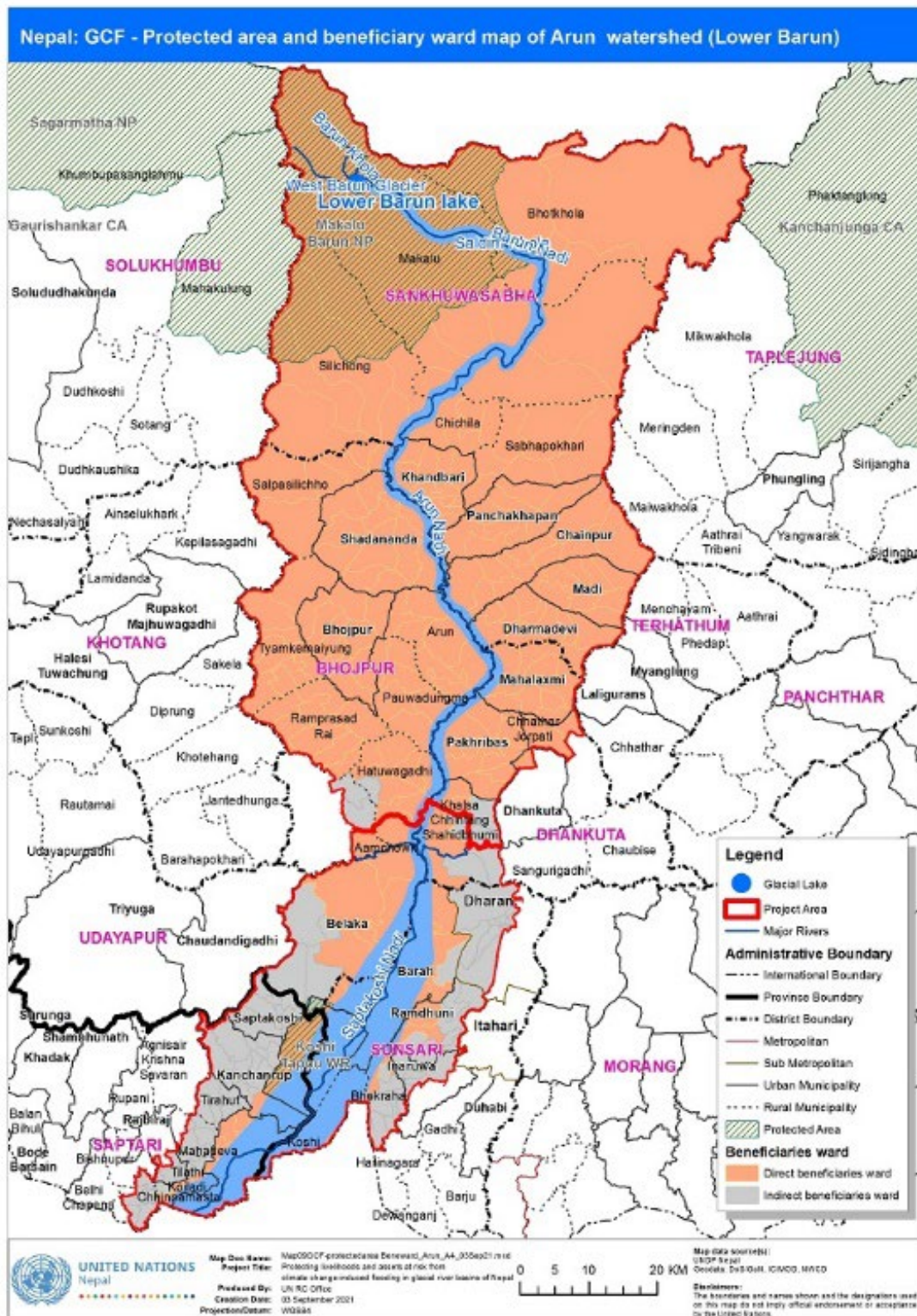


Figure 14 Location of Sagamatha NP in relation to the Arun watershed project area

### 2.2 SOCIO-ECONOMIC CONDITIONS

Nepal is a Least Developed Country (LDC), ranking as the 17<sup>th</sup> poorest nation globally and among the poorest in southern Asia<sup>45</sup>.

105. Table 2-10 provides a summary of baseline socio-economic data for Nepal.
106. The country has a population of ~29 million<sup>46</sup>, of which over 80% live in rural areas. Poverty among communities in the mountains, where population density is lowest, is most prevalent at 42% in contrast to an average of 9% in urban areas<sup>47</sup>.
107. The Human Development Index (HDI) for Nepal has increased over the last decade, from 0.380 in 1990 to 0.579 in 2018, indicating an improvement in overall human development. The country currently ranks at 147 out of 189 countries, placing it within the 'medium human development' category. In addition to an increased HDI, Nepal has also seen an increase in its Gross National Income (GNI) per capita by ~151% from 1990 to 2019. While there is improvement, Nepal's 2018 HDI value is still below the average 0.634 for other countries in the medium human development category, and below the average of 0.642 for countries in South Asia.<sup>48</sup> Recent surveys of national living standards indicate that ~30% of the population live below the national income poverty line of US\$1.90/day<sup>49</sup>.
108. Until signing a Comprehensive Peace Agreement in 2006, the country experienced a decade-long armed violent conflict between the Government of Nepal (GoN) and the Maoist Communist Party of Nepal<sup>50</sup>. Following the 2006 peace agreement, Nepal been focussed on peace building, social reconciliation and economic revival.
109. In 2015, Nepal became a democracy and transitioned its constitution to establish a federal structure. In 2017, elections were successfully held at the federal, state and local tiers, indicating a complete shift to federalism.
110. Despite these economic and developmental challenges, Nepal has still experienced a substantial decline in incidence of poverty<sup>51</sup>, which has fallen from 68% of the population in 1996 to 25% in 2011<sup>52</sup>. However, since 2014 the proportion of the population living in poverty slowly increased over five years, to ~30% in 2019. This is likely to be exacerbated by 2020's low economic growth, resulting from a national lockdown in response to the Covid-19 pandemic.

#### 2.2.1 Population in the project areas and beneficiary estimates

111. Nepal is predominantly a country of villages. Population densities in Nepal vary with terrain (Figure 15, Figure 16, Figure 17). Less than 10% live at an altitude between 3000 m and 4000 m, approximately 45% live in the mid-hill region and another 45% in the lowland Terai.
112. Total population of the project districts is 800,585 as per the census of Nepal, 2011 as shown in Table 2-7.

<sup>45</sup> <https://www.usaid.gov/nepal/economic-growth-and-trade>

<sup>46</sup> World Bank, 2019. More information available at: <https://data.worldbank.org/country/NP>

<sup>47</sup> Country Poverty Analysis – Nepal, Asian Development Bank 2017. More information available at: <https://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-pa-detailed.pdf>

<sup>48</sup> Human Development Report 2020, UNDP. More information available at: [http://hdr.undp.org/sites/all/themes/hdr\\_theme/country-notes/NPL.pdf](http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/NPL.pdf)

<sup>49</sup> World Bank, 2019. More information available at: <https://data.worldbank.org/country/NP>

<sup>50</sup> <https://peacemaker.un.org/nepal-comprehensiveagreement2006>

<sup>51</sup> Based on the international poverty line of \$1.25 per day.

<sup>52</sup> Country Poverty Analysis – Nepal, Asian Development Bank 2017. More information available at: <https://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-pa-detailed.pdf>

Table 2-7 Population of the Project Districts

District	Population <sup>53</sup>
Sankhuwasabha	158,742
Solukhumbu	105,886
Bhojpur	18,249
Dhankuta	163,412
Khotang	206,312
Okhaldhunga	147,984
<b>Total</b>	<b>800,585</b>

The project has been estimated to have 385,956 direct beneficiaries and 1,912,347 indirect beneficiaries, giving a total of 2,298,303 beneficiaries. Table 2-2-8 shows the ethnicity in Province One for direct beneficiaries and

113. Table 2-2-9 ethnicity of indirect beneficiaries in Province One. Table 2-11 shows the direct and indirect beneficiaries disaggregated by sex and administrative area.

Table 2-2-8 Ethnicity of direct beneficiaries (Province One)

Districts	Direct Beneficiaries			Dalit	Janjati	BCTS
	Female	Male	Total			
Solukhumbu	3255	2980	6235	206	5262	773
Sankhuwasabha	4736	4337	9073	544	5308	3221
Bhojpur	5178	4741	9919	893	6348	2678
Khotang	9996	9153	19149	3638	10532	4979
Okhaldhunga	4753	4353	9106	1238	4007	3861
Dhankuta	5691	5211	10902	1744	3707	5451
<b>Total</b>	<b>33609</b>	<b>30775</b>	<b>64384</b>	<b>5601</b>	<b>40884</b>	<b>17899</b>

Note: BCTS = Brahmin, Chhetri, Thakuri and Sannyashi

Table 2-2-9 Ethnicity of indirect beneficiaries (Province One)

Districts	Indirect Beneficiaries			Dalit	Janjati	BCTS
	Female	Male	Total			
Solukhumbu	48729	44621	93350	3081	78787	11575
Sankhuwasabha	77856	71293	149149	8949	87252	52948
Bhojpur	89422	81884	171306	15418	109636	46253
Khotang	97131	88944	186075	35354	102341	48380
Okhaldhunga	22400	20512	42912	5836	18881	18195
Dhankuta	40747	37313	78060	12490	26540	39030
<b>Total</b>	<b>376285</b>	<b>344567</b>	<b>720852</b>	<b>62714</b>	<b>457741</b>	<b>200397</b>

<sup>53</sup> Population Census, 2011 CBS

Table 2-10. Baseline information on Nepal population, socio-economic and vulnerability indicators<sup>54</sup>.

Indicator		Value	Year
Population	Total population	28,608,710	2019
	Population growth (annual %)	1.8%	2019
	Age dependency ratio - elderly	8.9%	2019
	Age dependency ratio - youth and children	45.7%	2019
	Percentage of population with access to electricity	93.9%	2018
	Total net enrolment in primary education (men and women) <sup>55</sup>	96.3%	2019
	Mean years of school (of adults)	4.9 years	2017
Five-year Indicators	Life expectancy at birth	70.5 years	2018
	Crude death rate	6.4 people	2018
	Infant mortality range (per 1,000 live births)	32.2	2018
	Under-five mortality	26.7	2018
Economy	Gross Domestic Product (GDP) per capita; PPP	US\$ 3,558	2019
	Gross National Income (GNI) per capita; PPP	US\$ 3,600	2019
	Inflation; consumer prices	5.6%	2019
Vulnerability	Proportion of population using improved drinking water resources <sup>56</sup>	91.6%	2015
	Global Needs Assessment (GNA) Crisis Index <sup>57</sup>	0	2014
	GNA Vulnerability Index <sup>58</sup>	2	2014

<sup>54</sup> <https://databank.worldbank.org/source/world-development-indicators>

<sup>55</sup> <https://ourworldindata.org/grapher/mean-years-of-schooling-long-run?tab=chart&country=~NPL>

<sup>56</sup> <https://ourworldindata.org/grapher/share-of-the-population-with-access-to-improved-drinking-water?tab=chart&country=~NPL>

<sup>57</sup> Global Needs Assessment (GNA) 2014: Global Vulnerability Index. More information available at:

[https://reliefweb.int/sites/reliefweb.int/files/resources/gna\\_2013\\_2014%20%281%29.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/gna_2013_2014%20%281%29.pdf)

<sup>58</sup> Global Needs Assessment (GNA) 2014: Global Vulnerability Index. More information available at:

[https://reliefweb.int/sites/reliefweb.int/files/resources/gna\\_2013\\_2014%20%281%29.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/gna_2013_2014%20%281%29.pdf)

## Annex VI (b) – Environmental and Social Management Framework

Green Climate Fund Funding Proposal

Table 2-11 Disaggregated beneficiary estimates by administrative area

PROVINCE	DISTRICT	Direct Beneficiaries (Female)	Direct Beneficiaries (Male)	Indirect Beneficiaries (Female)	Indirect Beneficiaries (Male)
Province One	BHOJPUR	5,178	4,741	89,422	81,884
	DHANKUTA	5,691	5,211	40,747	37,313
	KHOTANG	9,996	9,153	97,131	88,944
	OKHALDHUNGA	4,753	4,353	22,400	20,512
	SANKHUWASABHA	4,736	4,337	77,856	71,293
	SOLUKHUMBU	3,255	2,980	48,729	44,621
	SUNSARI	45,029	41,233	126,595	115,925
	UDAYAPUR	11,849	10,850	47,437	43,438
	<b>Province One Total</b>	<b>90,487</b>	<b>82,860</b>	<b>550,318</b>	<b>503,931</b>
Province Two	SAPTARI	14,682	14,859	100,167	101,376
	<b>Province Two Total</b>	<b>14,682</b>	<b>14,859</b>	<b>100,167</b>	<b>101,376</b>
Bagmati province	CHITAWAN	44,195	43,668	131,770	130,198
	SINDHULI	1,381	1,364	-	-
	<b>Bagmati province Total</b>	<b>45,576</b>	<b>45,033</b>	<b>131,770</b>	<b>130,198</b>
Gandaki province	GORKHA	3,253	2,705	28,534	23,726
	LAMJUNG	14,015	11,654	52,582	43,722
	MANANG	190	158	1,484	1,234
	NAWALPARASI_E	28,210	23,456	85,208	70,851
	TANAHU	4,815	4,004	47,637	39,610
	<b>Gandaki province Total</b>	<b>50,483</b>	<b>41,977</b>	<b>215,445</b>	<b>179,143</b>
<b>Grand Total</b>		<b>201,228</b>	<b>184,728</b>	<b>997,699</b>	<b>914,648</b>



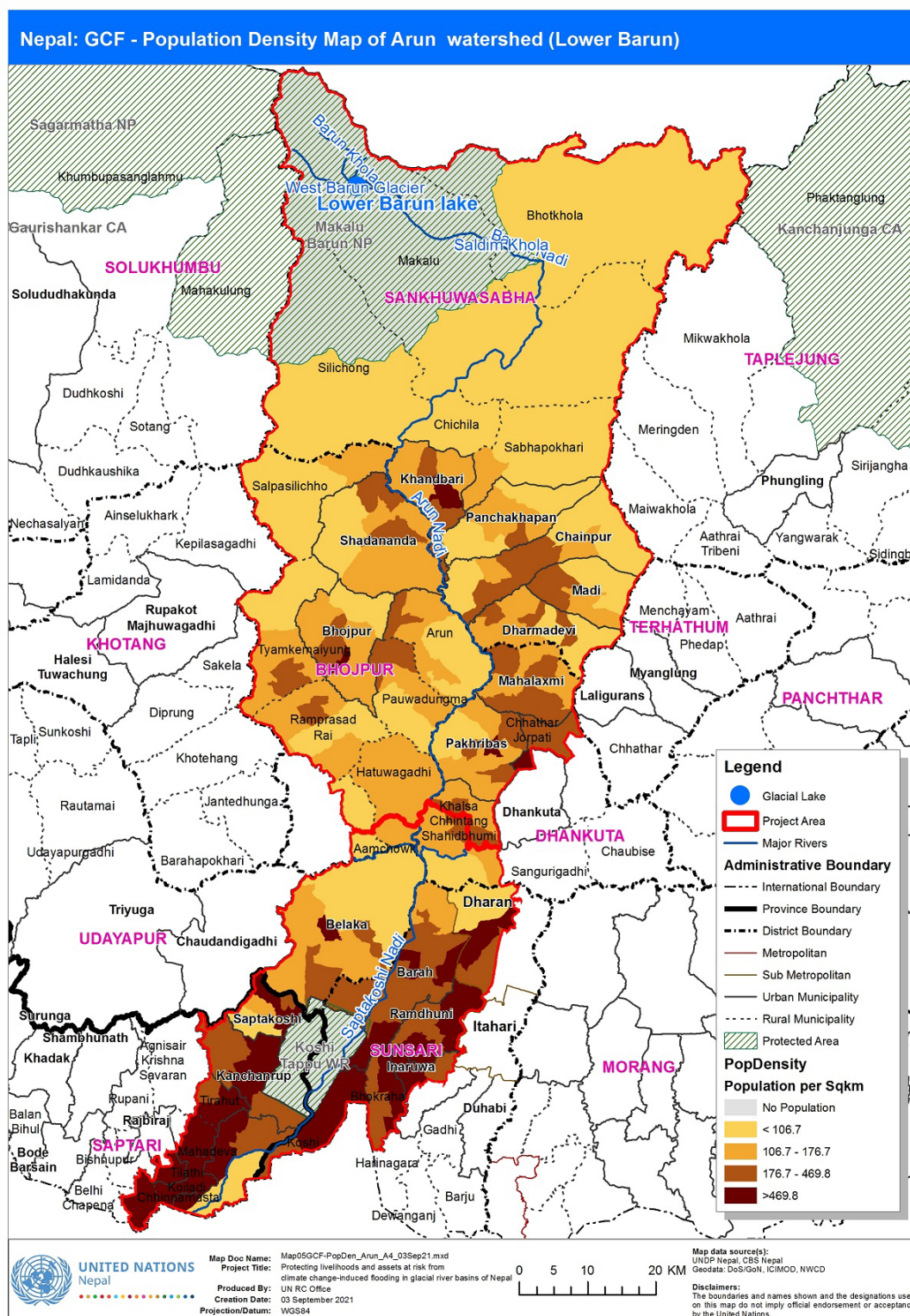






Figure 15 Population density in the Arun River watershed

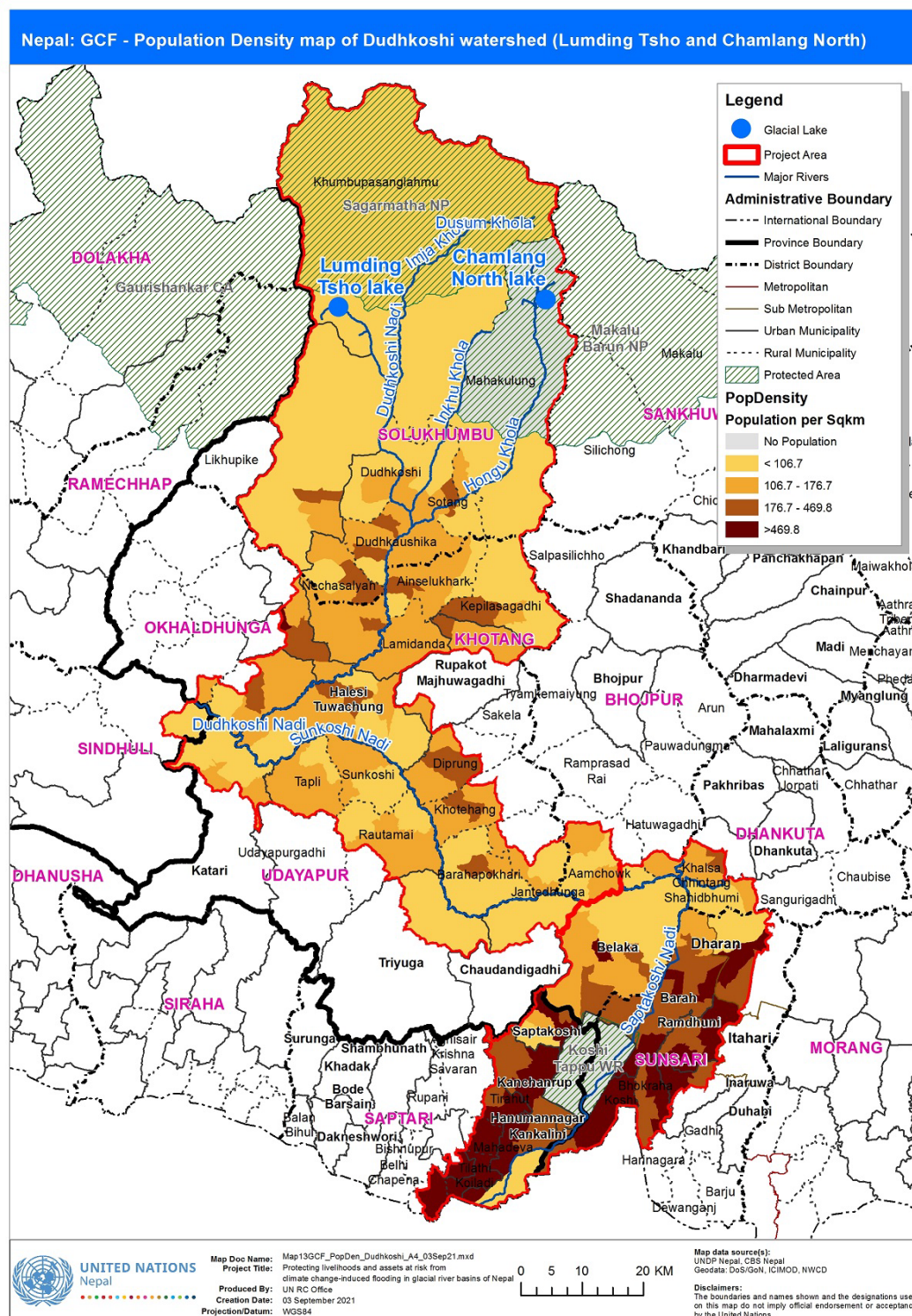






Figure 16 Population density in the Dudhkoshi watershed

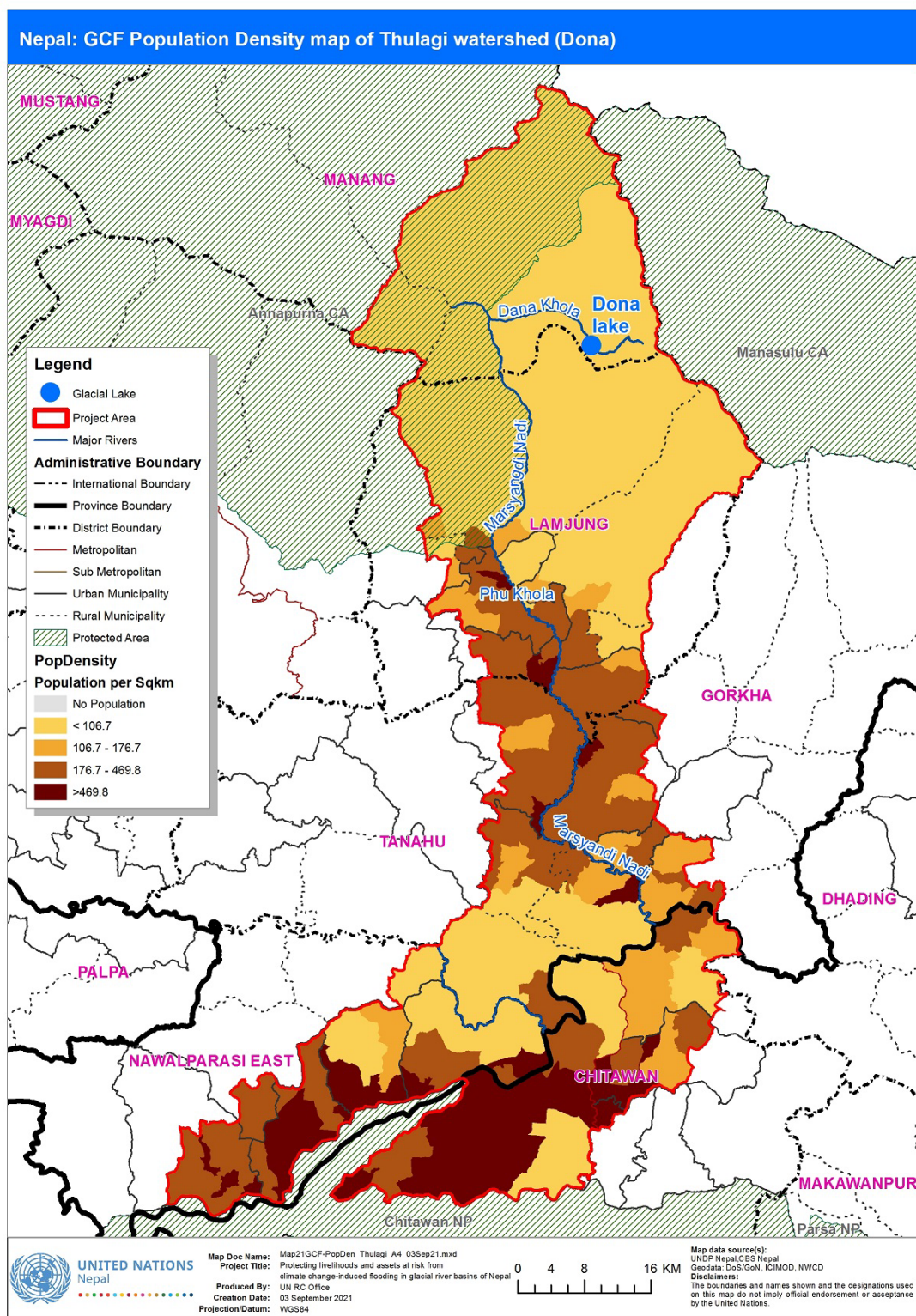


Figure 17 Population density in the Thulagi watershed

### 2.2.2 Gender

114. In Nepal, traditional family structures are grounded in beliefs that men have predominance over women. Gender roles may vary with context, caste<sup>59</sup>, ethnic group, religion and socio-economic class. Generally, however, women and girls are frequently disadvantaged by many traditional practices, including, *inter alia*: the dowry system, early marriage, stigmatization of widows, family violence, polygamy, son-preference and *chhaupadi*<sup>60,61</sup>.
115. Household division of labour is gendered in Nepal. The primary responsibility of women is water, fuel wood and fodder collection, while men are responsible for income-generating activities such as farm work. Trends of decreasing or irregular availability of water, and long periods of drought, has a direct impact on women's water fetching time. When women need to travel further and spend more time to collect water, it limits their available time for social, educational and livelihood opportunities. In addition to constraining time, further water collection travel creates safety and security concerns, especially where the terrain is rugged, and areas are remote or isolated.
116. Women also play a large role in the management and care of family farm animals and livestock, contributing to ~70% of the work<sup>62</sup>. Their roles can include: i) day-to-day decisions about animal grazing; ii) collection of water and fodder; iii) watering and feeding livestock; iv) application of composts; and v) home-based processing of livestock products. Although women contribute significantly to the livestock and agricultural sectors, surveys show that women make little contribution to decision-making in livestock rearing and management. Even in the cases where women do have ownership over livestock or property, they are marginalised from access to credit and newer technologies. This marginalisation limits them to traditional practices instead of investing in more value-added and higher income generation activities, such as dairy or meat processing and improved dairy animal farming practices<sup>63</sup>.
117. Limited access to new technologies also puts women at a disadvantage for responding to new and emerging pests and diseases that are outside of the realms of traditional knowledge and local management methods. While women's economic contributions are substantial, their labour is often not credited because the nature of the work is informal and the traditional role of women as caretakers is not accounted for.
118. Because of an increased workload due to climate change impacts, women's mobility and participation in community initiatives, committees and decision-making processes is limited. Even when opportunities are presented, women experiencing time poverty are unable to take advantage of them. As mentioned above, caring and household work is traditionally a woman's responsibility. In the communities of the proposed target areas, even women in positions such as elected ward members, Community Forestry Executive members and Female Community Health Volunteers are required to finish their household duties before participating.
119. Compared to men, women across all social and economic groups are more often excluded from accessing climate change and development resources. However, the degree of exclusion and vulnerability is highest among poor single women, particularly those living in the remote and disaster-prone areas targeted by the proposed project. Women and marginalized groups are poorly represented in structures for planning disaster related policies and programmes.
120. During natural disasters, records show that more women than men die or get injured from climate change related hazards<sup>64</sup>. This is the result of, *inter alia*: i) women's lack of access to information; ii) cultural and soil restrictions which limit mobility of women and their ability to avoid disasters; iii) lack of decision-making power and access to resources and training related to climate information. In cases where the mortality rate for women was three times higher than for men, studies indicated that the main reason for this high mortality rate was early warning signals not reaching women<sup>65</sup>. In times of displacement, women face the risk of increased sexual violence in temporary shelters. Women are also met

<sup>59</sup> Castes are hereditary classes of Hindu society, distinguished by relative degrees of ritual purity or pollution and of social status. The Nepalese caste system broadly borrows the classical Hindu model consisting of four broad social classes: Brahmin, Kshatriya, Vaishya, Sudra.

<sup>60</sup> *Chhaupadi* is a traditional practice where women are girls are confined to a kind of cow-shed outside of the house during their menstruation period, mostly practiced in East Western Nepal.

<sup>61</sup> Nepal Gender and Protection in Brief. CARE. 2015. More information available at:

[https://reliefweb.int/sites/reliefweb.int/files/resources/gender\\_and\\_protection\\_gorkha\\_lamjung\\_dharding\\_khatmandu\\_ds\\_final.pdf](https://reliefweb.int/sites/reliefweb.int/files/resources/gender_and_protection_gorkha_lamjung_dharding_khatmandu_ds_final.pdf)

<sup>62</sup> <https://www.adb.org/sites/default/files/publication/28745/gender-case-study-nep.pdf>

<sup>63</sup> <https://www.adb.org/sites/default/files/publication/28745/gender-case-study-nep.pdf>

<sup>64</sup> ICIMOD. (2014). Flood Early Warning Systems in Nepal. A Gendered Perspective Working Paper 2014/4, International Center for Integrated Mountain Development, Nepal.

<sup>65</sup> UNEP (1997) 'Asian disaster management news: Gender and disaster.' A Newsletter of the Disaster Management Community in Asia and the Pacific 3(3). Nairobi, Kenya: UNEP

with the burden of providing increased care of vulnerable children, sick, disabled or old age people during climate disasters.

121. In recent years, there have been changes to improve the challenges faced by women and girls in Nepal. The government has been legislating for more gender equality. Nepal was the first country in Asia to develop a National Action Plan on Women's Peace and Security in 2011<sup>66</sup>; and women's and girl's rights are protected in the Comprehensive Peace Agreement, signed in 2006 between the Government of Nepal and Communist Party of Nepal (Maoist)<sup>67</sup>. However, progress in traditional systems has been slow.

### 2.2.2.1 Gender Based Violence

122. In Nepal, gender-based violence takes many different forms that includes: domestic violence, sexual abuse and torture, rape, sexual harassment, incest, women trafficking, dowry and bride price, preference for boys, mental torture, verbal abuse and gender discrimination, child marriage, polygamy, polyandry, etc.<sup>68</sup>
123. Gender inequality and violence are not mutually exclusive phenomena but complex loops affecting each other. Women in Nepal face several inequalities and violence. The causes are diverse, but most of these results are due to socially assigned lower positioning of women.<sup>69</sup>
124. In their annual fact sheet for 2022<sup>70</sup>, WOREC report the following statistics for Nepal: 65% of women have experienced domestic violence, 90% of the perpetrators were male, 29% of women have experienced physical violence, 16% of women have experienced sexual violence, 35% of rape case perpetrators were neighbours, 58% of witchcraft allegation perpetrators were neighbours, 24% of human trafficking perpetrators were community member 7% of polygamy cases were recorded.
125. For the period July 2021 to June 2022 the total number of recorded cases of GBV against women and girls was 1813 (WOREC 2022). The dominant form of GBV was domestic violence (1175 cases) followed by rape (179 cases). Figure 18 shows the distribution of domestic violence cases recorded by WOREC, while Figure 19 shows the distribution of rape cases recorded by WOREC.
126. It is worth noting, that the provinces where most of the GCF project will take place (Bagmati and Gandaki) recorded the lowest domestic violence and rape incidents (with Gandaki not recording any rapes for the period).

<sup>66</sup> [http://peacewomen.org/sites/default/files/nepal\\_2011.pdf](http://peacewomen.org/sites/default/files/nepal_2011.pdf)

<sup>67</sup> <https://peacemaker.un.org/nepal-comprehensiveagreement2006>

<sup>68</sup> <https://www.herd.org.np/uploads/frontend/Publications/PublicationsAttachments1/1480578704-Backgrounder%20on%20Gender%20Based%20Violence.pdf>

<sup>69</sup> Dahal, P., Joshi, S.K. & Swahnberg, K. A qualitative study on gender inequality and gender-based violence in Nepal. *BMC Public Health* **22**, 2005 (2022).

<sup>70</sup> [https://www.worecnepal.org/uploads/publication/document/1190717651Annual%20Factsheet%20on%20Gender%20Based%20Violence\\_2022%20\(2\).pdf](https://www.worecnepal.org/uploads/publication/document/1190717651Annual%20Factsheet%20on%20Gender%20Based%20Violence_2022%20(2).pdf)



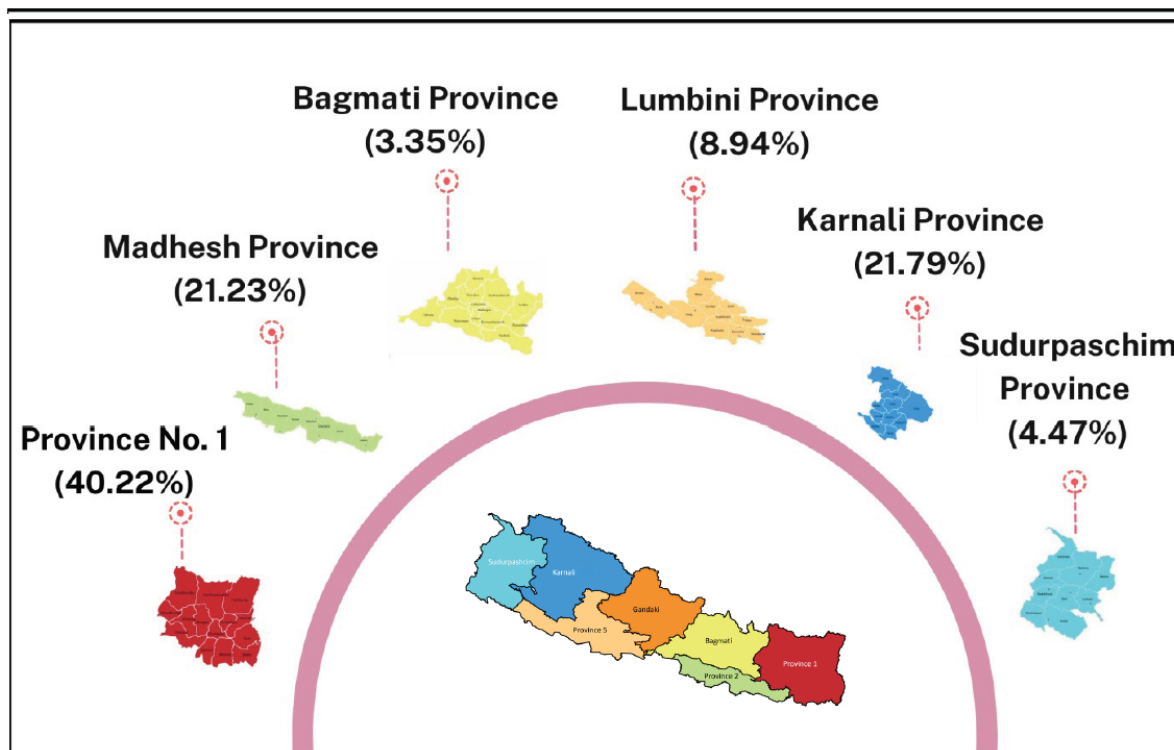


Figure 18 Distribution of domestic violence cases reporting by WOREC for period July 2021 to June 2022  
Figure 19 Number of recorded rape cases by Province for period July 2021 to June 2022 (WOREC 2022)

### 2.2.3 Employment

127. Most of Nepal's population are dependent on the country's agricultural sector for their livelihoods. In particular, the fertile floodplains of the Terai region is the country's most productive region, accounting for 56% of the national grain production despite only covering 23% of total land area<sup>71</sup>. Despite the importance of agriculture, limited access to improved technologies — such as fertilizers and improved seeds — and the use of inefficient techniques result in low yields. Moreover, only 28% of Nepal's cultivated land is under irrigation, which means agricultural outputs depend on water availability<sup>72</sup>.
128. As a result, agriculture, and ultimately community livelihoods, are heavily dependent on rainfall. Increased flood events, droughts and changing rainfall patterns that are occurring because of climate change leads to the destruction of crop yields or disruption in cultivation and planting<sup>73</sup>.
129. In recent years, with the improved use of science and technology, Nepal's economy has gradually shifted away from largely subsistence agriculture to industry and services. As a result, the contribution of the agricultural sector to the economy is declining, while contributions from the industrial sector is growing. Consequently, although ~66% of the national population engages in agriculture, the agricultural sector only accounts for 33% of the national GDP<sup>74</sup>.
130. Like many other agriculturally based societies, the project areas have experienced outward migration as villagers leave in search of alternate employment opportunities. Data for the project Districts indicates that over 305,023 people have migrated away from the project districts in recent years (Table 2-12).

<sup>71</sup> Ministry of Agriculture and Co-operatives (MOAC). 2010. Singhadarbar, Kathmandu Nepal, Statistical Information on Nepalese Agriculture

<sup>72</sup> <https://www.worldbank.org/en/results/2014/04/11/nepal-irrigation-and-water-resource-management>

<sup>73</sup> Participatory assessment of multiple socio-economic drivers and climate stresses leading to differentiated vulnerabilities in the Hindu Kush Himalaya (2019) HI-AWARE Working Paper. Report available at: <https://lib.icimod.org/record/34486>

<sup>74</sup> Country Poverty Analysis – Nepal, Asian Development Bank 2017. More information available at: <https://www.adb.org/sites/default/files/linked-documents/cps-nep-2013-2017-pa-detailed.pdf>

Table 2-12 Outward migration by project District<sup>75</sup>

District	Migration
Sankhuwasabha	60,481
Solukhumbu	40,343
Bhojpur	6,953
Dhankuta	62,260
Khotang	78,605
Okhaldhunga	56,382
Total	305,023

131. Tourism, particularly in Nepal's middle and upper mountainous regions, is another important economic sector in Nepal that has experienced growth in recent years, providing one of the country's most substantial sources of foreign currency. Mount Everest alone generates ~US\$13 million a year, and the annual number of visitors to Nepal's national parks averages over 500,000 people<sup>76</sup>. In 2019, visitor spending in the country comprised ~31% of the total national exports<sup>77</sup>. The tourism-linked service sector, which includes restaurants and hotels, employs 20% of the population. Overall, the travel and tourism industry contributed 6.7% of the total GDP in 2019<sup>78</sup>.
132. In terms of Nepal's energy sector, the country has no known significant deposits of oil, gas or coal and does not have any refineries for producing oil products<sup>79</sup>. As a result, the country relies on imports from India for its oil use. Most energy consumption in the country is generated by traditional sources of energy, such as firewood, agricultural waste and animal dung<sup>80</sup>. This is attributed to limited alternative sources, particularly in rural areas. These practices further contribute to deforestation and subsequent soil erosion and depletion, which lead to increased flooding and landslide risks.
133. Nepal has a considerable amount of hydropower potential provided by the perennial nature of the expansive Nepali river system and the steep gradient of the country's topography. Despite this potential capacity, existing hydropower stations have only been able to develop ~680 MW of power in recent years, or less than 2% of the total commercial generation potential. With these hydroelectricity sources left unutilised, total energy consumption in the country is low and only 1% of the country's energy requirements are fulfilled by electricity.

### 2.2.3.1 Labour/Working Conditions

134. Working conditions in Nepal are largely unregulated. For the minority of the population working in the formal economy, labour laws allow for a 6-day, 48-hour week with 30 days of annual leave, 15 days of sick leave, basic health and safety standards, and some benefits. The Nepal Labour Act 2017 provides some protections for workers (refer Section 3.1).
135. To work overseas, workers must first obtain permission from the government. The number of men and women that obtained permission for work outside of Nepal in 2020.

<sup>75</sup> Nepal Labour Force Survey 2017/18, ILO and CBS, Government of Nepal, 2019

<sup>76</sup> Nepal Department of Tourism. 2017.

<sup>77</sup> Travel & Tourism Economic Impact 2020. Nepal. 2020. World Travel and Tourism Council (WTTC)

<sup>78</sup> Travel & Tourism Economic Impact 2020. Nepal. 2020. World Travel and Tourism Council (WTTC)

<sup>79</sup> Ministry of Population and Environment. 2016. Intended Nationally Determined Contributions (INDC). Communicated to the United Nations Framework Convention on Climate Change (UNFCCC)

<sup>80</sup> Nepal Energy Sector Assessments, Strategy and Road Map. Asian Development Bank. 2017. More information available at: <https://www.adb.org/sites/default/files/publication/356466/nepal-energy-assessment-road-map.pdf>



Table 2-13 Number of workers that obtained permission for foreign jobs<sup>81</sup>

District	Male	Female	Total
Dhankuta	2,380	140	2,380
Sankhuwasabha	1,886	94	1,886
Bhojpur	2,608	116	2,608
Solukhumbu	749	180	749
Okhaldhunga	1,594	118	1,594
Khotang	3,578	129	3,578
<b>Total</b>	<b>12,795</b>	<b>777</b>	<b>127,95</b>

<sup>81</sup> Nepal Labor Migration 2020, Ministry of Labour, Employment and Social Security

### 2.2.4 Literacy

136. Literacy rates vary across districts in Nepal (Figure 20) but continue to be relatively low overall. This needs to be considered when developing approaches to build capacities, raise awareness, develop messaging and seeking participation of communities in the project.

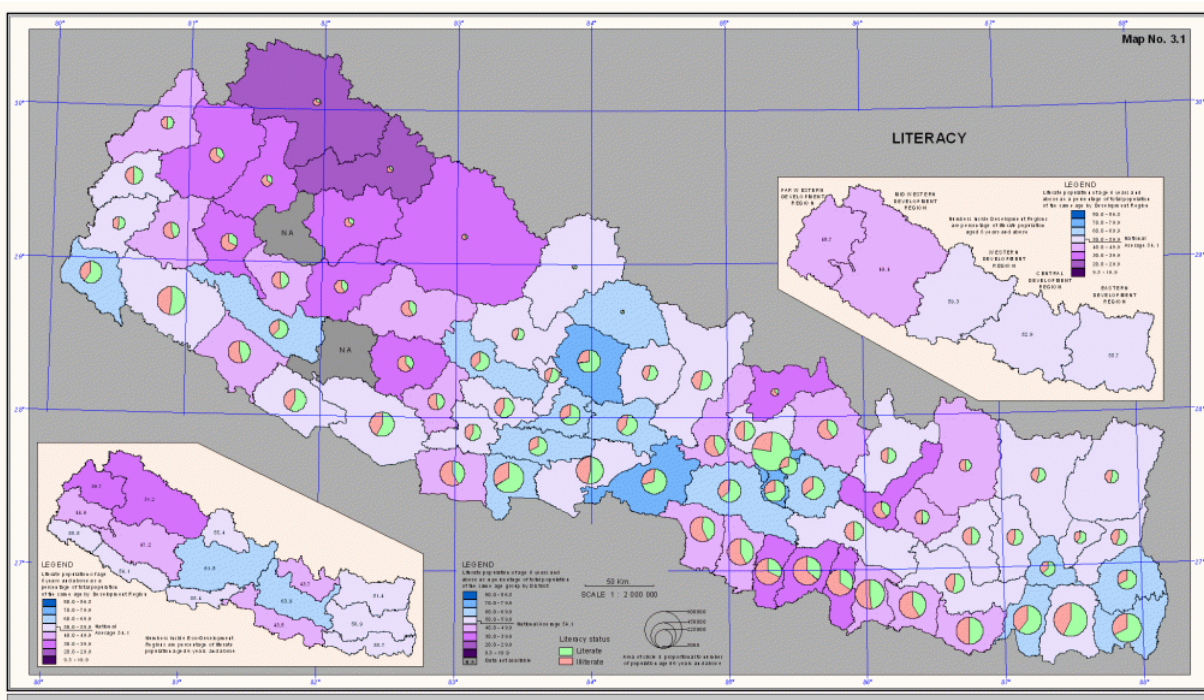


Figure 20 Literacy rates in Nepal<sup>82</sup>

### 2.2.5 Religion

137. Nepal is a secular nation, with secular defined by the Constitution (Part 1, Article 4) as 'religious, cultural freedom, along with the protection of religion, culture handed down from time immemorial'.

138. Religions practiced in Nepal include Hinduism, Buddhism, Islam, Kirat, Christianity, Prakriti, Bon, Jainism, Bahai, Sikhism and some minority religions. The main religions followed in Nepal are Hinduism (81%), Buddhism (9%), Islam (4.4%), Kiratism (3%), and Christianity (1.4%).

### 2.2.6 Land Ownership and Customary Tenure

139. Land rights and land tenure are a politically sensitive agenda in Nepal. There is an issue of access to land in rural areas.

At present, all land in Nepal is considered as the property of the state. But before 1950 there were two types of land tenure systems namely- Raikar as the land owned by the state, and Kipat as the land owned by certain ethnic communities. After 1950, the Raikar land was allocated to individuals with all rights from use to sell the land, however, the owner of such land had to pay taxes to the government. The Raikar land tenure was further divided into four categories with specific features of tenure arrangements. After 1964 most of the customary land tenure systems have been abolished. Some of the remaining tenures were abolished during systematic and compulsory cadastral surveying and preparation of basic land records or land register. The present land tenure systems are as follows (

140. Table 2-14):

<sup>82</sup> Source: <https://cbs.gov.np/literacy/> accessed 17/9/21



- Private land with absolute ownership - where land can be held by the owner or may lease or mortgage or sell.
- Public and government - where the land belongs to the government but is used by public or community, but the government land is handled by itself.
- Trust land or Guthi land - land allocated to the trust or Guthis.

Table 2-14 Current land tenure system in Nepal<sup>83</sup>

Land tenure type	Land tenure system					
	Registered (Statutory)		Religious	Customary	Non-registered	
	Raikar	Private	Does not exist	Does not exist	Non-formal	Socially accepted Legally recognised Unregistered
	State	Government			Informal	Socially accepted Legally not recognised Unregistered
		Public				
	Guthi	4 types (Guthi, Birta, Jagir, Raiya)			Encroachment	Socially not accepted Legally not recognised Unregistered

141. Major customary tenures are Raikar, Birta, Jagir, Rakam, Guthi and Kipat. Forms of land tenure in Nepal emerged from the orders declared by the crown or rulers over time. The traditional form of land tenure in Nepal was state ownership. However, land used by the individuals and the intermediaries (customary tenure) between the state and the cultivator have tended to obscure the character of this basic relationship. The crown was the supreme owner of all land or at the apex of land tenure system before 1950. The different forms of land tenure(s) system support the argument that the state has traditionally considered itself the owner of all the land within its domain.<sup>84</sup>

142. A description of the customary tenure types is given below<sup>85</sup>:

- **Raikar:** The Raikar is probably derived from the Sanskrit words Rajya (state) and Kara (tax), thereby denoting land on which the state levies taxes. It means that land on which taxes are payable to the government is listed in the official records. This distinguishes Raikar from the other forms of land tenure, Birta, Guthi, and Kipat which do not necessarily pay taxes and for the most part was not listed in official records. The land system in Nepal was previously determined primarily by relative abundance of land to the demand of it. Accordingly, law visualized land as a free commodity to be distributed among the local inhabitants based on their need and the availability of land. The Nepal Muluki Ain (legal code) stated as: "Those who possess inadequate land shall be given a proportionate share of the waste land available in that district, in such a way that each share includes land of both inferior and superior quality. But if land brought under cultivation by the strength of one's body exceeds this proportionate share, no deduction shall be made there from"<sup>86</sup>. Rights on Raikar land are limited to occupancy rights vis-à-vis the state. Relations between the state and the cultivator are thus essentially similar to those between a landlord and his tenants. Land belonged to the state but let out to "tenants" and regularity in the payment of the land tax or arrears (payment of annual land revenue) is the prime condition for holding land.

<sup>83</sup> Dahal, G. R., Adhikari, K., & Thwaites, R. (2018). Forest tenure and community forestry in Nepal: Trends and implications. In R. Thwaites, R. Fisher, & M. Poudel (Eds.), *Community forestry in Nepal: Adapting to a changing world*.

<sup>84</sup> Administration of Land Tenure Babu Ram Acharya Land Tenure and Land Registration in Nepal Integrating Generations FIG Working Week 2008 Stockholm, Sweden 14-19 June 2008 4/13

<sup>85</sup> Land Tenure and Land Registration in Nepal Babu Ram ACHARYA, Nepal

<sup>86</sup> Mahesh Chandra Regmi, Guthi land of Suvam Devi Bramani – Bhaktapur Guthi Records 1953 – Land Tenure and Taxation in Nepal



The landholder is listed as “Mohi” (tenants) in the assessment records. Transactions of Raikar land involve a transfer of occupancy rights only and not of the land itself. The term used for Raikar transactions is “Rajinama” literally “resignation” meaning to give up the right on land.

- **Birta:** The term “Birta” probably derived from the Sanskrit word “Britti” meaning livelihood. In other words, Birta means granted land to individuals to enable them to make a living. The following Sanskrit lines appear generally in Birta grants as: Anybody who confiscates the land granted by him or by others shall in his next life be a worm living in human excrement for 60,000 years. Birta land had no absolute ownership rights. Birta land may be utilized according to the terms and conditions prescribed in the grant. Transactions of Birta land were called “Farse” meaning that the precondition has been broke. The policy for abolition of Birta system and conversion of all Birta holdings into raikar has been declared since 1951 but it was functional only in 1959, after the formation of the elected Nepali Congress government. The policy was given legislative effect in the form of Birta Abolition Act 1959 and Section 3 of the Act provisioned as: (i) With effect from the date of the commencement of this Act, the Birta system existing in the kingdom of Nepal has been terminated and all Birta holdings existing up to the day prior to the commencement of this Act have been abolished. (ii) All Birta lands existing in the kingdom of Nepal, which have been abolished under sub-section.
- **Jagir:** The term “Jagir” is of Persian origin and denotes the emergence of Jagir tenure to assign Raikar land to government employees and functionaries. This practice was followed by the government until 1951. It was the policy of the government to pay the salaries of civil and military employees in the form of Jagir assignments as far as possible. The assignments were made until the death or termination of employment of the employee concerned. The Jagir system was finally abolished in 1951 after the downfall of Rana regime. All Jagir holdings then reverted to the state.
- **Rakam:** This system originated from the assignment of land as the remuneration for the performance of specific functions, mostly of a manual character. Jagir system usually constituted a permanent and inheritable assignment of land of continued nature whereas Rakam was temporarily assignment and lasted until the death or termination of service. Rakam lands have been assigned to carpenters, bricklayers, mail carriers, musicians (Kusule), caretakers of religious places and similar categories of manual work. This system of Rakam land was abolished in 1955 and converted into Raikar lands.
- **Kipat:** Kipat system is essentially a form of communal tenure and certain ethnic groups are permitted to own land. The most prominent groups are from Limbus of Dhankuta and Ilam. The subgroups are Yakha, the Athapriya, the Bhote, the Majhiya and the Tamangs. This Kipat system is also found in East No. 1 and 2 districts, Palpa, Accham and Dailekh. Kipat land cannot be alienated to individuals outside the community. If Kipat holders settle people of other tribes, the land becomes Raikar. Kipat system was abolished in 1964 when land reform campaign was launched.
- **Guthi:** The term Guthi is probably derived from Sanskrit word “Gosti” or council. Land assigned for charitable, religious or philanthropic institutions came under Guthi tenure. There are different forms of Guthi lands. Majority of cases come under state administration called “Rajguthi”. Sometimes Guthi lands are privately operated but grants are registered in the official records called Darta Guthi, and those not registered and generally used for religious purposes are Duniya Guthi. Guthi land may also be owned by monasteries. There are different categories of Guthi land that still exist. They are: Guthi Tainathi, Guthi Adhinastha, Raj Guthi, Nigi Guthi.

### 2.2.7 Indigenous Peoples and Ethnic Minorities

143. Nepal is an ethnically complex and diverse country, with the national census<sup>87</sup> in 2011 recognising 126 Indigenous castes<sup>88</sup> and ethnic groups. Indigenous peoples are recognised in the Nepalese Constitution and are addressed as “Adibasi Janajati”.
144. Altogether 126 ethnic groups are reported in the 2011 Census, only 59 ethnic groups are officially listed as indigenous peoples or indigenous nationalities (Janajatis) by the NFDIN Act, 2002. As per the definition of Janajati in the National Foundation for Development of Indigenous Nationalities (NFDIN) Act, 2002 indigenous nationalities means a tribe or

<sup>87</sup> CBS (2011). National population and housing census. Kathmandu: Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics.

<sup>88</sup> The Nepalese caste system broadly borrows the classical Hindu Chaturvarnashram model, consisting of four broad social classes or vama: Brahmin, Kshatriya, Vaishya, Sudra.

community as mentioned in the schedule having its own mother language and traditional rites and customs, distinct cultural identity, distinct social structure and written or unwritten history.

145. The Adibasi janajatis are spread across the country occurring in almost every part. Chhetri is the largest caste/ethnic groups having 16.6% (4,398,053) of the total population followed by Brahman-Hill (12.2%; 3,226,903), Magar (7.1%; 1,887,733), Tharu (6.6%; 1,737,470), Tamang (5.8%; 1,539,830), Newar (5%; 1,321,933), Kami (4.8%; 1,258,554), Musalman (4.4%; 1,164,255), Yadav (4%; 1,054,458) and Rai (2.3%; 620,004)<sup>89</sup>.
146. Within the proposed project area, there are Rai, Limbu, Sherpa, Tamang, Lhomi, Topkegola and Gurung indigenous communities, who speak Tibeto-Burman languages<sup>90</sup>. These Indigenous Peoples rely on agriculture for their livelihoods, with most of the communities practising subsistence farming, which is vulnerable to climate change impacts, particularly flooding.
147. Indigenous Peoples livelihoods depend upon either natural resources or wage labor. The vulnerability of these communities to climate change impacts is compounded by their reliance on climate-sensitive resources, such as local water supplies, agricultural land, fuel wood and medicinal herbs, as well as climate-sensitive activities such as farming and livestock rearing. With ongoing changes in climatic conditions occurring in Nepal, these communities are facing challenges in continuing their traditional livelihoods and practices. These changes, combined with prolonged dry spells, have severe impacts on crop production and livelihoods as communities may be forced to leave agricultural land barren because of the uncertainties in rainfall or diseases becoming more prevalent under climate change conditions.
148. In addition to the negative impacts on livelihoods, climate change has influenced the spatial distributions of indigenous plant species, many of which Indigenous communities rely on for producing traditional clothing items, as well as for medicinal purposes.
149. A relationship with nature is central to Nepalese Indigenous Peoples' culture, which extends beyond sustenance of lives and livelihoods and into emotional and cultural dimensions of value. Changes in the environment caused by climate change and human development fragments this relationship, putting knowledge systems and skills that are embedded in nature at risk. Water is particularly important to Indigenous Peoples in the proposed project area. Beyond consumptive value, the communities' relationship with water is culturally crucial as they believe that calamities related to water, such as floods or Glacial Lake Outburst Floods (GLOFs), are related to Gods or ancestors. These communities traditionally preserve water resources, holding them as sacred elements. Consequently, any infrastructure or dilution of the structure of natural resources, including lake lowering, may negatively impact Indigenous Peoples' cultural practices and wellbeing.
150. For Indigenous Peoples, customary institutions and customary law are very important as they are spiritually and intimately connected with the collective way of life of Indigenous Peoples, management of land and natural resources, livelihoods based on indigenous knowledge, customary skills, technology and practices.
151. However, Indigenous Peoples have not always been adequately represented in decision making processes and their knowledge of natural resources not incorporated into natural resource management regimes. Indigenous peoples who hold close ties with natural systems should be part of decision making and their collective rights recognised, as reflected in UNDRIP and ILO169. Further, development on customary land of Indigenous Peoples where FPIC has not been obtained, has also historically caused land conflicts, impacted livelihoods, and further undermined the socio-economic power of indigenous communities.
152. Governance structures within Indigenous Peoples' communities include village chiefs and head priests in each village. As authority figures in the community, chiefs are often consulted on matters concerning the village. Community priests also play an important role in climate change response, as Indigenous beliefs about the causes of climate change are related to Gods or ancestors. Indigenous Peoples often rely on traditional Lama gurus or shamans for forecasting natural disasters in the community.
153. Combining these systems of Indigenous Peoples into project interventions will help effectiveness and sustainability of the project as it will relate to a fundamental element of community life in the context and will foster community ownership. Similarly, Indigenous Peoples in the proposed project area have traditional systems of communities, called *Katuwal* system, used for relaying messages and information. These systems can co-create and play active roles in disseminating information about the need for early warning systems (EWS).

<sup>89</sup> <https://mofa.gov.np/about-nepal/nepal-profile/> accessed 19/9/21

<sup>90</sup> Tibeto-Burman languages comprise a group of approximately 250-300 languages spoken throughout countries in Southeast Asia, mostly in remote mountain areas.



154. The design of the proposed project encourages ownership and benefits by acknowledging and appropriately incorporating traditional practices, knowledge, and skills of Indigenous Peoples in the project area. These communities have practiced and adapted different measures over centuries in response to changing climate conditions. Focus has, therefore, been placed on considering the Indigenous and local techniques that are effective in building resilience among vulnerable communities in Nepal.
155. The project will seek meaningful representation and participation of Indigenous Peoples in climate policy and decision-making processes is crucial.

### 2.2.8 Infrastructure

#### 2.2.8.1 Roads

156. The total length of the project districts is 849 km. Sankhuwasabha district has the largest (235 km) road network and Solukhumbu district has the smallest (37.2 km) (Table 2-15).

Table 2-15 Road length by district<sup>91</sup>

District	Road Length (Km)	Road Density per (100 Sq Km)
Sankhuwasabha	235	7
Solukhumbu	37.2	1
Bhojpur	107	7
Dhankuta	134.68	15
Khotang	200.46	13
Okhaldhunga	134.9	13
<b>Total</b>	<b>849.24</b>	

<sup>91</sup> [www.nepal.gov.np](http://www.nepal.gov.np)

### 2.2.8.2 Airports

Nepal has one international airport located in Kathmandu. The remainder of the country is serviced by a network of domestic airports (Figure 21).

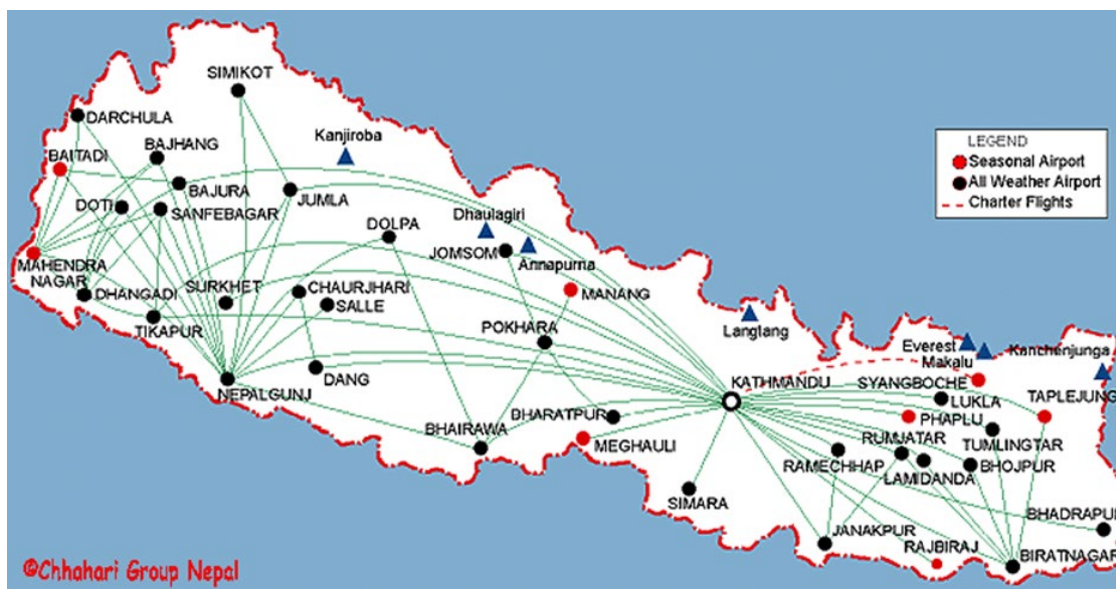


Figure 21 Domestic airports in Nepal

157. There are nine domestic airports in the project districts (Table 2-16).

Table 2-16 Domestic airports that service the project area

District	Number of domestic airport	Location of Airport
Sankhuwasabha	1	Tumlingtar
Solukhumbu	3	Phaplu, Syanboche, Lukla
Bhojpur	1	Bhojpur
Dhankuta	-	-
Khotang	3	Lamidanda, Khanidanda, Thamkharka.
Okhaldhunga	1	Khiji Chandeshwori
<b>Total</b>	<b>9</b>	

### 2.2.9 Archaeological and Cultural Heritage

158. According to the Ancient Monument Preservation Act of 1956, an 'Ancient Monument' means a temple, monument, house, abbey, cupola, monastery, stupa, or *bihar*, etc., which have importance above one hundred years from the point of views of history, the arts, science, architectonic, or art of masonry. 'Ancient Monument' also means the site of a monument as well as of human settlement or place, remnant(s) of ancient settlements such as a sacred or revered cave, an ageless shrine, or other such sites, having value from national or international points of view, irrespective of the fact

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that such settlements or places adjoin with each other or are separate in the same area, including associated 'archaeological objects'.<sup>92</sup>

There are 42 monuments and cultural heritage sites in the six project districts as summarized in Table 2-17, while the names of the cultural heritage sites are provided in

159. Table 2-18.

Table 2-17 Number of Temples and Gompas in Project districts

District	Number of temples/gompa
Sankhuwasabha	11
Solukhumbu	11
Bhojpur	6
Dhankuta	7
Khotang	2
Okhaldhunga	5
<b>Total</b>	<b>42</b>

Table 2-18 Names of cultural heritage sites by District

Name	District
Manakamana Devi Temple*	Sankhuwasabha
Dudhnaath Mahadev Temple	Sankhuwasabha
Ram Temple	Sankhuwasabha
Basnyaat Pauwa (Mejar Paati)	Sankhuwasabha
Baneshwar Mahadev	Sankhuwasabha
Yaang Guthi Gonpa	Sankhuwasabha
Chhorten Saamba (New Mound)	Sankhuwasabha
Lingang Chholing Gonpa	Sankhuwasabha
Kaangyur Gonpa	Sankhuwasabha
Hedaangana Gadhi (Historical Monument)	Sankhuwasabha
Lungden Gadhi (Historical Monument)	Sankhuwasabha
Bhimsen Temple	Bhojpur
Ajima Maata Temple	Bhojpur
Siddhibinayak Temple	Bhojpur
Panchbuddha Chaitya	Bhojpur
Sidhhakali Temple	Bhojpur
Hatuwa Gadhi	Bhojpur

<sup>92</sup> 'Archaeological object' means the object made and used by human being in pre-historical period or hand written genealogy, handwritten manuscript, golden inscription, copper inscription, petrography, wood inscription, *bhojpatra* (document written in the bark of birch tree), *tadapatra* (documents written in the leaf or bark of the Palmyra tree), paper, coin, house where historical event has occurred or where historically special personality has resided and things such as stone, wood, soil, ivory, bone, glass, cloth, paper, or metal used by such person or some important portion of the house in which attractively scribed things are used.



Halesi Mahadebsthaan	Khotang
Majhuwa Gadhi	Khotang
Chandi Devi Temple	Okhaldhunga
Tolu Gumba Monastery	Okhaldhunga
Chandisthan Gupha (Cave)	Okhaldhunga
Kirateshwor Mahadev Jahakari Baba temple	Okhaldhunga
Kotgadhi	Okhaldhunga
Bhimsen Temple	Dhankuta
Singheshwar Mahadev	Dhankuta
Gokundeshwar Mahadev	Dhankuta
52 Door Palace	Dhankuta
Karmacharya Paati	Dhankuta
Narbadeshwor Mahadev	Dhankuta
Shree Panchami Temple	Dhankuta
Thyangboche Monastery	Solukhumbu
Chiyong Monastery	Solukhumbu
Pangboche Monastery	Solukhumbu
Junibesi Monastery	Solukhumbu
Gumela Monastery	Solukhumbu
Kyorab Monastery	Solukhumbu
Thame Monastery	Solukhumbu
Singefu Monastery	Solukhumbu
Thaksindu Monastery	Solukhumbu
Thaktoo Monastery	Solukhumbu
Goli Monastery	Solukhumbu

\* Manakama temple on the Arun River particularly vulnerable to flooding

160. Figure 22, Figure 23, and Figure 24 show the locations of major cultural heritage sites within the three project watersheds.



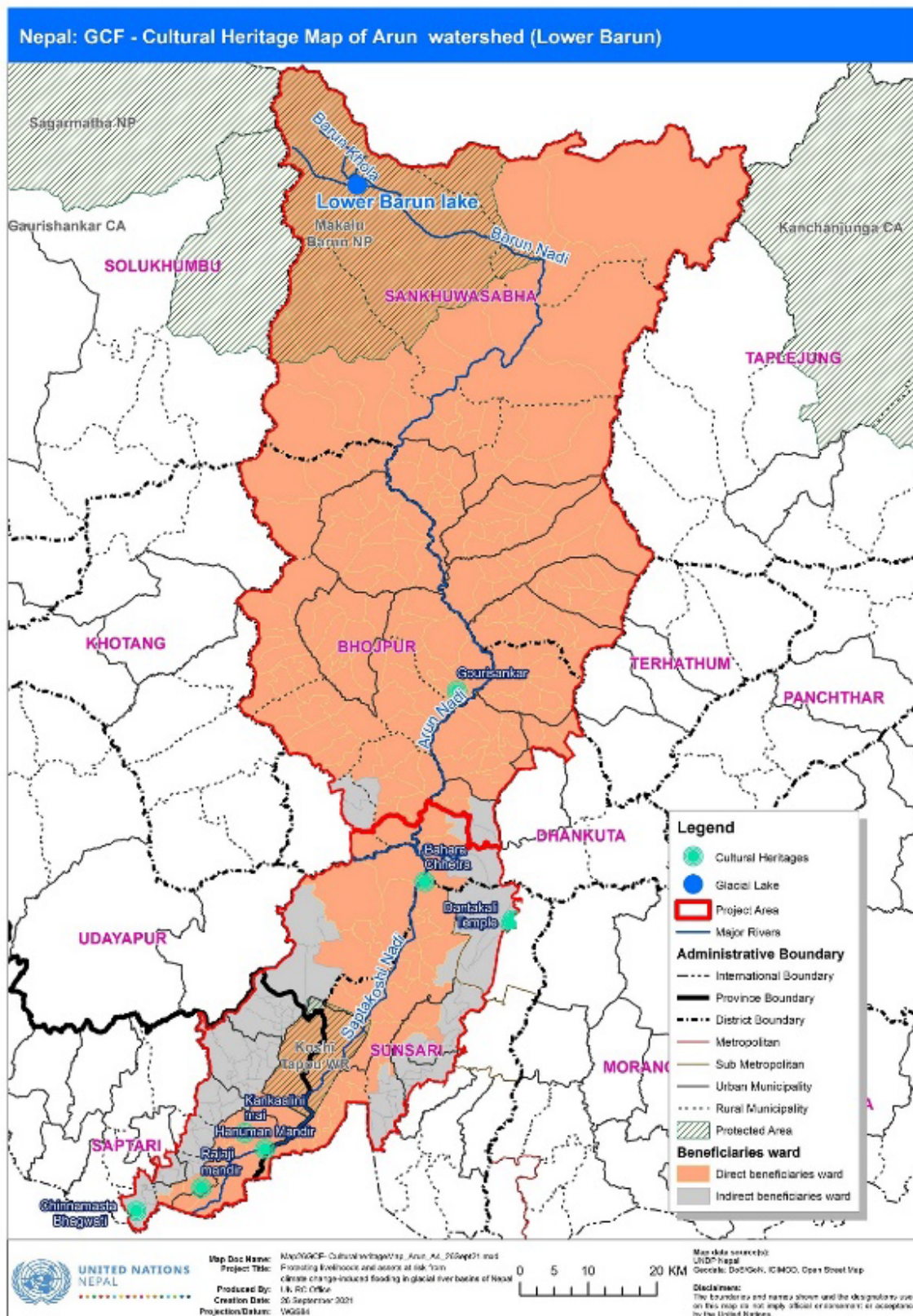


Figure 22 Major cultural heritage sites in Arun watershed



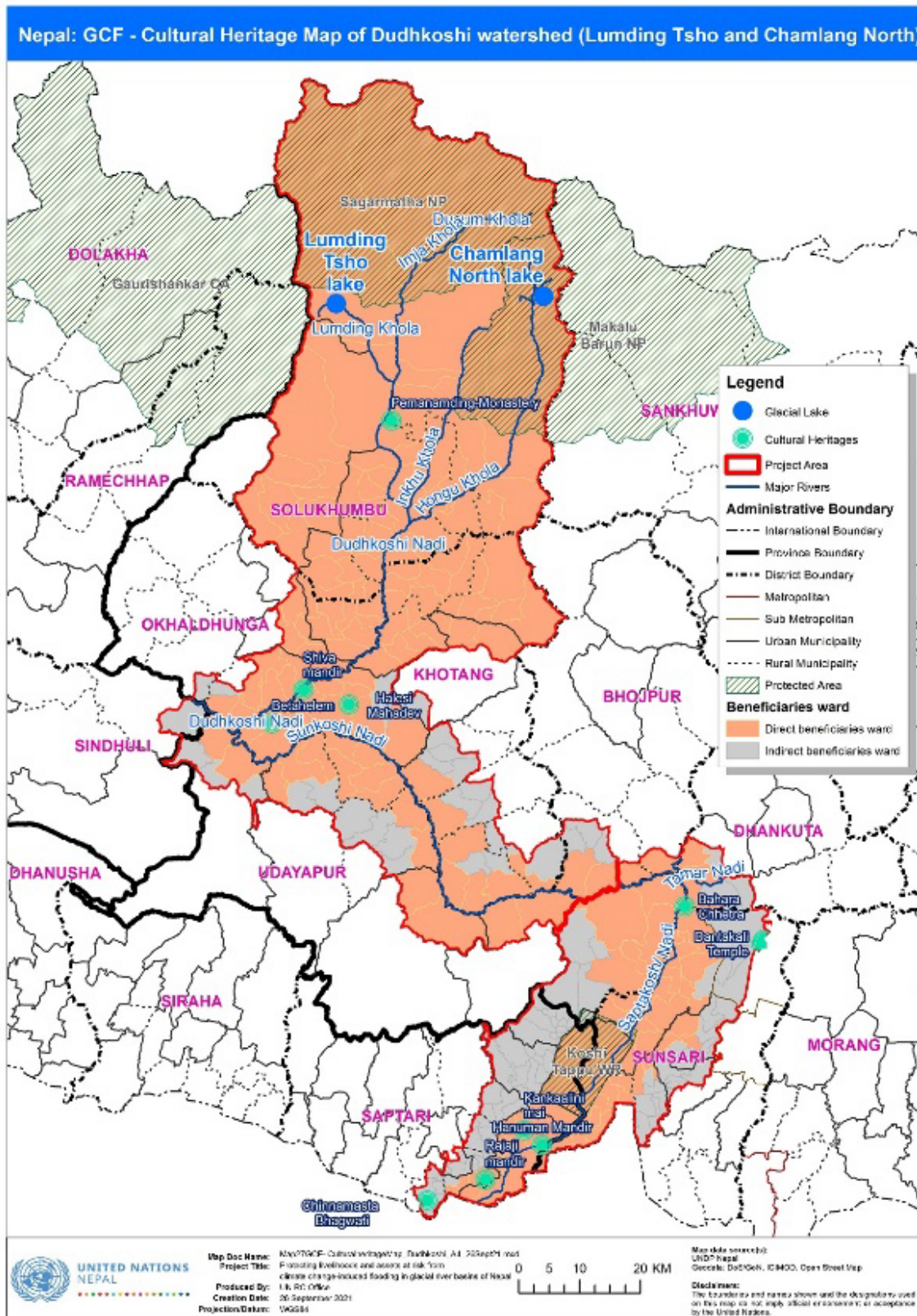


Figure 23 Major cultural heritage sites in Dudhkoshi watershed





### 3 LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MATTERS

#### 3.1 LEGISLATION, POLICIES AND REGULATIONS

161. The following legislation is relevant to the project:

- Constitution of Nepal (2015).** Guarantees people's welfare and all-round progress through economic, social and cultural transformation, while defending and strengthening political achievements and their development. Maintains the rule of law by protecting and practicing human rights and implements international treaties and agreements. Ensures the right to equity, where there shall be no discrimination in the application of general laws (Article 18). Guarantees good governance by ensuring equal access to services provided by the State and making public administration clean, competent, impartial, transparent, accountable and participatory. Expands and develops the means, administration and responsibilities of federal units for the management of resources. Requires maintenance of national forest area goals and incorporation of state policies to control forest encroachment
- Environment Protection Act, 2076(2019 AD)** - The Act includes additional layers for preparing and approving 'environmental study' report for the prescribed proposal in addition to IEE and EIA. Based on proposed definition, 'environmental study' includes: (i) brief environment study; (ii) IEE; and (iii) EIA reports. A section has been added for 'detailed alternative analysis' of any proposal that requires an environmental study report. Similarly, section 11 has been added for carrying out Supplementary Environmental Impact Assessment (SEIA) of the project whose EIA report has already been approved.
- Muluki Aparadh Samhita, 2017 (Criminal Code)** - The Criminal Code was adopted in 2017 alongside five other Acts, designed to replace the Civil Code, 2021. This act was issued, pursuant to Article 93 of the Constitution of Nepal, with great object to, inter alia, maintain peace and order in Nepal and to maintain harmonious relations between the people of various classes, castes, tribes and regions.
- Muluki Debani Samhita, 2017 (Civil Code)** - This act came into action from 1st Bhadra, 2075. Clause 617 states that the tenure of lease contract lasts for forty years for the construction, development and operation of infrastructure like electricity generation. Clause 640 indicates that persons engaging in the manual works under 16 years should not be forced to engage in physically challenging works. Clause 641 states that workers should not be liable to work more than 8 hours a day and 48 hours a week without extra time payments.
- Soil and Water Conservation Act, 1982** - Section 3 of the Act empowers government to declare any area a protected watershed area. Under Section 10 of the Act, power is extended to the Watershed Conservation Officer to grant permission to construct dams, drainage ditches and canals, cut privately owned trees, excavate sand, boulders and soil, discharge solid waste, and establish industry or residential areas within any protected watershed. The Act outlines the essential parameters necessary for proper watershed management (including both rivers and lakes). The Act is applicable only to protected watersheds.
- Water Resource Act, 1992 and Water Resource Regulations, 1993** - The Act strives to minimize environmental damage to water bodies, especially lakes and rivers through environmental impact assessment studies and the proponents who wish to use water resources for various purposes should prepare EIA report before a license can be granted. The Act stipulates that soil erosion, flooding, landslides, or any significant impact on the environment should be avoided in all uses of a water resource. Under the Water Resource Regulation, it is mandatory under Rule 17(e) of the regulation that any person or corporate body, who desires to obtain a license for utilization of water resources must state in his application that appropriate measures will be taken to lessen the adverse effects due to the project on the overall environment. Measures are to be taken for the conservation of aquatic life and water- environment, and for mitigating social and economic effects of the project in the concerned area. Local labor should be utilized and the local people should get benefits after the completion of the project. The regulation also emphasizes training to the local people in relation to construction, maintenance and operation of the project. The mitigation plan should give details of people to be evacuated and a necessary plan for their rehabilitation. Rule 19 stipulates that the water resources committee shall publish a notice giving detailed information about the project to the people. If any person finds that the construction and operation of the project concerned is likely to cause adverse effects, he or she may furnish his/her reaction stating the reasons within thirty-five days from the date of





publication of the notice. If the committee is satisfied with the reason given by the people, the proponent will be asked to revise the plan.

- **Land Acquisition Act, 2034 (1977)** - Land Acquisition Act 2034 Amendment 2049 is the main legislation to guide the involuntary acquisition of land in the country. Government can acquire land at any place in any quantity by giving compensation pursuant to the Act for the land required for any public purpose or for the operation of any development project initiated by government or government authorized institution (sections 3 and 4).
- **Ancient Monument Protection Act, 1956 AD** - Section 2 defines the ancient monuments; Sections 3, and 17 empower Government to declare any place or area as a monument site / area; Section 13 restricts transfer, transaction, export or collection of ancient monuments and archaeological objects or curio without prior approval of the government.
- **Labor Act, 2017** - Describes classification of job postings; makes provision of appointment letter and prohibition on child labour and restriction on minors and women; Section 10 - job security; section 12 - retrenchment and reemployment; Section 16, 17, 18 and 19 - working hours; Sections 20, 21, 22, 23, 25 and 26 - remuneration; Sections 27 to 36 - occupational health and safety; Sections 37 to 44 - welfare arrangements; Section 46 - special arrangements for construction sites; Sections 50 to 60 - conduct and penalties; Sections 72 to 82 - settlements of labour disputes.
- **Explosive Act, 1961 AD** - The act defines explosive matters and reserves the right to the government to define the explosive as to the requirement by publication of notice. Without holding the license from the government authorized person, individuals/institutions are prohibited to manufacture, use, sell, transport or import/export explosives defined by the government. The licensee has the obligation to report in case of accidents while manufacturing, using, selling, storing, and transporting of explosives. Those that do not comply with the provisions are treated as offenders of the law and are punishable as per the law provisions.
- **Land Reform Act, 1964 AD** - The land reform act has set a ceiling on the landholding for individual or households. Land holding above the land ceiling could be confiscated as per the provisions of the act. However, with the permission of the authorized government officials, landholding ceiling could be increased for the organizations as per the requirement of the organizational works.
- **Aquatic Animal Protection Act, 1960 AD** - The Aquatic Animal Protection Act, 1961 provides the legislative protection of the aquatic habitats. The section three (3) of the Act renders punishment to any party introducing poisonous, noxious or explosive materials into the water source or destroying any dam, bridge or water system with the intent of catching or killing aquatic life. The section four (4) empowers the government to prohibit catching, killing and harming certain kinds of aquatic animals through notification in the Nepal Gazette.
- **National Foundation for Upliftment of Aadibasi/Janjati Act, 2002** - The Act prescribes a number of provisions to overall improve the lot of the Aadibasi / Janjati by formulating and implementing programs relating to the social, educational, economic and cultural development through: Creating an environment for social inclusion of disadvantaged and indigenous people ensuring participation of disadvantaged groups in the mainstream of overall national development of the country, by designing and implementing special programs for disadvantaged groups; Protecting and preserving their culture, language and knowledge and promoting the traditional knowledge, skills, technology and special knowledge of the Aadibasi / Janjati and providing assistance in its vocational use.
- **Forest Act, 2019** - The National Forest Act, 2076 defines forest area as the grass land, grazing land; snow covered and uncovered barren cliff, road, pond, lake, wetland, river, flood plain and unregistered land except the land under private ownership and land managed by prevailing laws. According to Section 3 of this Act, no one can change the land use pattern, use the forest land, and take the land in lease without the permission of Nepal Government. Section 42 of this Act empowers the government to permit the use of any part of the National Forest for the implementation of a plan or project of national priority without significantly affecting the environment if there is no alternative except to use the forest area. According to Sub Section 2 of Section 42, the project must compensate the National Forest land equivalent to the land occupied by the project. Instead, the project can pay the cash amount for the land used by the project (Sub Section 5 of Section 42). According to Sub Section 6 of Section 42 of this Act, the project proponent itself will be responsible to plant the saplings take care and protect the planted tree for five years with the co-ordination with concerned forest office.
- **National Trust for Nature Conservation Act, 1982** - The Act aims to conserve and manage the nature and natural heritage. The Act forms a trust under the guidance of Nepal government to conserve, promote and manage wildlife and other natural resources. Most importantly the trust aims to manage necessary arrangements related to



the development of national parks. Therefore, if any project takes its route from national parks the trust is to be consulted.

- National Parks and Wildlife Conservation Act, 1973** - Article 5, includes provisions to restrict damage to forest products and to block, divert any river or stream flowing through a national park or reserve, or any other source of water, or restrict the use of any harmful or explosive materials without obtaining written permission; Article 9 lists protected wildlife species that are prohibited from being hunting; Article 13 prohibits collection of samples from National parks and Reserves without obtaining a license.
- Solid Waste Management Act, 2011** - Solid Waste Management Act aims to manage solid waste and mobilize resources related thereto and ensure the health convenience of the common people by controlling the adverse impact on pollution from solid waste. The commercial or industrial establishments should adhere to the clauses mentioned in the act during the construction and operation phases of the projects.
- Control International Trade in Endangered Wild Fauna and Flora, 2017** - This act was formulated based on Sub-Article 1 of Article 296 of the Constitution of Nepal for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1973. The main objective of this act was to protect the endangered flora and faunal species and monitor and control the international trade of those species. According to this Act, the species enlisted in Appendix I of CITES is stated as RARE Flora and Fauna, Appendix II is stated as THREATENED Flora and Fauna and Appendix III is stated as PROTECTED Flora and Faunal Species.

Section 1 of this Act states that no one can transport, use, keep, plant, grow and have the captive breeding of the endangered flora and fauna cited in Appendix I and II of CITES. If anyone is interested to do research, training or plant and grow the endangered species, he/she has to take the consent letter from the concerned authority.

Section 8 of this Act states that interested person can keep, utilize, and transport the protected species after getting the license from the concerned authority.
- Right to Information Act, 2007** - The aim of this act is to make the functions of the state open and transparent in accordance with the democratic system and to make it responsible and accountable to the citizens. It intends to make the access of citizens to the information of public importance held in public bodies simple and easy and to protect sensitive information that could have an adverse impact on the interest of the nation and citizens.

Clause 3 of the act ensures the Right to Information. It says that every citizen shall, subject to this Act, have the right to information and they shall have access to the information held in the public Bodies unless confidentiality has been maintained by laws.

Clause 4 of the act describes the Responsibility of a Public Body to disseminate information. It mentions that each Public Body must respect and protect the right to information of citizens. Public Bodies shall have the following responsibilities for the purpose of protecting the right to information of citizens: - to classify and update information and make them public, publish and broadcast to make the citizens' access to information simple and easy; to conduct its functions openly and transparently; to provide appropriate training and orientation to its staffs.

Public bodies may use different national languages and mass media while publishing, broadcasting, or making information public. A Public Body shall arrange for an Information Officer for the purpose of disseminating information held in its office.

The clause 7 of the act prescribes the Procedures of acquiring information. It states that a Nepali Citizen, who is interested to obtain any information under this Act, shall apply before a concerned Information Officer by stating the reason to receive such information.
- Local Government Operation Act, 2017** - This Act states the roles of local bodies in Nepal. The jurisdiction, roles and responsibilities of personnel appointed in local bodies are clearly mentioned in this Act.
- Land Use Act, 2019** - According to Section 2, 6 (1) before the formation of land use plan, Nepal government, province government and local government must study the increase in demand of the land for the wildlife, population growth rate, necessity of food and shelter, economic development and infrastructure construction. According to Section 3, 8 (1) Article 4 states the land use cannot be changed by using the land that has been classified for another purpose. According to Section 3, 8 (7) irrespective of the fact whatever is written in sub article 1, Nepal government can change the current land use of the places where national priority development projects, industrial area, special economic area, etc. are to be established.

- **Public Road Act, 1974** - In relation to this proposal, the Public Road Act, 1974 has been attracted and this legislation provides provisions to ensure the construction and operation of the road access. The act also empowers the DoR to operate quarries and Borrow pits and other facilities during the access road construction (Section 17). In a nutshell, the Act facilitates construction of access roads and acquires land and property for the extraction of construction materials and development of other facilities through compensation as negotiated and as well as to maintain greenery along the roadside.
- **Sangkaman Rog Niyantran Ain, 2020** - Section 2 of the Act states that officials can declare the state of pandemics with the required and Standard Operating Procedures, rules, and penalty which can be levied for dishonoring such order. Section 2 A; province can make their own Standard operating Procedure for handling the pandemics or can appoint an official to handle the pandemics and can make necessary provision regarding bringing the pandemic to control.

#### 3.1.1 Plans and Policies

- **The Fifteenth Plan (2076/77-2080-81) (2019/20-2023/24 AD)** - The plan focuses in developing modern, safe, and sustainable cities and integrated settlements to manage the increasing migration and urbanization. Further, the plans emphasize in construction of dense cities with modern infrastructure, urban corridors, specialized mountain cities and systematic settlements with pollution free urban environment. The plan aims to construct necessary infrastructure for the management and treatment of drinking water and waste at the provincial and local level by constructing large scale projects in the drinking water sector. Enhancing integrated settlement development, construction of civic housing schemes as well as inter-rural and urban areas and building a new city to expand local economic activities and create employment opportunities is another key aspect of the plan related to the land use plan. The plan emphasizes environmental conservation. The state will make such arrangements as may be required to keep the environment clean. The state will give priority to the prevention of adverse impacts in the environment from physical development activities, by increasing the awareness of the public about environmental cleanliness, as well as to the protection of the environment. The plan also emphasizes the need of sustainable utilization of natural resources of Nepal.
- **Nepal National Biodiversity Strategy and Action Plan (2014-2020)** - The NBSAP provides a guiding framework for the management of Nepal's biodiversity. It has been prepared to meet the national needs for managing biodiversity on a sustainable basis for the benefit of present and future generations, and to fulfill the country's international obligations. It has a long-term (i.e. 35 years) vision and includes specific short-term (up to 2020) strategies and priorities for action.  
  
The specific strategies and associated actions are grouped into six biodiversity themes and 15 cross-cutting subjects. The strategies for managing protected area and forest biodiversity aims at reducing or managing human pressure on natural resources, reducing human-wildlife conflict, controlling invasive alien species, mitigating climate threats to ecosystems, species, and their habitats, and addressing economic and social concerns of local and indigenous communities through targeted programmes, enabling policy and legislative environment. Reducing rate of loss and degradation of forest habitats, improving biological connectivity, enhancing knowledge and understanding about forests, promoting conservation of species and genetic diversities, enhancement of forest-based livelihoods are some of its focus areas.
- **Land Acquisition, Rehabilitation and Resettlement Policy, 2072 BS (2015 AD)** - Recognize the need for resettlement and rehabilitation plan to ensure the livelihoods of project-affected persons or households be at least above the pre-project conditions; Emphasize that the project development agency conducts meaningful consultation with project- affected persons, communities and sensitive groups, particularly poor, landless, senior citizens, women, children, indigenous / Janajati groups, disabled, helpless and persons having no legal rights on the operated land while preparing land acquisition, resettlement and rehabilitation plan; Employment opportunities to seriously project-affected households and Vulnerable groups (Dalit, Janajati or marginalized Indigenous, single women, helpless, disabled, senior citizens, etc.) based on their skills and capabilities, and Requires an adequate mechanism to listen to, register and resolve the grievances of the project-affected persons and communities.
- **Hydropower Development Policy, 2058 BS (1992 AD)** - Over all policy goal is to develop environmentally friendly hydropower to meet the country energy needs and to encourage private sector to invest in hydropower. The policy has a provision to make public the programs and measures identified by the IEE/EIA study for implementation to the local area people. The policy further states that all developers release at least ten percent of minimum monthly average discharges below the water diversion structure for all types of water resource projects.



The private parties developing hydropower projects are encouraged to acquire the private land and property required for the project at their own costs. If the lands and houses are not available, the government ensures to acquire such property to the private developers according to prevailing laws. However, private developers will have to bear all expenditures for such acquisition, and resettlement and rehabilitation of affected people. Government lands shall be made available to the private developers on a lease basis or according to the prevailing laws.

- **National Forest Policy, 2076 BS (2019 AD)** - The Forest Policy emphasizes the protection of soil, water, flora and fauna constituting the main element of forestry to sustain biodiversity. It recognizes that the sustainable forests management is only possible when it gives adequate attention to meet the basic needs of the people, sustainable utilization of forest resources, participation in decision making and sharing of benefits and above all on socio-economic growth.
- **Land Use Policy, 2015** - Land use Policy is a policy relating to limits and protection of Land and Land Resources, optimum use, and effective management thereto. Legal and institutional management for Lands and Land Resources (LLRs), and protection, use and management thereon are done under this Policy. This Policy shall bring about benefits of using Lands and Land Resources by creating a situation of distributing lands in a just manner. The National need of this policy is to ascertain of environment-friendly construction-works by making optimum use of Lands and Land Resources in keeping with a balance between the environment and development, to develop a hygienic, beautiful, well-facilitated and safe human settlement; to enhance a planned and sustainable urbanization of the country, and to achieve sustainable and inclusive economic boost up through devising and executing of all regional development plans of the country under a level-wise Land Use Plans. The vision of this Policy is to make optimum use of available Lands and Land Resources in pursuit of sustainable social, economic, and ecological developments and prosperity of the country as well.
- **National Environment Policy, 2019** - The objectives of the National Environment Policy are:
  - To prevent, avoid, control, minimize and mitigate pollution in these sectors namely noise air, water, soil, electromagnetic waves, chemicals including radioactive substances.
  - Manage solid waste originating from domestic, industrial, and service sectors.
  - To mainstream environmental issues in all development activities.
  - To conduct research and capacity development in the field of environmental protection and management.
- **National Energy Crisis Reduction and Electricity Development Decade Plan, (2016)** - This plan was formulated for the institutional improvement related to energy sector. According to this plan, for the community development of the project area, it is proposed to separate 0.75% of total project cost in case of the project with installed capacity below 100 MW and 0.5% of total project cost of the project with the installed capacity greater than 100 MW for Community Support Program in IEE and EIA report. In this plan, it is mentioned that the recommendation letter from the community forest is not required for the approval of IEE or EIA report. Supplementary IEE or Supplementary EIA is not recommended if significant impact on the environment is not expected due to the change in the project components or if there is change in the forest land requirement by 10%. It is planned to manage the 10% share of total capital of the project to the communities and personnel of the project affected district.
- **Nepal Environmental Policy and Action Plan, 1993** - Five policy principles apply, including: a) to manage efficiently and sustainably natural and physical resources; b) to balance development efforts and environmental conservation for sustainable fulfillment of the basic needs of the people; c) to safeguard natural heritage; d) to mitigate adverse environmental impacts of development projects and human actions; and e) to integrate environment and development through appropriate institutions, adequate legislation and economic incentives, and sufficient public resources.
- **National Water Plan, 2005** - The National Water Plan emphasizes the need for Strategic Environmental Assessment. Section 7 of the NWP highlights the Environment Management Plan (EMP) as a strategic document for the implementation, monitoring and auditing of environmental protection programs.
- **National Climate Change Policy, 2019** - The climate change policy includes climate adaptation and disaster risk reduction; low carbon development and climate resilience; access to financial resources and utilization; capacity building, peoples' participation, and empowerment; study, research, technology transfer, climate friendly natural resources management and institutional set up with legal provisions, and importance of monitoring and evaluation.



- **Working Policy for Construction and Operation of Physical Infrastructure within Conservation Area, 2009** - This policy describes the terms and conditions required for implementing projects inside the National Park or buffer zone area. This policy states that no land will be made available for construction of any development works except of National priority within the conservation area and buffer zone area. It further states that if the hydropower utilizes the water flowing inside the National Park or along the boundary of the National Park, at least 50% or 10% respectively of monthly discharge or the discharge quantified by the SEIA report should be released. Implementation of mitigation measures, allocation of royalty for the protection of National Park, payment for use of natural resources and monitoring are some of the conditions mentioned in this policy.
- **Rangeland Policy, 2012** - One of the objectives is to help maintain ecological balance by conserving, promoting, and sustainable utilization of rangeland biodiversity. Emphasizes sustainable utilization of biodiversity and natural resources and protection of such commodities by bringing them under the ambit of intellectual property rights legislation. Highlights studying and developing records / data of biodiversity and genetic differences of rangelands and updating them regularly. Promotes in-situ and ex-situ conservation of rangeland-based resources that are rare and on the verge of extinction. Plans carrying out research to learn the contribution of rangelands in carbon sequestration. Sets up a 13-member Steering Committee at the central level and a 15-member District Coordination Committee.
- **National Water Resources policy, 2020** - The policy integrated all use of water resources including drinking water, irrigation, energy, and water induced disaster. The policy has 7 objectives with aimed to multi-dimensional and sustainable development of water resources for the economic and social transformation. The policy will fill the vacuum in the utilization sector in absence of national policy and will ease the disputes among the three tiers of government on water sharing issues.

### 3.1.2 Rules and Regulations

- **Environmental Protection Rule 2020** - The newly formed regulation has included three types of environment examination concise environment study for project under schedule 1, Initial environment examination for the project that comes under schedule 2 and Environment impact assessment for the project that come under schedule 3. Section 4 of chapter 2 guides for the scoping works and section 6 guides for conducting the public hearing. Section 7 guides to develop the report with reference to annex 10 for concise environment study report, annex 11 for initial environment examination report and annex 12 for environment impact assessment report. Section 10 mentions strategic environment assessment. Section 16 mentions hazardous substance management. Chapter 3 mentions provision related to pollution control. Schedule 1 includes thresholds to conduct concise environment study, schedule 2 includes thresholds of project to carry out initiation environment examination and schedule 3 includes thresholds of project to carry out environment impact assessment.
- **Labor Regulation, 2018** - Section 11 (3) of the Labor Act provides for the employment contract and the matters to be covered under the employment contract. The Labor Rules require the Employer to provide notice to the Employees for layoff. The Notice should cover (a) reason for lay off and its duration, (b) details of Employee such as name, position, branch or division and job description, (c) information that mentions payment of half remuneration during lay off, (d) other matters as required by the Employer. The Labor Rules also require the Employer to lay off the Employee on rotation if the layoff is partially enforced. The Labor Rules specify the documents requirement for work permits. The application for work permit may be submitted by the Employer or by the foreign national in individual capacity.
- **Wildlife Reserve Rules, 1977** - Rule 4 stipulates provision of entry pass to enter the Parks or Reserve, Rule 6 stipulates restricted activities within the Parks and Reserves, Rule 11 stipulates prior approval for any research activities or study within the parks or reserves.
- **Conservation Area Management Regulation, 1996** - The conservation officer concerned shall constitute a conservation area management committee in each Village Development Committee within the Conservation Area for the effective implementation of the construction works related to the community development activities in the Conservation Area, protection of the natural environment of that area and management program related to the balanced utilization of natural heritage.
- **Child Labour (Prohibition and Regulation) Rules, 2006** - This Rule was framed in exercise of powers conferred by section 27 of the Child Labour (Prohibition and Regulation) Act, 2006. Before, employing a child as a Labor an application shall be filed in the Labor office to examine his /her health in relation to his/her ability and inability to do the work, mentioning the nature of the work and the age of the child. A child working in an Enterprise shall get the

monthly remuneration and allowance not less than prescribed by the Government of Nepal by publishing a notice in Nepal Gazette from time to time. A child working in an Enterprise shall get at least Thirteen days public holiday with full salary each year. A child who goes to school shall get Ten days educational leave during the annual examination in a year.

- **Forest Products Collection, Sale and Distribution Guidelines, 2017** - The clauses 3 to 10 of the guidelines have specified various procedures and formats for getting approvals for vegetation clearance, delineation of lands for vegetation clearance, evaluation of the wood volume etc. and government offices and officials are responsible for the approval. These provisions have direct relevance to the development of the project and need compliance to these provisions.
- **Standard Operation Procedure for Covid 19 (SOP)** - Guides how different stakeholders will act during the pandemics. Control and prevention measures to transmission and treatment and response of the pandemics. MOHP to be the central body to handle the Covid related information. Manage on ground situation, identify the gaps, and manage funds to cope with the pandemics.

### 3.1.3 Standards

- **National Indoor Air Quality Standards (NIAQS), 2009** - The time weighted (1~24hrs) standards are given for PM10, PM2.5, CO and carbon dioxide (CO<sub>2</sub>) for indoor environments. The units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m<sup>3</sup>), and micrograms per cubic meter of air (µg/m<sup>3</sup>). Monitoring of carbon dioxide is to ensure the adequacy of the ventilation of the monitoring sites. The provision for measurement of PM2.5 is preferred; the PM2.5 values can be converted to the corresponding PM10 values by application of a PM2.5/ PM10 ratio of 0.5.
- **Exhaust Emission Standards for Diesel Generating Sets, 2012** - Emissions standards for exhaust emissions of Diesel plants / Generating sets.
- **Nepal Noise Standards, 2012** - Noise levels for different land use categories and noise generating equipment.
- **Drinking Water Quality Standards, 2005** - Quality of drinking water supply in the project camps and construction sites.
- **Nepal Vehicle Mass Emission Standard, 2012** - Compliance to Type I to Type V tests for vehicles fueled with gasoline and diesel while importing vehicles for a project.
- **Nepal Ambient Air Quality Standards, 2012** - Limits of ambient air quality parameters around construction sites.

## 3.2 ENVIRONMENTAL IMPACT ASSESSMENT IN NEPAL

162. An umbrella act – the *Environment Protection Act, 1997* – is in place and environmental regulations have since come into force. The EPA provides the legal basis for the relevant authorities to require an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) for all projects with potentially negative impacts on the environment. The Environment Protection Act makes impact assessment mandatory for major development projects.
163. The enforcement of the Act means that it is not possible to implement such projects without the approval of the authorities concerned. While the responsibility to conduct an IEE is left to individual implementing agencies, all cases requiring an EIA must be referred to the Ministry of Population and Environment.
164. The EPA obliges the Ministry of Population and Environment (MOPE) to make the arrangements necessary to make EIA reports public, so that the public may render opinions and suggestions. The Environment Protection Rules (EPR), 1997 further elaborates on the public consultation process to ensure the participation of different stakeholders from initial scoping to final approval. The EPR also obliges the proponent to issue a public notice on the contents prior to the preparation of a scoping report. Once the draft EIA report is prepared, based on the approved Terms of Reference (TOR), the proponent should conduct a Public Hearing at the project site. Following submission of the EIA report to the Ministry of Population and Environment, it should be made public. The MOPE has to make an approval decision on the EIA report within 60 days upon receipt.
165. The project team is awaiting a decision from MOFE as to whether the project will require an IEE or an EIA. Whichever is the case, MOFE's requirements will be met through the production of the scoped ESIs planned for each watershed that will be prepared as part of the early implementation of the project. These ESIs will satisfy both UNDP's SES and Nepalese law.

### 3.3 MULTILATERAL AGREEMENTS AND BIODIVERSITY PROTOCOLS

166. Nepal is a signatory to various international and regional agreements and conventions, which are related to the environment. They include:

- Plant Protection Agreement for the South-East Asia and Pacific Region, Rome, 1956. Nepal acceded to the Agreement on 12 August 1965.
- Convention on the High Seas, Geneva, 1958. Nepal ratified the Convention on 28 December 1962.
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water, Moscow, 1963. Nepal ratified the Convention on 7 October 1964.
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Washington, 1967. Nepal ratified the Convention on 10 October 1967.
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971. Nepal acceded to the Convention on 17 December 1987.
- Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Seabed and Ocean Floor and the Subsoil Thereof, London, Moscow, Washington, 1971. Nepal ratified the Convention on 6 July 1971.
- Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972. Nepal accepted the Convention on 20 June 1978.
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972. Nepal ratified the Convention on 1 January 1973.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973. Nepal acceded to the Convention on 18 June 1975.
- Vienna Convention on the Protection of the Ozone Layer, 1985. Nepal ratified the Convention in 1994.
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987. Nepal acceded to the Protocol in 1994.
- London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990. Nepal acceded to the Convention in 1994.
- Agreement on the Network of Aquaculture Centres in Asia and the Pacific, 1988. Date of Ratification/Accession (AC): 4 April 1990 (AC).
- United Nations Framework Convention on Climate Change, 1992. Provides the international framework for managing climate change. Nepal ratified the Convention on 2 May 1994.
- Paris Agreement Under the United Nations Framework Convention on Climate Change, 2015.
- Convention on Biological Diversity, 1992. Nepal ratified the Convention on 23 November 1993.
- Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989. Nepal acceded to the Convention in August 1996.
- Convention on Combating Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa, 1994. Nepal ratified the Convention in 1996.
- Convention (No.169) Concerning Indigenous and Tribal Peoples in Independent Countries. Provides right to the indigenous and tribal people to decide their own priorities for the process of development. However, for the national development plans and programs, it mandates consultation with them in the formulation of the plans and programs. Safeguards rights of the indigenous people in the land and natural resources in territories traditionally occupied by them. In the event that the state retains the right of the natural resources in their territories, it mandates formulation of special provisions under the state legislation for participation in the decision-making process and resettlement process with full compensation of the resulting loss or injury (Article 16).
- United Nations Declaration on the Rights of Indigenous Peoples, 2007. Sets out the individual and collective rights of indigenous peoples, as well as their rights to culture, identity, language, employment, health, education, and other issues (Article 1-4). It also "emphasizes the rights of indigenous peoples to maintain and strengthen their own institutions, cultures and traditions (Article 5) and to pursue their development in keeping with their own needs and aspirations (Article 23)". It "prohibits discrimination against indigenous peoples" (Article 21), and it "promotes

their full and effective participation in all matters that concern them and their right to remain distinct and to pursue their own visions of economic and social development" (Articles 25-30).

### 3.4 UNDP SOCIAL AND ENVIRONMENTAL STANDARDS

167. UNDP's Social and Environmental Standards (SES) underpin the organisations commitment to mainstream social and environmental sustainability into its programs and projects. The SES are an integral component of UNDP's quality assurance and risk management approach to programming. Further details on the UNDP SES are available on the UNDP website.
168. The UNDP SES have been applied during the development of the project. The SES objectives are to:
  - strengthen the social and environmental outcomes of programmes and projects;
  - avoid adverse impacts to people and the environment;
  - minimize, mitigate, and manage adverse impacts where avoidance is not possible;
  - strengthen UNDP and partner capacities for managing social and environmental risks; and
  - ensure full and effective stakeholder engagement, including through a mechanism to respond to complaints from project-affected people.
169. The project has been screened against the UNDP SES using the UNDP Social and Environmental Screening Procedure (SESP) template. Screening identified both moderate and substantial risks, therefore the project is "Substantial Risk" under the UNDP SES (GCF Category B). While some risks are considered to be Substantial, they are not considered to be High prior to application of the various mitigation measures.
170. A key consideration in determining that the risk is not 'high' is that working under the conditions at the lakes is not uncommon in Nepal. The regular nature of work at high altitudes and in remote settings means that Nepal has developed specific OHS requirements and practices required by law for working in such environments, which therefore cannot be considered mitigation measures as they legally constitute 'business as usual'. This includes several factors that will, as standard, be included in the OHS systems for the project that are not considered project-specific mitigation measures, including:
  - Having medical facilities on site
  - Use of helicopters to deliver materials, remove waste, and transport people, as required. This regular nature of helicopter flights reduces the 'remoteness' of the project sites.
  - Works are only scheduled for appropriate weather windows – for example, no work to be done during winter when extreme weather conditions most likely
  - Insurance being in place.
  - Contract selection criteria will include relevant skills and experience at delivering similar projects in similar environments
  - Limited exposure through shift work, with the time at site further limited by daily movement of active teams from site to nearby camps, while replacement teams are accommodated further downhill.
171. In addition to this legal baseline for OHS, several other key points have been considered in determining the risk rating — each of which is considered standard practice that limits risk. These include:
  - The works are to be undertaken in an area that, while remote, is none the less regularly visited. Walking tracks already exist to the sites, and it is these tracks that will be improved to provide better access (still foot access).
  - The workforce per site is small, approx. 50 total. The workforce will also be drawn from local populations who live and work at high altitude, so are therefore adapted to working in the local conditions — the local labour force, and particularly Sherpas are acclimatised and even genetically suited to living and working at high altitude.
  - The work will be primarily manual labour - no blasting or heavy machinery is proposed to be used.
172. While natural disaster risks cannot be removed, they are rare. The risk of natural disaster such as earthquakes exists both at the project sites and the surrounding settlements due to the regional nature of the risks.
173. The screening indicated that the project would trigger most of the UNDP social and environmental standards (Table 3-1).



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Table 3-1 Summary of UNDP Social and Environmental Standards Triggered by the Project and their Requirements for the Project

	Triggered	Requirements Relevant to Project	Relevant Nepalese Policies, Legislation, Regulations to address UNDP SES requirements
<b>Programming Principles</b>			
Human Rights	Yes		<p><b>Constitution of Nepal (2015)</b> - Guarantees people's welfare and all-round-progress through economic, social and cultural transformation, while defending and strengthening political achievements and their development</p> <p>Maintains the rule of law by protecting and practicing human rights and implements international treaties and agreements</p>
Gender Equality and Women's Empowerment	Yes	<ul style="list-style-type: none"> <li>Promotion of gender equality and the empowerment of women.</li> </ul>	<p><b>Constitution of Nepal (2015)</b> - Ensures the right to equity, where there shall be no discrimination in the application of general laws (Article 18)</p> <p><b>Local Government Operation Act (2017)</b> - Local government can implement climate change mainstreaming into local plans, including GESI, and building institutional capacities through making operational guidelines, procedures and criteria.</p> <p><b>Forest Policy 2015, National Forest Strategy (2016)</b> - Measures to enhance participation and capacities of women, Dalits, ethnic minorities and indigenous peoples (promoting proportionate representation, improved representation in leadership positions within forest institutions, etc.), ultimately promoting gender equity, inclusive development and socio-economic development, particularly for poor households, women, Dalits, indigenous persons, and other marginalized groups.</p> <p><b>Forest Sector Gender and Social Inclusion Strategy 2018</b></p>
Accountability	Yes		<b>Constitution of Nepal (2015)</b>

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			<p><b>Right to Information Act, 2007</b></p> <p><b>Local Government Operation Act (2017)</b></p> <p><b>Environment Protection Act (2019)</b></p>
<b>Project Level Standards</b>			
Standard 1. Biodiversity Conservation and Sustainable Natural Resource Management	Yes	<p>Precautionary approach to be applied.</p> <p>Risk identification and assessment: Identify and address direct and indirect impacts on natural resources, biodiversity, ecosystems and ecosystem services.</p> <p>Use of experts.</p> <p>Siting preference.</p> <p>Modified habitats and natural habitats.</p> <p>Risk reduction measures follow a mitigation hierarchy that favours avoidance of potential adverse impacts over minimization, mitigation where adverse residual impacts remain, and, as a last resort, application of offset and compensation measures.</p> <p>Management of ecosystems services – avoid adverse impacts.</p> <p>no adverse impacts on critical habitats.</p> <p>under no circumstances will species known to be invasive be introduced into new environments.</p> <p>Avoid, and where avoidance is not possible, minimize adverse impacts on soils, their biodiversity, organic content, productivity, structure, water-retention capacity.</p>	<p><b>Environment Protection Act (2019) / Environment Protection Regulations (2020)</b> – the project may need to undertake Brief Environmental Studies, Initial Environmental Examination, or Environmental Impact Assessment depending on location/trigger under threshold. Refer Schedule 1 for Projects requiring BES, Schedule 2 for IEEs, and Schedule 3 for EIAs.</p> <p><b>Forest Policy 2015, National Forest Strategy (2016)</b> - Focuses on forest productivity and the sustainable provision of forest products and services, while improving biodiversity, watershed and eco-system services, entrusting forestry sector organizations, ensuring cli-mate resilience, and improving livelihoods</p> <p>Provides system for equitable distribution of timber and firewood from government and community managed forests, particularly to forest-de-pendent poor households, socially marginalized groups and families af-fected by natural disaster.</p> <p><b>Forest Act 2019</b></p> <p><b>Revised Land Use Policy (2015)</b> - Ensures the use of land and land resources follow guidelines set in land use plans to mitigate natural and human created disastrous hazards</p> <p><b>Water Resource Strategy (2002)</b> - Recognizes the connection between human activities, natural factors, and risks of severe flooding and environmental deterioration, economic loss, and displacement of people and that this calls for improved holistic watershed management</p>

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			<p><b>Wildlife Reserve Rules (1977)</b> - Determines the access and activities allowed within reserves. Without written permission from designated authorities, building any infrastructure, occupying any land, grazing, cutting or obstructing any trees, plants, or bushes, retrieving any meat and mining or disturbing any stones, sand, mineral, river or water body is considered illegal. Other rules related to fines, vehicle use, permits and waste are also laid out.</p> <p><b>National Parks and Wildlife Conservation Act (1973)</b> - Defines four categories of protected areas: national parks, strictly controlled nature reserves, hunting reserves and conservation areas.</p> <p><b>National Parks and Wildlife Conservation Regulations (1974)</b> - Sets forth the services that are allowed to be operated in national parks or reserves, who can be granted access to the parks, provisions on hunting and required related licenses and the fees and procedures related to the above activities.</p> <p><b>Soil and Watershed Conservation Act, 2039 (1982)</b> - Defines "Soil and Watershed Conservation" as acts to prevent or save any area from being destroyed from natural calamities such as flood, landslide and soil-erosion and keep the volume and flow of water in a normal condition or keep on maintaining cleanliness by preventing the flow of water from being muddy.</p> <p>The Act permit to carry out by a conservation officer to maintain the soil fertility and the cleanliness of water and environment in a balanced manner and carry out such other soil and watershed conservation related acts as prescribed by Government of Nepal.</p> <p>Classification of lands within conserved watershed area</p> <p><b>Nepal National Biodiversity Strategy and Action Plan (2014-2020)</b></p>
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			<p><b>Working Policy for Construction and Operation of Physical Infrastructure within Conservation Areas, 2008</b></p> <p><b>Directives on Ecosystem-based Adaptation Implementation, 2020</b></p>
Standard 2. Climate Change and Adaptation	Yes	<p>Climate change and disaster risk analysis, planning and implementation – assess for climate change and disaster risks and their impacts to project activities and outputs as well as the possibility that project activities could increase exposure to such risks.</p>	<p><b>Nepal's Nationally Determined Contributions (2016)</b> - Provides impacts of climate change across sectors including water re-source management (stressing reduced water availability and increased droughts and floods), agriculture, food security and renewable energy.</p> <p>Prioritizes climate-resilient sustainable land and forest management, ecosystem rehabilitation and restoration, strengthening community-based NRM, and improving agricultural techniques.</p> <p>References the legitimate rights of all Nepali people, including disadvantaged social groups over biological resources</p> <p><b>Disaster Risk and Management Act, 2074 (2017).</b></p>
Standard 3. Community Health, Safety and Security	Yes	<p>Protect communities from hazards caused and/or exacerbated by project activities (including flooding, landslides, contamination or other natural or human-made hazards), disease, and the accidental collapse or failure of project structural elements.</p> <p>Assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of projects and establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts.</p> <p>Avoid or minimize the potential for community exposure to health risks and diseases that could result from or be exacerbated by project activities.</p> <p>Infrastructure design and safety to be in accordance with national legal requirements, good international practices, and any international obligations and standards.</p>	<p><b>Soil and Watershed Conservation Act, 2039 (1982)</b></p> <p><b>Water Resource Strategy (2002)</b></p> <p><b>Human Trafficking and Transportation (Control) Act, 2064 (2007)</b></p> <p><b>Security of the Health Workers and Health Organizations Act, 2066 (2009).</b></p> <p><b>Infectious Disease Act, 2020 (1964).</b></p> <p><b>Essential Services Operation Act, 2014 (1957).</b></p>



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		<p>Apply concept of universal access in the design and construction of facilities and services.</p> <p>Avoid, or where avoidance is not possible, minimize potential community exposure to hazardous materials and substances that may be utilized in or released by project activities.</p> <p>Be prepared for emergencies e.g. plans, training, equipment. and resources.</p> <p>Avoid, mitigate, and manage the risks and potential adverse impacts on health and safety of communities arising from the influx of project-related workers.</p> <p>Avoid, or where avoidance is not possible, minimize such adverse impacts and implement appropriate mitigation measures that aim to maintain the value and functionality of ecosystem services of relevance to local communities.</p> <p>Risks associated with influx of workers.</p> <p>Impacts on ecosystem services which may result in adverse health and safety risks to communities.</p>	
Standard 4. Cultural Heritage	Yes	<p>Protect Cultural Heritage from damage, inappropriate alteration, disruption, removal or misuse</p> <p>Preserve and safeguard Cultural Heritage</p> <p>Promote the equitable sharing of benefits from the use of Cultural Heritage</p> <p>Promote meaningful consultation with stakeholders regarding preservation, protection, utilization and management of Cultural Heritage</p>	<p><b>Ancient Monument Protection Act, 1956</b> - Restricts transfer, transaction, export or collection of ancient monuments and archaeological objects or curio without prior approval of the government. According to Act, an 'Ancient Monument' means a temple, monument, house, abbey, cupola, monastery, stupa, or <i>bihar</i>, etc., which have importance above one hundred years from the point of views of history, the arts, science, architectonic, or art of masonry. 'Ancient Monument' also means the site of a monument as well as of human settlement or place, remnant(s) of ancient settlements such as a sacred or revered cave, an ageless shrine, or other such sites, having value from national or international points of view, irrespective of the fact that such settlements or places adjoin with each other or are separate in the same area, including associated archaeological objects.</p>

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			Act can require standalone management plans to be prepared.
Standard 5. Displacement and Resettlement	No		
Standard 6. Indigenous Peoples	Yes	<p>Rights and welfare of indigenous people is not to be compromised.</p> <p>An IPPF/IPP will be required.</p>	<p><b>The Constitution of Nepal</b></p> <p><b>National Foundation for Development of Indigenous Nationalities Act (2002)</b> - Established the National Foundation for Development of Indigenous Nationalities (NFDIN), an independent organization that works as the link between the Government and indigenous peoples with the mandate to implement programs that support the development of all indigenous peoples and to recommend to the government strategies to improve the social, economic, and cultural development of indigenous peoples.</p> <p>Defines indigenous peoples (Adivasi/Janajati) and promotes the overall development of indigenous peoples, preservation, and promotion of traditional knowledge, skill and technology, inclusion of indigenous peoples in decision processes and building of an equitable society.</p> <p><b>Tribal People's Commission Act, 2074 (2017)</b></p> <p><b>Language Commission Act, 2074 (2017)</b></p>
Standard 7. Labour and Working Conditions	Yes	<p>For construction activities, ensure appropriate control of site access, use of appropriate personal protective equipment, safely designed work platforms, appropriate engineering and administrative controls, and safety barriers. Construction personnel will have appropriate qualifications and training.</p> <p>Emergency preparedness: ensure that all parties involved in the project are prepared to respond to accidental and emergency situations.</p>	<p><b>Trade Union Act, 2049 (1992)</b></p> <p><b>Arbitration Act, 2055 (1999) (No. 17 of 1999)</b></p> <p><b>Labour Act 2017</b></p> <p><b>Human Trafficking and Transportation (Control) Act, 2064 (2007)</b></p> <p><b>Bonded Labour (Prohibition) Act, 2002</b></p> <p><b>Child Labour (Prohibition and Regulation) Act, 2000</b></p>

## Annex VI (b) – Environmental and Social Management Framework

Green Climate Fund Funding Proposal

		<p>Terms and conditions of employment – written labour management procedures. Workers to be advised of the conditions of their employment.</p> <p>Non-discrimination and equal opportunity.</p> <p>Workers organizations – freedom of association and recognition of the right to collective bargaining</p> <p>No forced or child labour.</p> <p>Occupational health and safety - protect and promote the safety and health of workers.</p> <p>Workplace grievance mechanism (distinct from project-level grievance</p>	<p><b>Children's Act, 2048 (1992)</b></p> <p><b>Security of the Health Workers and Health Organizations Act, 2066 (2009).</b></p>
Standard 8. Pollution and Resource Prevention Efficiency	Yes	<p>Pollution prevention: avoid release of pollutants, where not avoidable, minimise and/or control intensity and mass flow of their release.</p> <p>Wastes: seek to avoid generation of waste, where not possible adopt waste management hierarchy (reduce, reuse, recycle).</p> <p>Hazardous materials: avoid or minimise and control release and exposure to hazardous materials.</p> <p>Resource efficiency: design and implement project in manner that promotes efficient use and consumption of resources.</p>	<p><b>Environment Protection Act (2019), Environment Protection Regulation (2020)</b></p> <p><b>Pesticides Act, 2048 (1991).</b></p> <p><b>Solid Waste Management Act of 2011</b></p>

### 3.5 GCF ENVIRONMENTAL AND SOCIAL POLICY

174. GCF has an overarching framework for achieving improvements in environmental and social outcomes while addressing any unintended adverse impacts of all the GCF-financed activities. GCF incorporates environmental and social considerations into its decision-making and operations and identifies opportunities to “do good” and improve environmental and social outcomes.
175. GCFs Environmental and Social policy sets out the requirements for accredited entities working with GCF to establish and maintain robust, systematic, accountable, inclusive, gender- responsive, participatory and transparent systems to manage risks and impacts, from GCF-financed activities, pursuant to this policy and the ESS standards adopted by GCF. These requirements complement the accreditation framework and are considered in the accreditation and reaccreditation processes. UNDP is an accredited entity with GCF, therefore its social and environmental standards meet the requirements of GCF.
176. At the project level level, the policy establishes the requirements for environmental and social risk assessment and management, including SEAH risks, to be aligned to GCF ESS standards ensuring that due diligence is undertaken for all GCF-financed activities, including subprojects financed from GCF-funded programmes or through financial intermediaries, regardless of the financial instruments used or whether these are solely supported by GCF or co- financed by other institutions.
177. In implementing this project UNDP and the Government of Nepal would ensure that there was compliance with GCF policies and procedures, including in the event of unanticipated risks being identified.



## 4 POTENTIAL ADVERSE ENVIRONMENTAL AND SOCIAL IMPACTS

178. Potential negative impacts and proposed mitigation measures have been identified for each of the three outputs and sub-activities and will serve as a basis to prepare the ESMPs.

Table 4-1 Potential adverse impacts and mitigation measures associated with Output 1

<b>Output 1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.</b>	
<b>Potential Adverse Impacts</b>	<b>Mitigation Measures</b>
<i>Activity 1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.</i>	
OHS risks associated with field data collection	<p>Contracts include OHS requirements</p> <p>The project will support the procurement of safety equipment</p> <p>Trainers/extension staff supporting the implementation of activities will be trained on OHS good practices, protocols, and equipment</p>
Discrimination of women	<p>At least 50% of project beneficiaries will be women, including proportional representation from indigenous groups and marginalized communities (including Dalits)</p> <p>Gender Action Plan includes measures to promote women's empowerment and gender equality within the framework of the project. Diverse groups of women need to be included, such as indigenous women, dalit women, non-dalit and non-IP women etc.</p>
Discrimination or limited engagement of Indigenous Peoples, Dalits, and other marginalized groups.	<p>Indigenous peoples and social inclusion planning Framework include measures for the engagement and participation of indigenous peoples.</p> <p>Invitation of indigenous federations, Dalit organizations and ethnic minority organizations to participate within the project management platform, as well as in the role of project partners supporting awareness raising, training processes and implementation activities. This would include the use of customary institutions of Indigenous Peoples.</p> <p>Promotion of proportional representation within project beneficiaries of indigenous peoples, Dalits, women from diverse groups, and marginalized communities.</p> <p>Knowledge and communication focused activities will include information from national experiences, international best practices as well as local and indigenous knowledge. The integration of knowledge from diverse actors into extension and knowledge sharing platforms will promote social inclusion and allow diverse groups to build on local experiences and knowledge.</p>
Trained staff may not be retained by Department, resulting in a loss of corporate knowledge.	<p>Train the trainer program will allow additional staff to be trained, thereby increasing the pool of talent in the government. Selection of staff/participants to consider inclusiveness and diversity.</p> <p>Training can also be extended to communities where appropriate and would be inclusive, considering the needs of women, minorities, and other disadvantaged groups.</p>
<i>Activity 1.2. Develop public-private partnerships for sustainable investment in GLOF and flood risk information services.</i>	

Additional sectors that could benefit may be missed.	Stakeholder engagement to be broad and inclusive. Engagement to include government, private sector, and communities.  Incentives to private sector participation should not be limited to specific sectors, but rather to anywhere benefits can be derived and willingness to participate is demonstrated.
Messaging may not meet needs of beneficiaries, in particular vulnerable groups	Stakeholder Engagement Plan to be developed and messaging to be based on broad beneficiary consultation and participation.  A GRM provides a mechanism for anyone to raise concerns about the project. The GRM systemises the receipt, management and close out of complaints.  Information to be accessible to multiple levels of user
Anticipated private sector investments may not be realized in a timely manner to support implementation.	Cooperation and coordination with the private sector will begin from project inception, and the project will implement awareness raising programs to help engage private sector actors.

Table 4-2 Potential adverse impacts and mitigation measures associated with Output 2

<b>Output 2. Improved hazard monitoring and the generation of early warnings, including the dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events</b>	
<b>Potential Adverse Impacts</b>	<b>Mitigation Measures</b>
<i>Activity 2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk</i>	
Impacts associated with installation of equipment ie construction impacts: <ul style="list-style-type: none"> <li>Physical issues: air, water, noise pollution, sed/erosion</li> <li>Biological issues: impacts on flora and fauna</li> <li>Socio-economic: GESI, labour force etc</li> </ul>	<p>Existing sites and/or public land to be utilised – land requirements for DHM infrastructure small (eg 4x6m or 10x10m) thus providing flexibility in site selection.</p> <p>LAP will be prepared to clearly outline the steps required to utilise public or private land (Refer Annexure 6). If private land required (ie for installation of EWS equipment), the process of negotiation and compensation will occur. Land acquisition will be based on willing buyer/willing seller and the following conditions: (i) land markets or other opportunities for the productive investment of the sales income exist; (ii) the transaction occurs with the seller's informed consent; and (iii) the seller will be provided with fair compensation based on prevailing market values No compulsory acquisition will occur. In some instances private partners have offered use of their private land for installation of EWS equipment as a form of co-finance, but it is not anticipated that there will be any change of ownership in these cases.</p> <p>ESIAs will be prepared for each watershed. ESIAs will assess potential impacts associated with the project including physical, biological, and social. The ESIAs will be prepared by a team with appropriate qualifications and experience eg flora and fauna specialists from National Parks, GESI and IP experts, engineering specialists from ICIMOD and government.</p> <p>Based on the outcomes of the ESIAs, ESMPs will be developed (one for each watershed) to ensure appropriate monitoring is in place.</p> <p>Gender and Social Inclusion Plan</p>

	<p>IPPs will be developed to ensure coverage of IP issues</p> <p>GRM</p>
Training -selection of staff to be inclusive/equitable	<p>Training of trainers for the for the implementation of project activities should include men and women from indigenous groups, Dalit communities and other marginalized groups.</p> <p>LRPs who speak local languages should support trainers as well as awareness raising and information dissemination processes</p>
Maintenance costs and management may not be appropriately budgeted for	<p>Responsible parties are to be engaged in discussion regarding design and maintenance.</p> <p>O&amp;M budgets to be determined and agreed</p> <p>Responsibilities for budget and implementation of work to be clear and transparent</p>
OHS issues associated with in-field maintenance of equipment	<p>ESMPs will include OHS requirements</p> <p>The project will support the procurement of safety equipment</p>
<i>Activity 2.2. Develop and implement early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards in vulnerable sectors and communities</i>	
Selection of trainees within DHM discriminates	<p>Training to be inclusive and non-biased.</p> <p>Gender and Social Inclusion Action Plan and IPPF to be implemented.</p>
Information dissemination may not reach all people including illiterate people	<p>To ensure the widest dissemination local and accessible disclosure tools including audio-visual materials as well as flyers, brochures, videos and community radio broadcasts, and publications will be utilized in addition to other tools. The use of local/ethnic languages will be a focus of outreach documents. Furthermore, particular attention will be paid to farmers, indigenous peoples, illiterate or technologically illiterate people, people with hearing or visual disabilities, people with limited or no access to internet and other groups with special needs.</p> <p>Board/ committee members of community-based organizations, customary institutions, and Local Resource Persons will be local focal points who are able to facilitate ongoing communication with project beneficiaries.</p> <p>Local CSOs and project partners will be important to support information dissemination and communications at the local level, using locally accepted practices such as community-meetings, workshops, among other practices.</p>
OHS associated with field maintenance	<p>Operation and maintenance plan will include OHS requirements.</p> <p>The project will support the procurement of safety equipment.</p>
Lack of culturally appropriate practices, technical assistance and information dissemination for the implementation of Activity	<p>Indigenous Peoples Planning Framework includes measures to the engagement and participation of indigenous peoples within the framework of the project.</p> <p>Invitation of indigenous federations, Dalit organizations and other organizations representing marginalized communities, among other CSOs to participate within the project management platforms.</p>

	<p>Training of trainers for the consultations and workshops, as well as extension support should include men and women from indigenous groups, Dalit communities and other marginalized groups.</p> <p>The project GRM provides a mechanism by which anyone can raise concerns about the project.</p>
Physical impacts associated with installation of equipment eg towers and sirens	<p>The sites are relatively small, so significant adverse impacts are not expected, none the less, if any new accessways are required, then these will be assessed as part of the ESIs by appropriately experienced specialists. Existing Rights of Way would be used. ESMPs will be developed to ensure appropriate mitigation measures and monitoring is in place.</p>
Community-based disaster response plans fail to be inclusive or take into account local issues/variables	<p>Plans to be developed in a participatory way with communities and ward leader. Participatory planning will help ensure that plans empower and engage highly vulnerable households, including indigenous peoples and Dalits.</p> <p>Emergency Response Procedures would include both workers and communities. The project activities include updating existing disaster response plans, which will benefit from the improved early warning systems that the project will provide as well as the physical structures that will reduce the risk of GLOFs and lessen the impacts of floods.</p> <p>Project to develop SEP.</p> <p>IPPF to ensure inclusion of IPs.</p>

Table 4-3 Potential adverse impacts and mitigation measures associated with Output 3

<b>Output 3. Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds.</b>	
<b>Potential Adverse Impacts</b>	<b>Mitigation Measures</b>
Activity 3.1. Lower the levels of four of the highest risk glacial lakes.	
The lowering of the glacial lakes and the construction of flood structures may result in the diversion of surface or water that could be destructive	<p>Design assessment, including hydrologic modelling, has been undertaken. The structural measures proposed have been vetted, designed and specifications are based on thorough dam breach models and safety protocols. These measures have all been vetted by officials of DHM. An independent technical review and site assessment will be conducted prior to construction of these structural measures and adjustments will be made, as necessary. During implementation, the engineers of DHM will be placed on-site to supervise and monitor construction activities.</p> <p>The purpose of the lake lowering is to reduce the risk to populations downstream in the event of a GLOF, the beneficiaries are all those who live adjacent to the rivers downstream of the glacial lake. In terms of populations potentially impacted by construction, as the project sites are located away from the settlements, project activities during construction period will not bring adverse impact on the community regards to disruption of local water supply system. Based on the experience of lake</p>

	<p>lowering work in Imja, lake water is gradually drained out through a controlled drainage system to be built.</p> <p>Water flows currently occur downstream of the terminal moraines due to runoff and meltwater. The lowering of lakes would be controlled release, similar to flood events, until the design depth is reached. At that point the moraines will operate as a 'run of river dam' naturally allowing water that flows onto the lake to continue flowing downstream.</p> <p>Activities 3.1 and 3.2 involve physical structures to help mitigate flooding, including diversion of flood waters. Flood structures must not result in destructive diversion.</p> <p>Operation and maintenance plan for lowering to be prepared</p>
Construction impacts (physical, biological and socio-economic)	<p>ESIAs will be undertaken to identify and assess potential impacts (refer Annexure 5). ESIAs to include all components of the lake lowering activity, eg physical works in terminal moraine, downstream works, access tracks, resource supply and stockpiling, worker accommodation and conditions. The ESIAs will be prepared by appropriately experienced and qualified professionals. ESIAs and ESMPs will be submitted to GCF for review.</p> <p>Critical habitats will be avoided by the project. The area where lake lowering works would be undertaken (the terminal moraines) consists entirely of rock, sediments and ice, there is limited habitat diversity in these areas ESIAs will include assessment of biodiversity and identify any management and mitigation measures required. Based on the findings of the ESIAs, ESMPs will be developed to ensure appropriate monitoring is in place. In the unlikely event that the need for a Biodiversity Action Plan is identified then it would be prepared by specialists. An outline for Biodiversity Management Plans is contained in Annexure 7.</p> <p>Project sites are located away from the settlements, project activities during construction period will not bring adverse impact on the community regards to disruption of local water supply system.</p> <p>All construction activities will take place during the dry season, to limit damage due to monsoon rains and to limit soil erosion and sedimentation.</p> <p>A Chance Finds Procedure shall be applied in the event of discovery of cultural heritage items during construction.</p>
Lake lowering structures have a negative visual impact on the landscape	<p>Stakeholder engagement should include discussions on potential visual impacts. Visual aids to be used to communicate likely impacts.</p> <p>Local materials to be used where possible to reduce visual impact.</p> <p>Designs to consider inclusion of culturally appropriate elements, such as mani walls/stones, prayer wheels, stupas or prayer flag poles.</p>
Residual risk of GLOF remains	<p>The purpose of the lake lowering is to reduce the risk to populations downstream in the event of a GLOF, the beneficiaries are all those who live adjacent to the rivers downstream of the glacial lake.</p> <p>Interventions will not totally remove risk of GLOFs but will reduce significantly.</p>



	<p>Designs take account of likely climate change scenarios.</p> <p>Dam break modelling to determine areas of impact if catastrophic failure and assist in identifying mitigation measure designs and identifying 'safe zones'/escape pathways as part of EWS.</p> <p>Communities to be consulted on level of risk that will remain and trained in EWS action plans (capacity building for EWS included as part of Activity 2.2)</p> <p>Additional interventions aim to address some of residual risk.</p> <p>Periodic safety inspections will be undertaken as part of monitoring and maintenance regime.</p> <p>Information from Output 3 to be provided to agencies to allow update of existing DRR plans</p>
OHS risks associated with construction and maintenance	<p>ESMPs to include requirements for OHS management.</p> <p>Earthquakes and landslides are an ever-present risk in the high Himalayas. This risk is recognised in the National Park Mangement Plans. ESMPs to include Emergency Response Procedures.</p> <p>Labour management procedure to be put in place. Refer Annexure 8. Responsible parties and project contractors must:</p> <ul style="list-style-type: none"> <li>• not employ workers under minimum age for employment as determined by national law for applicable parties subject to national law and consistent with the ILO Convention No. 138</li> <li>• not allow children under the age of 18 to perform work in connection with or arising from the project activities which, by its nature or the circumstances in which it is carried out, is likely to harm his/her health, safety or morals,</li> <li>• not allow children under the age of 18, in connection with project activities, perform work that is likely to interfere with their compulsory education or be harmful to their physical, mental, spiritual, moral or social development.</li> <li>• take immediate steps to correct and remedy any cases where child labour is identified.</li> </ul> <p>Guidance on hazardous work to be prohibited in connection with the project shall derive from the ILO Worst Forms of Child Labour Convention, 1999 (No. 182) and ILO Worst Forms of Child Labour Recommendation, 1999 (No. 190).</p> <p>Examples of hazardous work activities prohibited for children include work: (a) with exposure to physical, psychological or sexual abuse; (b) underground, underwater, working at heights or in confined spaces; (c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads; (d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or (e) under particularly difficult conditions such as work for long hours, during the night or in unreasonable confinement on the premises of the employer.</p>

	<p>To this end, the project shall ensure that contractors have adequate systems in place to check workers' ages and keep records of the dates of birth of all employees and ensure that these requirements are complied with.</p> <p>Further, the project shall:</p> <ul style="list-style-type: none"> <li>• screen the capacity of locally available workforce with aim to avoid or reduce labour influx by hiring from the local pool of workforce,</li> <li>• ensure Environmental Manager responsibilities regarding oversight of, and reporting on, labour influx and workers' camps (if any),</li> <li>• provide influx workers with training on prevention and response to Gender-Based Violence,</li> <li>• develop effective reporting and response protocol and referrals for safe and confidential survivor assistance,</li> <li>• allow workers to raise their concerns (safety, discontent, maltreatment or else) through the Grievance Mechanism, complaints forms are to be present on the construction site, and promptly investigate allegations of Gender-Based Violence related to project activities</li> </ul> <p>Workers to use appropriate PPE and appropriate training to be provided</p> <p>Contractors to prepare Construction Emergency Medical Plans</p> <p>Operation and maintenance plan to be prepared</p> <p>Institutional arrangements for periodic safety inspections, emergency procedures, and overall operation and maintenance (O&amp;M) of GLOF risk reduction, flood risk reduction, and plantation activities will be integrated within existing mandates of DHM and DoFSC. A structured coordination mechanism will be established to ensure effective collaboration among these agencies, local governments, and community-based organizations. The budget for safety inspections, security measures, and emergency procedures will be incorporated within the existing O&amp;M costs, leveraging available resources without requiring additional allocations. Additionally, existing emergency response health facilities at the sites and other emergency protocols will be utilized to enhance preparedness and response during the project period as well as for O&amp;M activities. Periodic capacity-building programs and inter-agency coordination will be set up for the post project scenario and will be clearly reflected in the Exit Strategy.</p>
<p>IPs could be adversely impacted due to the importance of lakes and other landscape features to them culturally</p>	<p>Early and ongoing engagement with national indigenous bodies (eg Nepal Federation of Indigenous Nationalities (NEFIN) and National Indigenous Women's Federation (NIWF). IPs have been engaged in the project development and continue to do so.</p> <p>IPPF to ensure appropriate engagement of IPs and their inclusion in project planning and implementation.</p> <p>As communities consider lakes and mountains as abodes of gods and goddesses, they have deep respect and a spiritual connection with their environment. Therefore, respecting their beliefs and seeking permission and advice on how to ensure that deities believed to be living in the lakes are not disturbed will be obtained prior to undertaking any work. It is critical that local customs are adhered to and that local sentiments are respected.</p>

	<p>The following is an example of some of the actions that were undertaken during the field investigations undertaken for the design phase:</p> <ul style="list-style-type: none"> <li>• consultation with community leaders during planning field trips to determine concerns and actions required</li> <li>• religious figures from the community, local leaders, and community members invited to help perform rituals to appease the goddess (Nhepu) and seek her blessings.</li> <li>• only start work after carrying out the rituals.</li> <li>• undertake daily rituals eg burning incense and juniper leaves as part of a cleansing ceremony.</li> </ul> <p>Enumerating the total number of IPs associated with the project, will be an ongoing task as detailed site selection and design of infrastructure. Further discussions with IPs and the development of IPPs will occur as part of implementation. The IPPs will detail the measures (as identified by the IPs) that will be required to be undertaken to protect cultural heritage – physical and spiritual.</p>
Sourcing of materials and generation of waste	<p>ESIAs to include consideration of materials and waste generated. Waste to be managed (removed) from construction sites in accordance with National Parks Management Plan. ESMPs to include Waste Management Sub-Plans.</p> <p>Materials to be sourced locally where possible. Lake lowering will include reusing materials excavated, so no loose spoil dumps will remain. Design includes downstream bank stabilisation and/or armouring. Area of disturbance will also be minimal. It is anticipated that rock material removed from the moraines to lower the lakes will be utilised within other works such as spillways, training wall, accessways etc. This will reduce the material needed to be sourced.</p> <p>Only authorised/legal sources of material to be used.</p> <p>Procurement to comply with the Nepal Public Procurement Act 2063 (2007), which addresses issues such as transparency, competitiveness and accountability, and financial administration. A labour management plan will also be prepared (refer Annexure 8).</p> <p>ESMPs would include a Waste Management Plan. Water quality impacts will be managed via Sediment and Erosion Management sub-plans. The ESMPs, and their sub-plans, would be based on the findings of the ESIAs</p>
Project activities could have a negative impact on the two National Parks in which works will occur.	<p>National Park Plans of Management will be reviewed and confirmed to include works to lakes. If any amendments are required, the amendment will follow National Parks processes and will be done in such a way so that revision does not result in other unintended exploitation or damaging activities within the park ie revision will be specific to the proposed GCF works.</p> <p>ESIAs will be undertaken to assess the impacts of the proposed works to ensure that any impacts are acceptable and manageable. Based on the findings of the ESIAs, ESMPs will be developed to ensure appropriate mitigation and monitoring is in place.</p>
Social impacts associated with influx of workers (construction)	<p>Local workers to be used where possible. A Labour Management Plan will be prepared (refer Annexure 8).</p>

	<p>Demands on local infrastructure to be considered prior to importing workers – contractor may be required to provide additional facilities (eg medical, accommodation or food).</p> <p>All activities will be closely monitored in coordination with the Department of National Parks and Wildlife Conservation potentially with support from the Nepal Army as per the government policy. This will reduce risk of poaching and increase readiness in event of natural disaster.</p> <p>GRM includes mechanism for managing GBV/SEAH</p>
<p><i>Activity 3.2. Construction of structural and non-structural measures (Civil and NbS/ Bioengineering) for the risk reduction of GLOF and flash flood.</i></p>	
<p>Rights holders, particularly IPs, may not have the capacity to claim their rights.</p>	<p>Implement SEP and GRM</p> <p>Confirm land tenure at all project sites as part of detailed site survey during implementation stage (public land proposed to be used).</p> <p>A Land Acquisition plan (LAP) will be prepared (refer Annexure 6). LAP to describe process for identification of tenure and process for obtaining legal use of land (note, there will be no compulsory land acquisition). The application of the LAP and IPP will ensure that land is unencumbered and that restriction of access to natural resources or traditional uses is not adversely impacted.</p> <p>In the case of use of public lands in the project, some sites legally belong to the local government but are managed by the IPs as prevailing customary rights of the IPs on the land. In a very few instances, where communities have customary user rights (but not legal ownership rights) these areas will be avoided, as far as possible. In cases where it is unavoidable, the local government will facilitate consultations with affected communities and use land for project activities only upon agreement of the affected communities. UNDP will work closely with the IP and other users who depend on public land to ensure that the any public land used by the project is unencumbered and/or not land on which local livelihoods depend.</p> <p>IPPs to be developed for each catchment</p>
<p>Increased flows could damage interventions and/or downstream infrastructure</p>	<p>Designs have taken account of likely climate change parameters</p> <p>Modelling to test effectiveness of interventions under different scenarios has been undertaken</p> <p>Apply lessons learnt from Imja Lake project eg water to gradually drain out through a controlled drainage system.</p> <p>Periodic safety inspections will be undertaken as part of monitoring and maintenance regime.</p>
<p>Construction impacts (physical, biological, socio-economic)</p>	<p>Project sites are located away from the settlements, project activities during construction period will not bring adverse impact on the community regards to disruption of local water supply system.</p> <p>ESMPs to be developed.</p> <p>ESMPs to include a sediment and erosion plan.</p> <p>Heritage items, such as mani walls, stupas etc to be protected</p>

Sourcing of materials and generation of waste	<p>ESIAs to include consideration of materials and waste generated.</p> <p>Materials to be sourced locally where possible. As much as possible excavated material will be reused in the construction of the structural elements of the project. – mainly in filling open areas and gullies and in stabilization of river channel embankments, including with bio-engineering measures and plantation on embankments.</p> <p>Only authorised/legal sources of material to be used.</p>
Land required for installation of infrastructure	<p>Public land to be prioritised. The majority (&gt;95%) of construction activities will be on public land. Use of private land would be a last resort and due to sites on public land not being technically feasible. The sites where actual lake lowering work will be conducted are away from human settlements and the land there belongs to the government. So, there is no issue of land acquisition and compensation.</p> <p>For physical small-scale interventions downstream – these areas fall mostly in government-owned land. However, where private land is required for construction work, standard practices will be followed, as in the case for other projects – i.e. local governments will facilitate community negotiations, especially engaging affected private landowners.</p> <p>Public lands where communities have customary user rights (but not legal ownership rights) will be avoided, as far as possible. In cases where it is unavoidable, the local government will facilitate consultations with affected communities and use land for project activities only upon agreement of the affected communities. UNDP will work closely with the IP and other users who depend on public land to ensure that any public land used by the project is unencumbered and/or not land on which local livelihoods depend.</p> <p>LAP to be prepared which will outline processes required for use of public land, communal land and private land (refer Annexure 6). Where access to private land required, the negotiations by PMU will be conducted and appropriate compensation agreed. Use/ acquisition of private land will be based on willing buyer/willing seller and the following conditions will be followed: (i) land markets or other opportunities for the productive investment of the sales income exist; (ii) the transaction took place with the seller's informed consent; and (iii) the seller was provided with fair compensation based on prevailing market values.</p> <p>No forced private land acquisitions.</p> <p>Community will be involved and provide approval to the use of any communal lands. Where it is indigenous peoples customary land, then FPIC mechanism to be applied.</p>
Potential conflicts over the selection of priority intervention areas.	<p>Stakeholder Engagement Plan will be developed.</p> <p>Decision making is transparent and supporting studies and information (reports, minutes from consultations and workshops) are made publicly available.</p> <p>Strong focus on capacity building within all project activities will help raise awareness of climate risks and the link between climate change and natural disasters with unsustainable natural resource management, as well as the benefits of climate-resilient infrastructure.</p>



	In the case where any household/ person feels discriminated against or has a problem with the project, they can access the project's grievance redress mechanism.
<i>Activity 3.3. Implement Eco-disaster Risk Reduction and nature-based solutions to reduce the impact of GLOFs and flash floods.</i>	
Land required for installation of eco-DRR and nature-based solutions	<p>Public land to be prioritised.</p> <p>No forced private land acquisitions.</p> <p>Community should be involved and agree to the use of any communal lands. LAP will be developed to describe the processes for obtaining legal right to use land use (refer Annexure 6). Where it is indigenous peoples customary land, then FPIC mechanism to be applied. The application of the LAP and IPP will ensure that land is unencumbered and that restriction of access to natural resources or traditional uses is not adversely impacted,</p>
Construction impacts (physical, biological, and socio-economic)	<p>Scoped ESAs to assess potential impacts</p> <p>ESMPs to be developed.</p>
Site-specific impacts due to the inappropriate planting of tree species based on site conditions.	<p>Guidance on site-species matching will be developed for project sites, providing information on key tree species that are adapted to the area and their ideal site-conditions. In addition to native species, the project will only promote tree species which are already locally adapted and do not pose a risk to the local biodiversity. It will ensure compliance with Nepal's Forestry Policy (2015).</p> <p>If required, a Biodiversity Action Plan will be prepared (refer Annexure 7).</p>
In practice it may be challenging to have equal participation due to gender discrimination, especially against women from indigenous groups and marginalized minority groups	<p>At least 50% of project beneficiaries will be women, promoting proportional representation from indigenous groups, Dalit communities and other marginalized groups.</p> <p>Gender and Social Inclusion Action Plan includes measures to promote women's empowerment and gender equality within the framework of the project. The plan includes detailed measures that target women and aims to empower them within the project, whilst considering their differentiated contexts and vulnerabilities.</p> <p>PMU M&amp;E specialist and PPSU staff will regularly monitor the implementation of the GAP and work together with CSOs and other actors to strengthen the engagement of women within the project.</p>
Sourcing of materials eg trees and shrubs, rock	<p>The establishment of small-scale community-based nurseries will comply with relevant national legislation (Forest Policy, Environmental Protection Act), and will promote equitable hiring policies ensuring equitable employment opportunities for women, indigenous peoples, Dalits and other marginalized households.</p> <p>Existing legal quarries or other sources of rock only to be used.</p>

## 5 PROCEDURES FOR SCREENING, ASSESSMENT AND MANAGEMENT

179. As part of implementation environmental and social risks will continue to be assessed and appropriate management mechanisms put in place. The project has been screened using the UNDP SESP. The SESP assisted in identifying the safeguard documents and processes that are required to adequately manage risks associated with the project.

### 5.1 STEP 1: ENVIRONMENTAL AND SOCIAL RISK SCREENING

#### 5.1.1 UNDP SESP

180. The UNDP screening checklist (UNDP's SESP) has been completed for the project and moderate and substantial category risks associated with Outputs 2 and 3 identified. No High Risk activities have been identified. High risk activities are not permitted. Section 5.1.1.1 lists prohibited activities.

181. As a result of this screening and risk categorization, additional environmental and social impact assessment has been determined to be necessary to meet the UNDP SES requirements. As an accredited entity, UNDPs SES also meets GCFs requirements.

##### 5.1.1.1 Prohibited Actions

182. Consistent with the project SESP and identified risks, project implementation will ensure that no supported action:

- is detrimental to the conservation status of habitats and species, has measurable adverse impacts to critical habitats, or leads to a reduction in endangered species;
- is significantly harmful to the status or the ecological potential of surface water bodies and groundwater bodies;
- creates significant risks to communities and workers during construction and implementation;
- leads to significant damage, or removal of cultural heritage;
- Requires or involves:
  - Production or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements.
  - Purchase, application or storage of harmful pesticides or hazardous materials;
  - Production or activities involving forced labour / harmful child labour;
  - Production or trade in wood or other forestry products from unmanaged forests;
  - forced evictions
  - physical or economic displacement of Indigenous Peoples
  - leads to any significant increase in the emissions of pollutants as compared with the situation before the activity started.

183. In addition to the above prohibited actions, the project will not support any activities that are deemed to be "High Risk" under the UNDP SES Policy as identified through the ESIAs. If any unanticipated social and environmental risks are identified, relevant activities will not proceed until appropriate measures or adjustments are confirmed to ensure compliance with UNDP and GCF policies and procedures.

### 5.1.2 Government of Nepal Requirements

#### 5.1.2.1 GoN Environmental and Social Screening to determine level of assessment required

184. Review available environmental and social information relevant to the sub-activities and their surrounding Project Influence Areas (PIAs<sup>93</sup>). The following steps are key to the screening.

- Confirm presence of environmentally sensitive areas from secondary information and site observations
- Identify potential negative and positive direct or indirect impacts and provide clarity on issue, which needs to be investigated Category B EA type (for higher impact category requires ESIA, for medium impact category requires abbreviated EMP and for lower impact category require Best Environmental Practices-BEP).
- Incorporate feedback of public consultation and answer to published notice
- Additionally, GoN specific Environmental Impact Assessment (EIA)/Initial Environmental Examination (IEE)/Brief Environment Studies (BES) requirements to be complied with EPA/EPR 2020
- Determine applicability of regulatory and policy and requirement of clearances and permissions
- Identify of key environmental and social concerns and vulnerable groups
- Scope environmental and social impact assessment and mitigations.

#### 5.1.2.2 Undertake Environmental/Social Assessments

185. As noted, based on the UNDP SESP, scoped ESIA have been identified as being required. Three ESIA are proposed, one for each watershed, to address the risks identified in Table 4-2 and Table 4-3, specifically the moderate to substantial risks associated with Activities 2.1, 2.2, 3.1, 3.2 and 3.3. Each watershed area for which an ESIA will be developed will be considered as a subproject. The ESIA will give details and assess potential impacts of the risks identified for both permanent and temporary works eg access tracks, worker camps etc. The ESIA will be scoped so as to meet both UNDP SES and GoN requirements (ie the ESIA will meet GoN requirements for EIA, IEE or BES).

186. Early in the project implementation (within the first 6-12 months), activities in Outputs 2 and 3 in each watershed will be assessed to identify potential location-specific impacts. It is proposed initially do two ESIA concurrently and then remaining ESIA (two lakes) so that any lessons learnt can be incorporated into the final ESIA. For the assessments, the existing environmental and social baselines will be described and assessments of potential impacts made against that baseline for the specific activities being assessed. As part of the ESIA scoping process, risks will be rescreened to confirm that the risk category identified in the initial SESP has not increased. "No high-risk" activity will be undertaken.

187. Social risk assessments will include screening for SEAH risks, as per the processes described in Section 6.2.

188. The ESIA will be submitted to GCF for review.

## 5.2 STEP 2: DEVELOPMENT OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

189. An ESMP is the key document focused on implementation of mitigation measures, once the potential impacts are identified. It starts operationalizing the avoidance / minimization aspects from design/pre-construction phase and ensures that the project impacts are reduced to an acceptable level during implementation of the sub-project.

190. ESMPs will be developed for each of the watersheds to address the impact risks identified in the corresponding ESIA. An indicative outline of the ESMPs is provided in Annexure 9. Like the ESIA, the ESMPs will be scoped to address the impacts associated with moderate and substantial risk activities under Output 2 (Activities 2.1 and 2.2) and Output 3 (Activities 3.1 and 3.2). *The ESMPs will be submitted to GCF for review.*

191. The ESMPs should be activity specific, clearly, and concisely describing adverse impacts, selected management measures to bring it to an acceptable level and timelines for implementing these measures. It should also clarify roles

<sup>93</sup> **Project area of influence** can be defined as: The area likely to be affected by the project, including all its ancillary aspects, such as access roads, borrow and disposal areas, and construction camps, as well as unplanned developments induced by the project (e.g., spontaneous settlement, logging, or shifting agriculture along access roads). The area of influence may include, for example, (i) the watershed within which the project is located; off-site areas required for resettlement or compensatory tracts; (iv) the airshed (e.g., where airborne pollution such as smoke or dust may enter or leave the area of influence); (v) migratory routes of humans, wildlife, or fish, particularly where they relate to public health, economic activities, or environmental conservation; and (vi) areas used for livelihood activities (Hunting, fishing, grazing, gathering, agriculture, etc.) or religious or ceremonial purposes of a customary nature.

and responsibilities of various entities such as Project Proponent, Municipalities, Contractors, and other stakeholders. The key components of an ESMP are the following:

- Mitigation measures to be adopted for potential adverse impacts identified during the screening and environmental/social impact assessments for all phases of the project (Design, Pre-construction, Construction/Implementation and Operation)
- Implementation of emergency preparedness and response protocols, disaster risk reduction and climate change adaptation as appropriate
- Enhancement plans for positive impacts
- Monitoring Plan with indicators, mechanisms, frequency, locations,
- Budgetary allocations for all the above activities
- Institutional arrangements for each activity and mitigation measures, i.e. who is responsible for carrying out mitigation and monitoring measures for operation, supervision, enforcement, monitoring of implementation, remedial actions, financing, reporting and staff training.
- Implementation schedules for each activity.

192. Monitoring and reporting procedures to ensure early detection of impacts that necessitate mitigation measures and to provide information on the progress and results of mitigation (e.g. by annual audits and surveys to monitor overall effectiveness of this ESMF). The mitigation and monitoring measures recommended in each ESMP should be developed in consultation with affected groups to incorporate their concerns and views in the design of the ESMP.

193. It is proposed that three ESMPs will be produced based on watershed:

- **ESMP for Arun watershed** – Activities 2.1 and 2.2 (installation and maintenance of equipment), Activity 3.1 (lowering of Lower Barun Lake), Activity 3.2 (construction of check dams and other diversion infrastructure), and Activity 3.3 (construction of nature-based solutions).
- **ESMP for Dudhkoshi watershed** – Activities 2.1 and 2.2 (installation and maintenance of equipment), Activity 3.1 (lowering of Lumding Tsho and Hongu lakes), Activity 3.2 (construction of check dams and other diversion infrastructure), and Activity 3.3 (construction of nature-based solutions).
- **ESMP for Thulagi watershed** - Activities 2.1 and 2.2 (installation and maintenance of equipment), Activity 3.1 (lowering of Thulagi Lake), Activity 3.2 (construction of check dams and other diversion infrastructure), and Activity 3.3 (construction of nature-based solutions).

### 5.3 STEP 3 – ESMP IMPLEMENTATION, MONITORING AND REPORTING

194. The ESMPs are to be submitted to UNDP, GoN and GCF for endorsement prior to the commencement of any activities that are within the scope of the ESMP ie no moderate or substantial risk activities are permitted to be implemented ahead of sign off on the ESIsAs and ESMPs. All approvals are to be obtained and management measures in place before activities are implemented.

195. Once the ESMPs are endorsed by UNDP HQ, GoN and GCF, the safeguard specialist will ensure ESMPs are included and reported upon, along with stakeholder engagement in the context of the monitoring plan.

196. In this context, field staff (PMU staff in coordination with provincial and local authorities and extension agents) will be responsible for monitoring the progress as relevant in the monitoring plan, as well as to identify any potential risks that may emerge through the implementation phase. This information will be compiled in progress reports, including a section on environmental and social risk management.

197. Information from progress reports will be received by the safeguard and gender specialist in the PMU who will compile the information received in the progress reports, as well as information related to grievances in an annual report on the Environmental and Social Safeguards Performance to be endorsed by the UNDP HQ as part of the APR process.

### 5.4 COMPLIANCE WITH NATIONAL PARK MANAGEMENT PLANS

198. The glacial lakes Hongo 2 (also known as Chamlang North) and Lower Barun fall under the jurisdiction of Makalu Barun National Park (MBNP), while Lumding Tsho fall under the territory of the Buffer Zone of Sagarmatha National Park (SNP).

Therefore, project activities related to lake lowering and installation of hydro-met stations and EWS in these areas will need to be permissible and meet all the requirements of the respective national park management plans.

199. The Government of Nepal, through DNPWC, has committed to reviewing and updating the existing national parks management plans (Appendix 4). The GoN has requested assistance from UNDP.
200. In this connection, UNDP is collaborating with DNPWC for:
  - Preparation of Climate Resilient Protected Areas/ National Park Management Plan Framework
  - Revision of Management Plan of MBNP (including Initial Environment Examination (IEE) to make it climate resilient.
  - Provide support to DNPWC to carry out the Initial Environment Examination (IEE) of Climate Resilient Management Plan of SNP
201. This collaboration is expected to make the management plan of National Park and Protected Areas System in Nepal resilient to Climate Change impacts as envisaged by Protected Areas Management Strategy (2022-2030). Note, a similar approach was adopted to update the Sagarmatha NP Management Plan previously when UNDP collaborated with Government of Nepal to reduce the GLOF risks of Imja Glacial Lake, which is inside the Sagarmatha National Park
202. The revised management plans are expected to integrate implementation of GLOF Risks Reduction measures and establishment of hydro-met stations and Early Warning System in three lakes and it's downstream of the watershed.
203. None the less, as part of the GCF project, the National Parks Management Plans will be reviewed, and the permissibility of the proposed interventions confirmed. Should any minor amendments be required, the project team will work with DNPWS to ensure that the necessary changes are made, and in such a way as to prevent unintended exploitation of or development in the national parks.
204. Noting the above, before any project-related physical works commence, UNDP will ensure that the updated park management plan legally permits the execution of physical activities proposed under the project.

## 6 INSTITUTIONAL ARRANGEMENTS AND CAPACITY BUILDING

### 6.1 PROJECT IMPLEMENTATION ARRANGEMENTS

205. The project will be implemented following UNDP's National Implementation Modality (NIM).
206. The Ministry of Energy, Water Resources and Irrigation (MoEWRI) will lead the project execution on behalf of the Government of Nepal, while several government agencies will implement different components of the project as outlined in Figure 25.
207. The implementation mechanism for this project will engage a wide range of stakeholders, ensuring their sustained engagement from project design to implementation, to monitoring and evaluation (M&E).



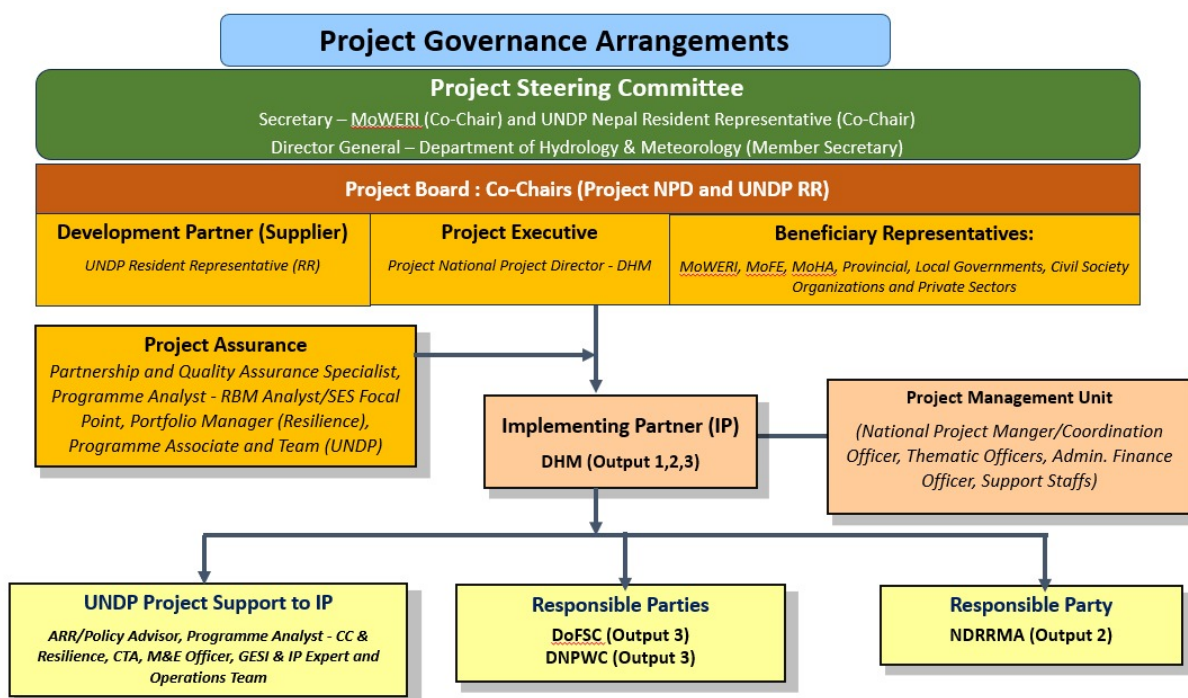


Figure 25 Governance and Institutional Implementation structure.

### 6.1.1 Accredited Entity

208. UNDP provides oversight and quality assurance involving UNDP staff in Country Offices and at regional and headquarters levels. Their quality assurance role requires objective and independent project oversight and monitoring functions. As the Accredited Entity to the GCF for the proposed project, UNDP will deliver GCF-specific oversight and quality assurance services including: i) day-to-day oversight and supervision; ii) oversight of project completion; and iii) oversight of project reporting. This will include overseeing the achievement of project management milestones that are

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established as per the GCF Board-approved Funding Proposal. Project assurance is independent of the Project Management function. Therefore, the National Project Steering Committee cannot delegate any quality assurance responsibilities to the National Project Coordinator and/or anyone paid for by the project resources. The project assurance role is covered by the Accredited Entity fee, provided by the GCF.

#### 6.1.2 Implementing Partner

209. The Implementing Partner (IP) for this project is the Department of Hydrology and Meteorology (DHM) under Ministry of Energy, Water Resources and Irrigation (MoEWRI) of Nepal. The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document. The IP is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources.

210. The Implementing Partner is responsible for executing this project. Specific tasks include:

- Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
- Overseeing the management of project risks as included in this project document and new risks that may emerge during project implementation.
- Procurement of goods and services, including human resources.
- Financial management, including overseeing financial expenditures against project budgets.
- Approving and signing the multiyear workplan.
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures
- Establishing and maintaining a transparent and accessible Grievance Redress Mechanism

#### 6.1.3 Responsible Parties

211. The Implementing Partner (IP) will enter into agreements with the Responsible Parties (as listed below) to assist in successful delivery of project outcomes. The RPs are directly accountable to the IP, the Department of Hydrology and Meteorology (DHM) as outlined in the terms of their agreement:

- The Department of Forests and Soil Conservation (DoFSC) of Ministry of Forests and Environment (MoFE),
- The Department of National Parks and Wildlife Conservation (DNPWC) of Ministry of Forests and Environment (MoFE)
- National Disaster Risk Reduction and Management Authority of Nepal (NDRRMA)

Table 6-1 Activities and Responsible Parties

Outputs	Activity	Responsible Party
Output 1: Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.	1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.	DHM
	1.2. Develop policy and financial mechanisms for sustainable GLOF and flood risk information services.	DHM
Output 2: Improved hazard monitoring and the generation of early warnings, including the	2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk.	NDRRMA

dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events	2.2. Improve early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards.	NDRRMA
Output 3: Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds.	3.1. Lower the levels of four of the highest risk glacial lakes for GLOF Risk Reduction	DoFSC DNPWSC
	3.2. Construct the Structural and non-structural flood risk reduction measures in the downstream of the glacial Lakes	DoFSC DNPWSC
	3.3 Implement eco-disaster risk reduction and nature-based solutions to reduce the impact of GLOFs and flash floods.	DoFSC DNPWSC

### 6.1.4 Project Steering Committee

212. The MoEWRI, the project Implementing Partner, will set up Project Steering Committee (PSC) chaired by the Secretary of MoEWRI responsible for Water Resources and Irrigation. The Project Steering Committee will be co-chaired by UNDP Resident Representative. Other members of the PSC will include Joint-Secretary level representatives from relevant federal and provincial ministries including National Planning Commission, UNDP, representatives of community organizations, indigenous people organization, academia, development partners and private sector as necessary.
213. The main function of the PSC will be to provide strategic guidance and oversight and ensure inter-government coordination within and across various government ministries and agencies involved in project implementation. The PSC will review project's annual work plans and budget, project progress, and resolve project implementation issues. In addition, the PSC will approve the Project Implementation Manual (PIM) and Project Reporting Guidelines (PRG) as per GCF requirements during the inception phase and other project documents during implementation.
214. The PSC meetings will be held at least once a year. The Secretary may designate a Joint Secretary level staff of MoEWRI to support PSC meetings. The Department of Hydrology and Metrology (DHM) will work as the Secretariate for the PSC and support the MoEWRI in organization of regular PSC meetings. The key functions of the DHM as secretariate to PSC will include a) consolidating project annual work plan, budget, and financial reports for submission to PSC for approval, b) sharing the consolidated project annual work plan, budget and reports to UNDP before submission for PSC approval, c) setting agenda for PSC meetings tracking implementation of PSC decisions.

### 6.1.5 Project Board

215. The Project Board reviews project performance based on monitoring, evaluation, and reporting, including progress reports, risk logs and the combined delivery report. The Project Board is responsible for making management decisions by consensus. Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency, and effective international competition. In case consensus cannot be reached within the Board, the UNDP representative on the board will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed. The Project Board will meet on a quarterly basis in general, but bi-annual meetings will be mandatory.
216. Following are the key responsibilities of the Project Board:

#### Oversee project execution:

- Agree on project manager's tolerances as required, within the parameters outlined in the project document, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded.



- Appraise annual work plans prepared by the Implementing Partner and RPs for the Project; review combined delivery reports prior to certification by the implementing partner.
- Address any high-level project issues raised by the project manager and project assurance and seek Inform PSC about issues and challenges faced by the project and seek timely guidance from PSC as required.
- Advise on major and minor amendments to the project within the parameters set by UNDP and the donor and refer such proposed major and minor amendments to the UNDP-BPPS/NCE Executive Coordinator (and the GCF Secretariat and/or GCF Board, as required by GCF policies);
- Provide guidance to the project management unit to ensure that the agreed deliverables are produced satisfactorily and according to plans
- Track and monitor co-financed activities and realisation of co-financing amounts of this project.
- Approve the Inception Report, Baseline Report, GCF APRs, Interim Independent Evaluation and terminal evaluation reports, other reports that GCF may require.
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.

### Risk Management:

- Provide guidance on evolving or materialized project risks and agree on possible mitigation and management actions to address specific risks.
- Review and update the project risk register and associated management plans based on the information prepared by the Implementing Partner. This includes risks related that can be directly managed by this project, as well as contextual risks that may affect project delivery or continued UNDP compliance and reputation but are outside of the control of the project. For example, social and environmental risks associated with co-financed activities or activities taking place in the project's area of influence that have implications for the project.
- Address project-level grievances.

### Coordination:

- Ensure coordination between various donor and government-funded projects and programmes.
- Ensure coordination with various government agencies and their participation in project activities.

### Other specific functions:

- Approve project's annual and quarterly works plans and budgets and project reports (substantive and financial) and ensure execution support provided by UNDP are aligned to project priorities and work plan
- Review project progress, milestones, targets, and implementation strategies and coordination structures.
- Review IP's and RP's project expenditure against activities and outcomes and approve readjustments in existing work plan and budget
- Assess project performance, ensure efficiency and effectiveness of implementation and report to PSC
- Ensure project budget is reflected into respective government ministry's LMBIS and Red Book and project co-financing is reflected into respective agencies' annual budget
- Ensure compliance to fiduciary risk management, gender, environmental and social safeguard standards, in compliance with GCF guidelines
- Support conducting project audits through Office of Auditor's General of Nepal (OAG)'s of Nepal while complying with GCF requirements
- Ensure setting up project field offices & mechanism in place for handling grievances in fair & timely manner , assess grievances
- Ensure timely fund disbursements from MoF to MoEWRI and from MoEWRI to the RPs and maintaining account of project co-financing.

### 6.1.6 Technical Advisory Group

217. UNDP in consultation with the Chair of the PSC will set up a Technical Advisory Group (TAG) chaired by a senior national expert. The CTA of the project appointed by UNDP and senior technical specialists and experts of MoEWRI, DNPWC,

DSCWM and NDRRMA will be the members of the TAG. Other members of TAG will include technical experts working in other government agencies, research institutions, development partner organizations and national and international organizations, with relevant experience in various thematic areas of the project, as decided by UNDP in consultation with the Chair of the PSC. The main function of the TAG will be to provide technical advice and inputs to the IP and RPs based on international best practice, regards to thematic assessments and technical studies conducted by the project. Including the Chair, the number of TAG members will be limited to a maximum of eleven. Meetings of the TAG will be organized up to twice a year, though it can meet on an ad hoc basis as and when required.

### 6.1.7 Project Management Unit (PMU)

218. The PMU will include the National Programme Manager, Coordination Officer, Field Coordinators, Administration and Finance Officer and 'Thematic Officers' (Environmental and Social Safeguards Officer, Gender and Social Inclusion Expert, Monitoring and Evaluation Expert), as well as other support members as deemed to be required.

219. The PMU, under the management of the NPM, will be responsible for overall and day-to-day management of the project on behalf of the Implementing Partner.

#### 6.1.7.1 Environmental and Social Safeguards (ESS) Officer

220. The PMU's Environmental and Social Safeguards Officer responsibilities will include the following:

- Assist the Implementing Partner and RP/s in the preparation of the applicable safeguards documents as may be required by GON, UNDP and/or GCF. This aspect may include the following tasks (among others):
- Updating/refinements of the ESMF
- Oversight of the preparation of the three ESIA's
- Preparation of Environmental and Social Management Plans (ESMPs)
- Ensuring the other safeguard plans listed in this document are prepared and implemented
- Facilitate and confirm overall compliance with all GoN rules and regulations on safeguards (i.e., environment, land tenure/land acquisition, indigenous peoples (IPs)) as well as assist the various RPs in securing the relevant permits/clearances for the project;
- Confirm/Validate whether the applicable safeguards documents or requirements (e.g., Environmental Compliance Certificate (ECC), Free Prior and Informed Consent (FPIC)) are integrated in the bidding documents and other contracts;
- Oversee implementation of the safeguards aspects of the sub-projects and ensure that the various safeguards management plans are implemented by the RPs and contractors;
- Provide support in institutional development, capacity building, safeguards implementation, community awareness and participation;
- Conduct periodic monitoring of safeguards performance in the various development stages;
- Consolidate quarterly safeguards monitoring reports from the various RPs and submit annual safeguards monitoring reports to UNDP;
- Ensure timely disclosure of the safeguards and similar documents in locations and form accessible to the public; and
- Work closely with the RPs in addressing grievances brought about by the project-affected persons through the grievance redress mechanism (GRM) in a timely manner.

### 6.1.8 Project Assurance

221. Project assurance is the responsibility of each project board member; however, UNDP has a distinct assurance role for all UNDP projects in carrying out objective and independent project oversight and monitoring functions. UNDP performs quality assurance and supports the Project Board by carrying out objective and independent project oversight and monitoring functions, including applying and ensuring compliance with UNDP's risk management and social and environmental management systems. Project assurance is totally independent of project execution. The Project Board cannot delegate any of its quality assurance responsibilities to the PMU or National Project Manager. A designated



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representative of UNDP playing the project assurance role will attend all board meetings and support board processes as a non-voting representative and provide board members with the required documentation related to quality assurance. The Partnership and Quality Assurance Specialist of UNDP will mainly take responsibility for the assurance function with support from other staff.

## 6.2 GENDER ACTION PLAN (GAP) AND GBV/SEAH ACTION PLAN

222. A Gender Action Plan has been developed during the project's design phase. It constitutes an Annex to the ProDoc and will guide all actions pertaining to SES implementation.

223. A SEAH Action Plan has been developed as part of the ESMF (Table 6-2) and should be implemented in conjunction with other safeguard plans. This includes consideration of SEAH risks identified under Table 6-2 during risk screening procedures noted under Section 5.

Table 6-2 SEAH Action Plan

Potential Risk Identified	Action to address SEAH risk	Timeline	Responsibility	Monitoring
There is a risk that challenges related to SEAH faced by the concerned stakeholders are not heard/addressed	As part of the project's stakeholder consultations, properly inform those affected by the project of SEAH risks and project activities to get their feedback on project design and safeguard issues.  Consultations need to engage with a variety of stakeholders (political, cultural or religious leaders, health teams, local councils, social workers, women's organizations, organisations working with marginalised groups working and children) and should occur at the start and throughout the implementation of the project.	Consultations need to be throughout the project cycle, not just during preparation.	IA	<ul style="list-style-type: none"> <li>Quarterly Monitoring of implementation of SEP.</li> <li>Stakeholder engagement will be a regular agenda item on PMU meetings</li> <li>Ongoing consultations, particularly when ESMP is updated.</li> <li>Report of consultation meetings</li> <li>Reporting on SEP activities, including grievances, will be included in Annual Reports</li> </ul>
There is a risk of potential GBV incidents occurring within the beneficiary community and workforce.	Disseminate information, in collaboration with stakeholders working to combat GBV, on GBV referral pathway and the importance of timely seeking services	During implementation	IA	<ul style="list-style-type: none"> <li>GRM, including SEAH/GBV referrals will be a standing agenda item at PMU/PSC meetings</li> <li>Summary provided to GCF as part of annual reporting</li> </ul>
There is a risk that the local community, Indigenous Peoples, and workforce may be affected by SEAH-related incidents.	Make certain of the availability of an effective GRM with multiple channels to initiate a complaint - Include specific procedures for SEAH (eg confidential reporting with safe and ethical documenting of SEAH cases).	Prior to contractor mobilizing.	IA	<ul style="list-style-type: none"> <li>Confirm GRM/SEAH systems in place with contractor prior to execution of the field level activities</li> <li>Ongoing monitoring and reporting on GRM to verify it is working as intended.</li> </ul>
	Organize orientation sessions to workers and communities on PSEA /SEAH, the reporting mechanism in case of any cases during the project implementation	During the initiation phase of the project		<ul style="list-style-type: none"> <li>Confirm orientation sessions to workers and communities on PSEA /SEAH held following initial to stage of project</li> <li>Reports of the refresher/sensitization programme to the communities, indigenous people and workforce on</li> </ul>

				SEAH and the available mechanism to report and how to be safe.
There is a risk that the community or workforce lacks adequate information and mechanisms to prevent SEAH, or to handle cases with safety, confidentiality and sensitivity.	<p>Map out SEAH prevention and response actors in project adjoining communities.</p> <p>Inform on the national mechanism to address SEAH in addition to the UNDP mechanism.</p> <p>Provide with the detail of the contact address/phone etc of the national mechanism if any cases of SEAH is witnessed or faced.</p>	During preparation and Implementation	IA  UNDP to provide technical support as appropriate	<ul style="list-style-type: none"> <li>• Update mapping as appropriate</li> <li>• Make the agenda to be discussed in all the missions and re-emphasize it on the Zero tolerance on SEAH.</li> </ul>
There is a risk that potential vendors may not have a code of conduct, policy and the capacity in place to address SEAH.	Clearly define the zero tolerance to SEAH and expected actions to be taken by organisations in bid documents.	Procurement.	IA.	Policy on prevention of SEAH <sup>94</sup>
	Define the requirements to be included in the bidding documents for a Code of Conduct and policy to combat SEAH.	Procurement.	IA	<ul style="list-style-type: none"> <li>• UNDP Policy on prevention of SEAH</li> <li>• UNDP Nepal Action Plan SEAH<sup>95</sup></li> <li>• UNDP Guidance note on Assessing and monitoring SEA and SH capacities of implementing partners and responsible parties<sup>96</sup></li> </ul>
There is a risk that potential vendors' code of conduct, policy and capacity in/of SEAH is not in place.	Evaluate the contractor's SEAH Accountability and Response Framework in the ESMP and confirm prior to finalizing the contract the contractor's ability to meet the project's SEAH prevention and response requirements.	Procurement.	IA	<ul style="list-style-type: none"> <li>• Review by UNDP</li> <li>• UNDP Guidance note on Assessing and monitoring SEA and SH capacities of implementing partners and responsible parties<sup>97</sup></li> </ul>
There is a risk that the ESMP may not have appropriate mitigation actions and measures.	Review ESMP to verify that appropriate mitigation actions are included	Implementation	IA	<ul style="list-style-type: none"> <li>• Review by UNDP</li> <li>• Review by GCF</li> </ul>

<sup>94</sup> UNDP 2018 Harassment, Sexual Harassment, Discrimination, and Abuse of Authority, and the [Secretary-General Bulletin ST/SGB/2003/13: Special Measures for Protection from Sexual Exploitation and Sexual Abuse](#).

<sup>95</sup> UNDP Nepal 2018 Action Plan to Prevent Sexual Harassment in the Workplace and Sexual Exploitation and Abuse

<sup>96</sup> UNDP Guidance note on Assessing and monitoring SEA and SH capacities of implementing partners and responsible parties

<sup>97</sup> UNDP Guidance note on Assessing and monitoring SEA and SH capacities of implementing partners and responsible parties

There is a risk that the complaints and grievances particularly those related SEAH and GBV may not be addressed or handled properly and in timely manner.	<p>Review that the GRM receives and processes complaints in a timely manner referring to an established mechanism to review and address the complaints.</p> <p>Escalate to the appropriate mechanism as soon as the case is registered.</p> <p>Organize sessions on the importance of the confidentiality and evidence of the case and on the mechanism where to report.</p>	During project implementation		<ul style="list-style-type: none"> <li>• Ongoing reporting</li> <li>• Monitoring of complaints and the action taken.</li> <li>• Report of the sessions conducted on SEAH with emphasis on confidentiality and importance of evidence.</li> </ul>
There is a risk that it may be perceived that hired or contracted UNDP personnel, contractors, consultants, vendors, and organizations are not held accountable.	<p>Codes of Conduct signed and understood 1) Ensure requirements in CoCs are clearly understood by those signing.</p> <ul style="list-style-type: none"> <li>• Have CoCs signed by all those with a physical presence at the project site.</li> <li>• Train project staff/personnel on the behavior obligations under the CoCs.</li> <li>• Disseminate CoCs (including visual illustrations) and discuss with employees and local communities.</li> <li>• Create an appropriate Accountability and Response Framework.</li> </ul>	Initiated prior to contractor mobilization and continued during implementation.	Contractor, Consultant, IA.	<ul style="list-style-type: none"> <li>• Review of SEA/SH risks during project supervision (e.g., Mid-term Review) to assess any changes in risk with particular emphasis on accountability.</li> <li>• Supervising Engineer reporting that CoCs are signed and that workers have been trained and understand their obligations.</li> <li>• Monitoring of GRM for SEA/SH complaints.</li> <li>• Discussion at public consultations.</li> <li>• Monitoring of the effective implementation of the accountability and response framework.</li> <li>• UNDP Guidance note on Assessing and monitoring SEA and SH capacities of implementing partners and responsible parties<sup>98</sup></li> </ul>
There is a risk that GBV/SEAH/PSEA may be misunderstood or misused by project workers or the community, resulting in confusion or	<p>Develop Training Materials/key messages for project workers sensitization, community awareness and for sensitization targeting Project management and Contractor management</p> <p>Training materials to be provided in Nepali language/and effort to be made in local</p>	At the start of the project implementation		<ul style="list-style-type: none"> <li>• Confirm that training and communication materials</li> </ul>

<sup>98</sup> UNDP Guidance note on Assessing and monitoring SEA and SH capacities of implementing partners and responsible parties

unintended consequences.	<p>language to and should include at least the following topics:</p> <ul style="list-style-type: none"> <li>• Definition of GBV, SEAH/PSEA</li> </ul> <p>Where/or whom to report if case of GBV, SEAH and PSEA and where to go for further information in case of confusion.</p> <p>What is prohibited action, importance of the confidentiality, evidence, reporting mechanism and accountability mechanisms</p> <ul style="list-style-type: none"> <li>• Roles and responsibilities of project stakeholders</li> <li>• Project staff Code of Conduct (CoC) Case (PSEA/SEAH/GBV) reporting mechanism, accountability structures, and referral procedures within agencies and for community members to report cases related to project staff; and</li> <li>• Services available for survivors of GBV and SEAH.</li> </ul>			developed, and strategies developed ahead of resource mobilization to the field.
There is a risk that project workers and local community may not be aware of SEA/SH/PSEA.	Have project workers and local community undergo training on SEA/SH/PSEA.	Implementation	IA, Contractors, Consultants	<ul style="list-style-type: none"> <li>• After engagement of new contractors and/or commencing work in a new community</li> <li>• Ongoing reporting</li> <li>• MTR</li> </ul>
There is a risk that adequate monitoring and evaluation is not conducted thoroughly or regularly, hence SEA/SH/PSEA events may go unnoticed, leading to ineffective prevention and response measures.	Undertake regular M&E of progress on SEA/SH/PSEA prevention and response activities, including reassessment of risks as appropriate.	Implementation	IA, Contractors, Consultants	<ul style="list-style-type: none"> <li>• Monitoring of GRM—standing agenda item at PMU meetings.</li> <li>• Ongoing reporting—quarterly reports + APR</li> </ul>

There is a risk that inadequate implementation of safety measures and the local communities and Indigenous Peoples including other marginalized communities are exposed to SEAH/PSEA due to poor infrastructures.	<p>Implement appropriate project-level activities to reduce SEAH/PSEA risks prior to civil works commencing such as:</p> <ul style="list-style-type: none"> <li>• Have separate, safe and easily accessible facilities for women and men working on the site. Locker rooms and/or latrines should be in separate areas, well-lit and include the ability to be locked from the inside.</li> <li>• Visibly display signs around the project site (if applicable) that signal to workers and the community that the project site is an area where SEASH/PSEA is prohibited.</li> <li>• As appropriate, ensure public spaces around the project grounds are well-lit.</li> </ul>	Prior to works commencing	Contractor (implementation)  Supervising engineer (supervising / enforcing contract)	<ul style="list-style-type: none"> <li>• Ongoing reporting and reviews during implementation support missions (audits to be undertaken during missions)</li> <li>• Mission reports</li> </ul>
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224. The UNDP SES Policy integrates Gender-Based-Violence, and concerns about GBV were raised during the consultations, therefore, the ESIA will need to specifically investigate gender issues and GBV/SEAH risks and if necessary, update the GAP to integrate any additional measures necessary to address the risk.

## 7 STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION

### 7.1 PUBLIC CONSULTATION AND ENVIRONMENTAL AND SOCIAL DISCLOSURE

225. During the development of the project there were discussions with a wide range of stakeholders including relevant government departments, industry groups, NGOs, representatives of indigenous peoples, and individual community members. Consultation has been ongoing since 2018, with the most recent round of consultation occurring in January 2024. A list of stakeholder groups consulted and timing is contained in Annexure 1.. Full details of consultations are contained in a separate Stakeholder Engagement Report.

A Stakeholder Engagement Plan has been prepared as part of this ESMF (

226. Table 7-1). The SEP includes public consultation as well as engagement with directly affected stakeholders. The SEP also notes the inclusion of indigenous peoples and is therefore linked to the IPPF.

227. The UNDP and GoN will develop and release updates on the project on a regular basis to provide interested stakeholders with information on project status. Updates may be via a range of media eg print, radio, social media or formal reports. A publicized telephone number will be maintained throughout the project to serve as a point of contact for enquiries, concern, complaints and/or grievances. All enquiries, concern, complaints and/or grievances will be recorded on a register and the appropriate manager will be informed. All material must be published in English and Nepali as appropriate.

228. Where there is a community issue raised, the following information will be recorded:

- time, date and nature of enquiry, concern, complaints and/or grievances
- type of communication (e.g. telephone, letter, personal contact)
- name, contact address and contact number
- response and investigation undertaken because of the enquiry, concern, complaint and/or grievance



- actions taken and name of the person taking action.

229. Some enquiries, concerns, complaints and/or grievances may require an extended period to be addressed. The complainant(s) will be kept informed of progress towards rectifying the concern. All enquiries, concerns, complaints and/or grievances will be investigated, and a response given to the complainant in a timely manner. A grievance redress mechanism (Section 7.2) has been included in the ESMF to address any complaints that may not be able to be resolved quickly.
230. Nominated PMU/contractor staff will be responsible for undertaking a review of all enquiries, concern, complaints and/or grievances and ensuring progress toward resolution of each matter.

### 7.1.1 Disclosure

231. Disclosure of relevant project information helps stakeholders effectively participate. The UNDP will disclose information in a timely manner, that is accessible and culturally appropriate, placing due attention to the specific needs of community groups that may be affected by project implementation (such as literacy, gender, differences in language or accessibility of technical information or connectivity).
232. UNDP has a Transparency Portal to publicly disclose projects' documentation related to environmental and social safeguards (eg environmental and social analyses, ESIA, ESMFs and ESMPs, indigenous peoples and social inclusion plans and other relevant documents. The website is: <https://open.undp.org/>
233. To meet UNDP disclosure requirements, the ESIA and ESMPs will be made available at least 60 days prior to implementation of activities that could cause impacts. The documents will be disclosed in English and the local language via electronic links on both UNDPs and GCF's website and in locations convenient to affected peoples during implementation.

#### 7.1.1.1 GCF Disclosure Requirements

234. The GCF Information Disclosure Policy prescribes specific schedules and methods of disclosure for certain types of information.
235. For Category B projects environmental and social safeguards reports from Accredited Entities (AE) must be disclosed 30 days prior to the GCF or AE Board Meeting date (whichever is earlier). (This will be met by UNDPs more rigorous requirement noted above). Disclosure is to be on the AE website / Locations convenient to affected peoples / Posted on GCF website together with funding proposal.
236. Further information on GCFs disclosure requirements can be found at: <https://www.greenclimate.fund/about/disclosure>

## Annex VI (b) – Environmental and Social Management Framework

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Table 7-1 Stakeholder Engagement Plan

Outputs	Activities	Responsible Stakeholders				How (Stakeholder engagement)
		Lead	Activities	Supportive	Activities	
1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.	1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.	DHM	Prepare SOP Conduct training on Remote Sensing & GIS Conduct detailed geophysical investigation Establishment of real-time data acquisition system Data analysis and Information dissemination.	NDRRMA DOFSC UNDP-PSCU Local Government Local NGOs Community Organizations	Participate in the training. Coordination and Collaboration, Knowledge base generation at local level.	<ul style="list-style-type: none"> <li>• Training Programs</li> <li>• Workshops</li> <li>• Regular community meetings and consultations</li> <li>• Promotions of project information and communication materials</li> <li>• Newsletters</li> <li>• Pamphlet</li> <li>• TV and radio news and program</li> <li>• Distributions of Information, Education and Communication (IEC) materials</li> </ul>
	1.2. Develop policy and financial mechanisms for sustainable GLOF and flood risk information services.	DHM	Data acquisition and communication system development Data analysis and risk knowledge generation and sharing;	DNPWC Private Institutions Tourism Board UNDP-PSCU Local government Community Organizations;	Facilitate the activities Coordination and Collaboration Information sharing Implementation of co-financing activities	<ul style="list-style-type: none"> <li>• Workshops</li> <li>• MOU between the potential beneficiaries for GLOF and Flood risk services</li> <li>• Training (data collection and management)</li> <li>• Information platform</li> </ul>
2. Improved hazard monitoring and the generation and dissemination of early warnings to local communities and	2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of	DHM	Various types of station installations Training Research and Development	DNPWC NDRRMA Local Gov. Provincial Gov.	Facilitate the activities Coordination and Collaboration Fund allocation for DRR	<ul style="list-style-type: none"> <li>• Training and capacity building program</li> <li>• Site selection for monitoring networks</li> </ul>

## Annex VI (b) – Environmental and Social Management Framework

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important economic sectors.	DHM for the monitoring of climate hazard and risk.		Field data integration in DHM existing system	UNDP-PSCU	Information sharing Partnership	<ul style="list-style-type: none"> <li>Own the stations for operation and security</li> </ul>
	2.2. Improve early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards.	DHM	Real-time data acquisition Data analysis and Risk Assessment Information communication and Dissemination	NDRRMA UNDP-PSCU	System Linkages between DHM and NDRRMA	<ul style="list-style-type: none"> <li>Training</li> <li>Publications</li> <li>Brochures/pamphlets</li> <li>Workshops</li> </ul>
		NDRRMA	Awareness creation to the community people Capacity Building at various levels EWS communication and dissemination Coordination with Local Gov. Establishment of EOCs	DHM Provincial Gov. Local Gov. Community People Private Institutions IP networks UNDP-PSCU	Coordination and Collaboration Fund Allocation from Government Investment from Private Institutions Community ownership	<ul style="list-style-type: none"> <li>Community consultation for local knowledge on hazard mapping and monitoring</li> <li>Emergency Drills</li> <li>Radio program</li> <li>Pamphlet</li> <li>Safety route identification in the field.</li> <li>Billboards &amp;/or public notices</li> </ul>
3. GLOF and flash flood risk and impact reduction measures implemented in priority glacial lake watersheds.	3.1. Lower the levels of four of the highest risk glacial lakes.	DHM	Detailed Engineering Design Bidding preparation Selection of Bidders Monitoring and Supervision Contract closing Operation and Maintenance;	DNPWC Local Gov. UNDP-PSCU Local Community IP Networks	Facilitate and provide permission for lake lowering activities if the sites are in National Parks and Conservation Areas Update NP Management Plan addressing the Climate Risks and permit works to be undertaken Provide support from Local Gov.	<ul style="list-style-type: none"> <li>Sharing the detailed plan of lake lowering, safety measure</li> <li>Regular consultative meeting and workshops on the sharing work progress of lake lowering</li> <li>Disclosure of safeguard documents</li> <li>Field Monitoring and Supervision</li> </ul>

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						<ul style="list-style-type: none"> <li>• Training of operation personnel</li> <li>• Management Plans available to public</li> <li>• Press releases/news updates to keep public abreast of progress</li> </ul>
	3.2. Install check dams and other infrastructure for the diversion of GLOF and flash flood flow.	DoFSC	<p>Detailed Survey and Cost Estimation</p> <p>Community Consultation</p> <p>Use of local materials</p>	<p>MoFE</p> <p>DNPWC</p> <p>Local Gov.</p> <p>Local Communities</p> <p>Provincial Gov.</p> <p>IP</p> <p>Local NGOs</p> <p>Koshi Basin Management Centre</p> <p>UNDP-PSCU</p>	<p>Monitoring and quality assurance</p> <p>Facilitate if the site is in National Parks and Conservation areas</p> <p>Selection of best approach of construction modality</p> <p>Field Monitoring;</p>	<ul style="list-style-type: none"> <li>• Priority categorization with Community Consultation</li> <li>• Wider consultation including local government</li> <li>• Engagement with the construction works</li> <li>• Field monitoring</li> <li>• O&amp;M training</li> </ul>
	3.3. Implement eco-disaster risk reduction and EbA interventions to reduce the impact of GLOFs and flash floods.	DOFSC	<p>Detailed Survey and Cost Estimation</p> <p>Community Consultation</p> <p>Use of local materials; Construction works</p> <p>Monitoring</p>	<p>MoFE; DNPWC</p> <p>Local Gov.</p> <p>Local Communities</p> <p>Provincial Gov.; IP</p> <p>Local NGOs; Koshi Basin Management Centre</p> <p>UNDP-PSCU</p>	<p>Monitoring and quality assurance</p> <p>Facilitate if the site is in National Parks and Conservation areas</p> <p>Supervision of the construction works</p> <p>Field Monitoring</p>	<ul style="list-style-type: none"> <li>• Stakeholder consultation and meetings for activities selection</li> <li>• Engagement with suppliers of materials and labour force</li> <li>• Engagement with the construction workers,</li> <li>• Field Monitoring</li> <li>• O&amp;M training</li> </ul>

237. To ensure the widest dissemination and disclosure of project information, including any details related to applicable environmental and social safeguards, local and accessible disclosure tools including audiovisual materials such as flyers, brochures, videos, and community radio broadcasts will be utilized in addition to other tools. Furthermore, particular attention will be paid to women, indigenous peoples, marginalized minority groups (including Dalits), illiterate or technologically illiterate people, and people with hearing or visual disabilities, people with limited or no access to internet and other groups with special needs. The dissemination of information among these groups will be carried out with the project counterparts and local actors such as municipalities, producers' associations, indigenous federations, organizations representing marginalized minority groups, women's organizations, government and other regional actors.

### 7.2 GRIEVANCE REDRESS MECHANISM

238. A grievance mechanism has been devised to acknowledge and address any negative impacts of complaints that arise because of the project. The GRM provides a single mechanism that is open to all to manage all grievances, ie project stakeholders, NGOs/CNOs, workers, team members and government.

239. Any grievances should be analyzed and mitigated as quickly as possible to avoid any tensions or conflicts. The grievance mechanism proposed here is cost effective as it is integrated into the institutional mechanism of the project.

240. The objectives of the grievance redress mechanism are to:

- Provide affected people an avenue through which they can voice their concerns and dissatisfaction
- Create a platform in which stakeholders and community members can freely raise concerns and complaints to be effectively addressed
- Demonstrate to project stakeholders and communities that they play an important role in project design and implementation
- Follow up and report on efforts to take corrective action.

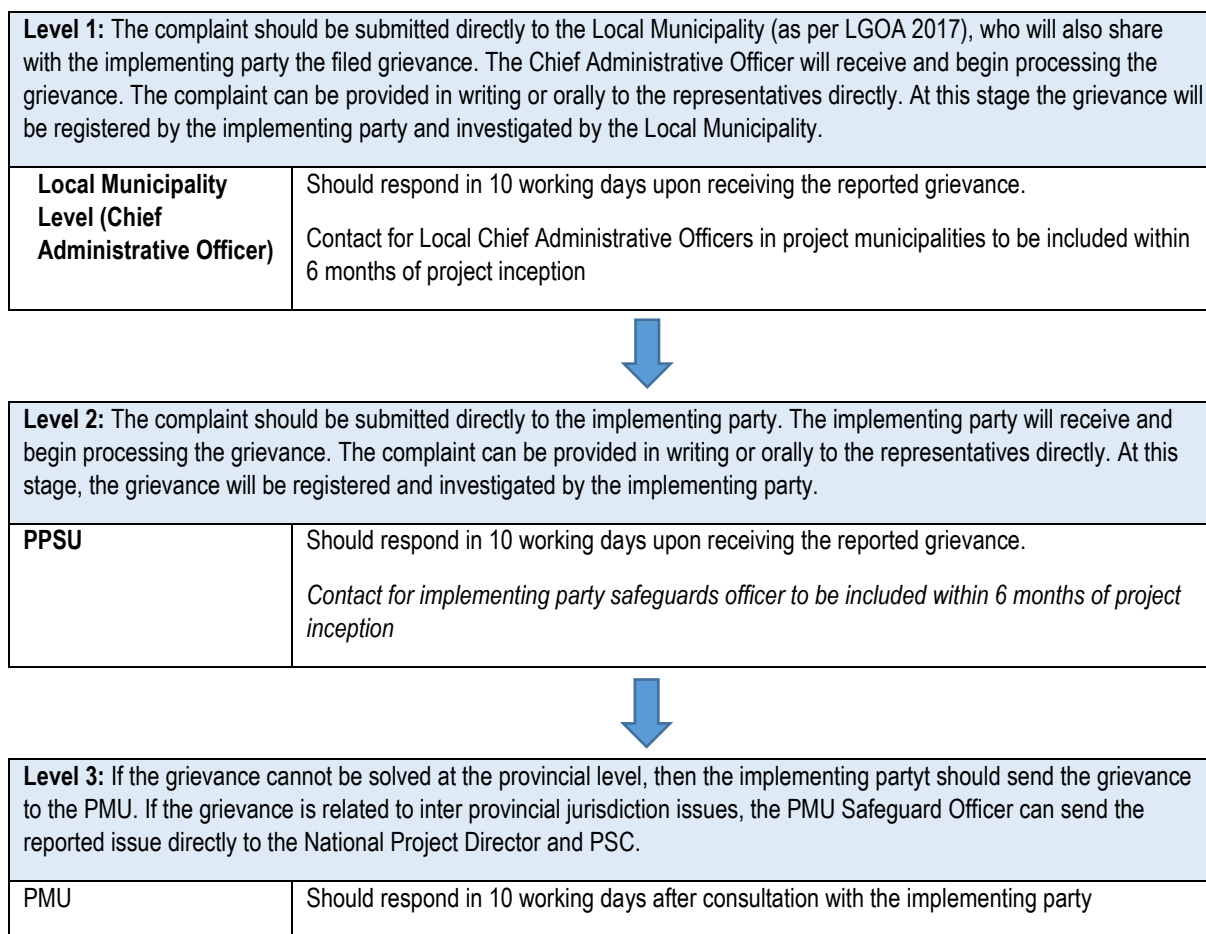
Table 7-2 Overview of grievance review procedure

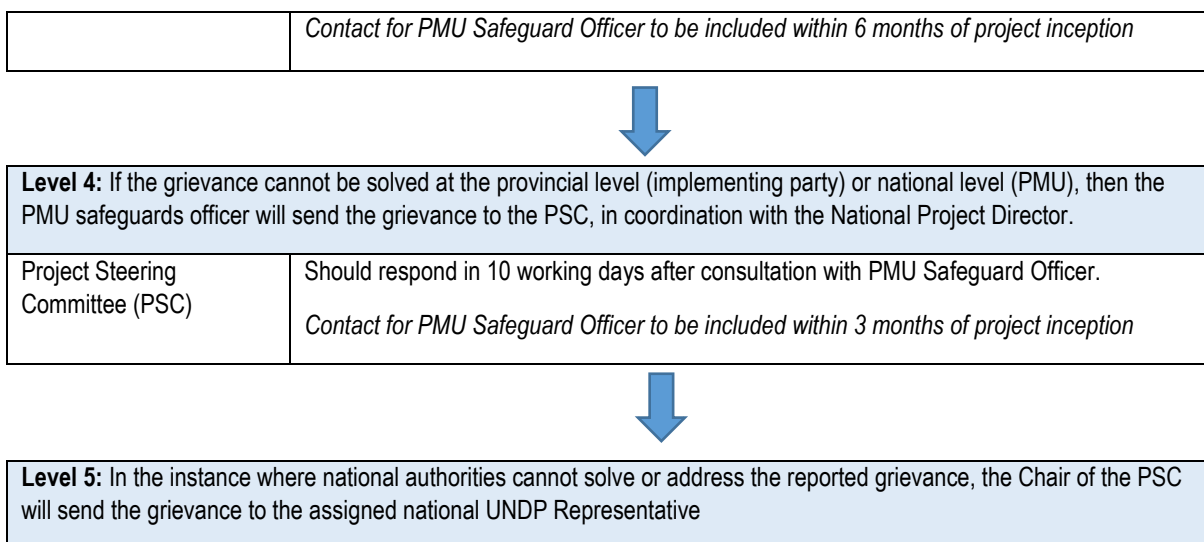
Steps	Procedures
1. Receive and register	Community organizations, households, individuals, or other stakeholders submit their grievances to the PMU safeguard officer and supporting officers within implementing units.  Safeguard Officers will receive grievances or feedback through telephone/SMS, email, feedback/complaint box or other written or oral formats.
2. Acknowledge, screen, assess and assign	PMU-M&R specialist will screen each grievance to ensure eligibility and either will assign staff to assess and investigate the grievance or forwards the grievance to higher institutional levels if too complicated to be addressed at the respective level.  Officers responsible for the investigation and addressing the grievance prepares and presents report on grievance with potential resolution options
3. Respond and address	PMU-M&R specialist proposes options to address the grievance to the complainant and any other related parties to reach an agreement
4. Implement and monitor	PMU-M&R specialist requests to implement the agreed upon redress option and, along with input from other PMU officers, assigns a relevant officer to monitor the progress and effectiveness of implementation
5. Report	PMU M&R specialist prepares a report, based on a standardized template, on the status of all grievances. This report is then submitted to the National Project Director (NPD) and the PMU's Safeguard Officer.  The report will be available on the official website for public access



### 7.2.1 Grievance Redress Mechanism Structure

241. The GRM has been designed to address any complaints or grievances to the project. All complainants shall be treated respectfully, politely and with sensitivity, this includes specific procedures for GBV/SEAH (eg confidential reporting with safe and ethical documenting of SEAH cases).
242. The GRM will be communicated to stakeholders through a range of channels, including UNDPs website, social media, radio, project information packages/newsletters, at community meetings and consultations, village notice boards and/or pamphlets.
243. The proposed structure has grievances first flow through an internal national process, where most issues are expected to be addressed. Within this internal structure, the grievance will first be filed to the local municipality (as per the LGOA 2017), who will also share the grievance report with the implementing units. The Chief Administrative Officer will process the grievance and, if it is not possible to solve it, will transfer the grievance to the PMU. If it is not possible to address the grievance within the local municipality/implementing party, PMU or PSC level, the grievance will be transferred to the UNDP Resident Representative. When considered necessary, the RR can further transfer the issue to the UNDP Regional Representative.
244. If the complaint relates to GBV/SEAH, the Chief Administrative Officer will notify a nominated staff focal point who are informed of all GBV services/referral focal points for their community and how to access them. The staff focal point will help reduce the risk of exposure of GBV survivors and reduce undermining confidence. The SEAH focal point will assist SEAH survivors by referring them to GBV service provider/s for support immediately after receiving a complaint directly from the survivor. Information in the GRM will remain confidential – for SEAH complaints, the GRM will serve primarily to: a) refer complainants to the GBV service provider; and b) record resolution of the complaint.
245. The following flow chart shows how the GRM would operate.





### 7.2.2 External Resolution Mechanisms

246. The Project Grievance Redress Mechanism does not replace or exclude other existing avenues for complaint resolution.

247. All complainants have the right to use the judicial system of Nepal (ie courts) at any time to seek resolution.

248. Two additional independent grievance mechanisms are also available to complainants:

- UNDP Stakeholder Response Mechanism - [www.undp.org/secu-srm](http://www.undp.org/secu-srm)
- GCF Independent Redress Mechanism - <https://irm.greenclimate.fund>

### 7.2.3 Informal and Customary Grievance Review

249. Customary practices of different community, ethnic and religious groups to manage conflicts will also be integrated into the formal grievance mechanism. In many instances grievance cases have been addressed in an informal manner by local communities under the direction of community or traditional leaders. The M&R specialist will consider the opinions or recommendations of leaders from any informal redress mechanisms before making any decisions.

### 7.2.4 Resolution

250. Once a grievance has been addressed and the party that filed the grievance has accepted the solution, an agreement should be signed by all parties involved. Records of all grievances made and addressed should be preserved to ensure continued compliance and a transparent grievance review mechanism.

## 8 MONITORING AND EVALUATION ARRANGEMENTS

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251. The effectiveness of the ESMF is to be evaluated every six months to monitor the implementation of the ESMF and adoption of specific social and environmental management plans, including parameters to be measured and arrangements for stakeholder participation.
252. The ESMF document is to also be reviewed every six months by the PMU. The objective of the review is to update the document to reflect knowledge gained during project delivery and to reflect new knowledge and changed community standards (values).
253. The ESMF will be reviewed, and amendments will be made in the event of any of the following:
- New or previously unidentified environmental risks are identified;
  - Information from the project monitoring and surveillance methods indicate that current control measures require amendment to be effective;
  - There are changes to environmental legislation that are relevant to the project;
  - There is a request made by a relevant regulatory authority.
254. Results of reviews and evaluations will be provided to the PMU and incorporated into Annual Progress Reports.
255. External third-party review will be undertaken as part of the mid-term project review.

## 9 ACTION PLAN AND BUDGET

### 9.1 IMPLEMENTATION ACTION PLAN

256. Following approval of the project funding, a series of actions related to safeguards will be initiated, including the following key actions:

- Engagement of safeguards team
- Inception workshop – Safeguards presentation
- Operationalise SEP and GRM
- Operationalise GAP
- Initiate IPPF actions – consultation with IPs, assess need for FPIC as activities designed (detail). Commence preparation of IPPs (if required)
- Screen detailed activities and identify any environmental and social assessment needs
- Undertake required impact assessments (including detailed baseline)
- Review and update ESMF as required
- Develop ESIA/ESMPs
- Develop Land Acquisition Plan (as part of ESMP) – LAP will describe process for identifying/confirming land tenure, and mechanisms for obtaining legal right to use land, both public, private and communal (eg Gethi). No compulsory land acquisition will be permitted
- Implement ESMPs as part of project execution
- Monitoring and reporting

### 9.2 BUDGET

257. All costs related to the ESMF implementation have been incorporated into the overall budget for the project. A budget estimate has been prepared for the implementation of the ESMF (Table 9-1).

Table 9-1 ESMF budget estimate

Item		Cost
Staff allowance	Safeguards Officer	\$190,524
	Gender and youth specialist	\$190,524
	IP specialist/s	\$63,000
	M&E specialist/s	\$190,524
Plan Preparation	ESMP Preparation (3 ESMPs) - inclusive of the cost required for ESIA, biodiversity assessment and BAP	\$45,000
	LAP	\$5,000
	IPPs preparation	\$150,000
Implementation	Stakeholder Engagement and IPP implementation	\$180,000
	General ESMF Expenses	\$20,000
	Water Quality Monitoring (including purchase of WQ instrument)	\$50,000
	Erosion, Drainage and Sediment Controls	\$100,000
	Grievance Redress Mechanism	\$50,000
	ESMF/ESMP updates and auditing	\$50,000
<b>Total</b>		<b>\$1,284, 572</b>

## APPENDIX ONE: SUMMARY OF STAKEHOLDER CONSULTATION DURING PROJECT FORMULATION (2018 TO 2022)

Table A1 summarises consultations with communities/individuals, government, CDOs/lps, and private sector organisations during the formulation of the project. Based on the Stakeholders Consultation Report, in general 40%-80% of participants were indigenous peoples. Disaggregated data will be collected during inception/ before implementation as part of the implementation of the IPPF.

The consultations were carried out at different stages of project development and informed the design of the interventions.

The consultation agenda over the period were:

- a) Issues and challenges faced by the community due to changing climate
- b) Ongoing and planned initiatives
- c) Priority actions that need to be undertaken in the communities and roles of the communities/ CSOs / Local Government
- d) Roles of various Stakeholders at all levels
- e) Components / Outputs of the proposed project
- f) Social and Environmental safeguards- Proposed components – EWS, Lake Lowering and Downstream Flood Risk Reduction Measures
- g) Possible Collaboration and Co-financing for the proposed project

The inputs of various stakeholders have been used iteratively during the design of the project, for example the concerns of IPS are reflected in the IPPF and will be explored further and resolved more fully in the IPPs that will be prepared during implementation, local labour will be sought as much as possible (and a Labour Management Plan will be prepared), blasting will not be undertaken, religious and cultural ceremonies will be held as per the practice and IP and local requirements, public land will be used to avoid land acquisition. Expert inputs from flood specialists, dam break experts, ICIMOD, NGOs, ESS specialists, and government departments have all contributed to the design of the project.

Detailed records of the various consultations are contained within Annex 7a and 7b of the Funding Proposal.



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Table A1. Consultations undertaken during project formulation

Male	Female	IP	Dalits	Brahman/Chettri	Madhesi	Others	Total			
68%	32%	64.0%	3.7%	29.2%	2.7%	0.5%	100%			

Thematic Consultations	Date	Location	Male	Female	IP	Dalits	Brahman / Chettri	Madhesi	Others	Total
	6-Aug-19	Makalu Rural Municipality 5, PhyaKsingda besi	7	11	7	3	8	0	0	18
Consultations for Gender Assessment and Action plan	6-Aug-19	Makalu Rural Municipality-5, Saraswoti Tole	13	1	2	12	0	0	0	14
	6-Aug-19	Makalu Rural Municipality, Numbazar	6	6	8	2	2	0	0	12
	7-Aug-19	Khandbari Municipality-9, Samghuri, Tumlingtar	9	12	21	0	0	0	0	21
	7-Aug-19	Venus Hotel, Khandbari, Sankhuwasabha	12	3	11	1	3	0	0	15
	9-Aug-19	Agriculture Research Centre, Pakhribas, Dhankuta	7	1	1	0	6	1	0	8
	9-Aug-19	Pakhribas Municipality	9	3	7	0	5	0	0	12
	10-Aug-19	Hatuwagaadhi Rural Municipality-6, Bhojpur	7	17	23	1	0	0	0	24
	11-Aug-19	Koshi Rural Municipality ward no: 3	6	18	1	20	1	3	0	24
	1-Oct-19	Dhokaima Cafe - Yalamaya Kendra, Patan Dhoka	12	18	15	1	11	2	0	30
Consultation with Indigenous Peoples, CSO and Local Communities	9-Jan-18	Gorkha	29	5	13	3	17	1	0	34
	9-Jan-18	Dharche Rural Municipality (FGD 1)	4	8	12	0	0	0	0	12
	9-Jan-18	Dharche Rural Municipality (FGD 2)	7	5	11	1	0	0	0	12
	9-Jan-18	Dharche Rural Municipality (FGD 3)	7	1	5	0	3	0	0	8
	16-Jan-18	Hotel Landmark, Lakeside, Pokhara	37	18	55	0	0	0	0	55
	19-31 Jan 2018	Nasong-1, Manang	8	24	29	2	1	0	0	32
		Nasong-2, Manang	18	12	29	1	0	0	0	30
		Danda Kharche/Gauri Shankar 3, Dolakha	10	6	15	0	1	0	0	16
		Gumba Danda Gaurishankar 4, Dolakha	21	10	31	0	0	0	0	31

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		Gauri Shankar 3, Dolakha	9	4	5	0	8	0	0	13
		Gharphing 3 and 5 Mustang	22	9	30	1	0	0	0	31
		Gharphing 4, Mustang	17	13	30	0	0	0	0	30
		Bhotkhola 4, Sankhuwasabha	27	8	35	0	0	0	0	35
		Bhotkhola 5, Sankhuwasabha	31	2	33	0	0	0	0	33
		Thulung Dudhkosika-3, Solukhumbu	23	9	32	0	0	0	0	32
		Thulung Dudhkosika-4, Solukhumbu	16	5	18	0	3	9	0	21
		Dharche-3, Gorkha	8	16	24	0	0	0	0	24
		Chumubri-1 and 2, Gorkha	17	9	26	0	0	0	0	26
		Aisalukharka-4, Khotang	19	10	29	0	0	0	0	29
		Aisalukharka-5, Khotang	27	3	27	1	2	0	0	30
		Marsyandi-3, Khudi, Lamjung	1	15	14	1	1	0	0	16
		Marsyandi-4, Lamjung	21	14	32	1	2	0	0	35
		Phaktanlung-2, Taplejung	18	12	28	0	2	0	0	30
		Phaktanlung-6, Taplejung	7	10	17	0	0	0	0	17
		Zoom	4	5	7	0	2	0	0	9
	24-Jan-18	Khotang	1	0	1	0	0	0	0	1
	26-Jan-18	Consultation at Sankhuwasabha	48	8	24	1	28	3	0	56
	26-Jan-18	Solududh Kunda Municipality	5	1	5	0	1	0	0	6
	27-Jan-18	Khandbari Bazar, Bhotkhola	4	0	4	0	0	0	0	4
	27-Jan-18	Makalu Rural Municipality	16	5	18	2	2	0	0	21
	27-Jan-18	KII at Sankhuwasabha	1	0	1	0	0	0	0	1
	27-Jan-18	Kalinchowk Rural Municipality	8	0	0	0	8	0	0	8
	28-Jan-18	Dudhkoshi Rural Municipality	9	3	6	0	6	0	0	12
	28-Jan-18	Charikot, Bhimeswor Municipality	8	4	1	0	11	0	0	12

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	28-Jan-18	Solukhumbu	7	6	12	0	1	0	0	13
	29-Jan-18	Sotang Rural Municipality (FGD 1)	10	0	3	0	7	0	0	10
	29-Jan-18	Sotang Rural Municipality (FGD 2)	0	10	1	0	9	0	0	10
	29-Jan-18	Dolakha	16	1	5	0	12	0	0	17
	30-Jan-18	Thulung Dodhkoshi Rural Municipality	6	0	4	0	2	0	0	6
	30-Jan-18	Mahakulung Rural Municipality (FGD 1)	9	1	7	0	2	1	0	10
	30-Jan-18	Mahakulung Rural Municipality (FGD 2)	6	1	6	0	1	0	0	7
	30-Jan-18	Dudhkoshi Rural Municipality	2	1	3	0	0	0	0	3
	30-Jan-18	Taplejung Dovan	14	2	8	0	7	1	0	16
	30-Jan-18	KII at Taplejung	1	0	0	0	1	0	0	1
	30-Jan-18	Makalu Rural Municipality	7	4	11	0	0	0	0	11
	30-Jan-18	Makalu Rural Municipality	6	1	4	0	2	1	0	7
	13-Feb-18	Marsyangdi Rural Municipality (FGD 1)	16	0	3	1	12	0	0	16
	13-Feb-18	Marsyangdi Rural Municipality (FGD 2)	7	1	4	0	4	0	0	8
	14-Feb-18	Lamjung	18	2	6	0	12	1	0	20
	14-Feb-18	Besisahar Municipality	6	2	1	0	7	0	0	8
	15-Feb-18	Manang	10	0	1	1	6	1	0	10
	15-Feb-18	Mustang	17	2	2	1	13	2	0	19
	23-Feb-18	Jumla	18	0	3	0	12	1	0	18
	24-Feb-18	Nasong Rural Municipality	12	1	7	1	4	1	0	13
	25-Feb-18	Chhayanath Rural Municipality, Mugu District	21	2	6	0	11	3	0	23
	29-Jan-18	Bhimeshwar Municipality, Bigu & Gaurishankar Rural Municipality	7	0						7
	3-Aug-21	Virtual with FECOFUN	1	4	2	0	3	0	0	5
	24-Aug-23	NIWF meeting Hall	6	19	22	0	3	0	0	25

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Second Round Discussions with Indigenous People Groups and Communities	1-Sep-23	NEFIN Meeting Hall	9	3	9	1	2	0	0	12
Re-Engagement Consultations with Indigenous Peoples	9-Jan-24	Khandbari, Sankhuwasabha	33	16	46	0	3	0	0	49
	11-Jan-24	Salleri, Solukhumbu	25	18	39	2	2	0	0	43
	20-Jan-24	Besishahar, Lamjung	30	15	41	0	4	0	0	45
	26-Jan-24	NEFIN Office, Kathmandu	24	10	32	0	2	0	0	34
Consultations with Government of Nepal	8-Jul-21	Ministry of Forest and Environment (MoFE), Singhadurbar, Kathmandu	6	1	0	0	7	0	0	7
	8-Jul-21	Ministry of Energy, Water Resources, and Irrigation (MoEWRI), Singhadurbar, Kathmandu	6	0	0	0	6	0	0	6
	11-Jul-21	Project Office of Building a Resilient Churia Region Nepal (BRCRN), Babarmahal, Kathmandu	2	0	0	0	2	0	0	2
	11-Jul-21	DoFSC, Babarmahal, Kathmandu	2	0	0	0	2	0	0	2
	23-Jul-21	NDRRMA, Singhadurbar, Kathmandu	7	1	1	0	7	0	0	8
	2-Aug-21	DHM, Babarmahal, Kathmandu	13	0	4	0	9	0	0	13
	9-Aug-21	DoWRI, Jawalakhel, Lalitpur	6	0	0	0	6	0	0	6
	9-Aug-21	WECS, Singhadurbar, Kathmandu	6	0	0	0	6	0	0	6
	9-Aug-21	MoFAGA, Singha durbar, Kathmandu	5	0	0	0	5	0	0	5
	12-Aug-21	DNPWC, Babarmahal, Kathmandu	6	0	0	0	6	0	0	6
	16-Aug-21	MoALD, Singhadurbar, Kathmandu	6	0	0	0	6	0	0	6
	19-Aug-21	MoEWRI, Singhadurbar, Kathmandu	13	1	2	0	10	1	1	14
	25-Aug-21	DMG, Lainchour, Kathmandu	10	2	2	0	10	0	0	12
	29-Aug-21	Ministry of Finance, Singhadurbar, Kathmandu	7	1	1	0	7	0	0	8
	7-Sep-21	Virtual Meeting - Gandaki Province	3	1	0	0	4	0	0	4

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	23-Sep-21	Virtual Meeting - Province-1	6	0	1	0	5	0	0	6
Telephonic Consultation Meeting for preparation of environmental & social management framework (ESMP) and including IPs planning framework at local level	18-29 Dec 2021	Virtual	10	19	29	0	0	0	0	29
	16-Jun-22	Panchakhapan Municipality-Sankhuwasabha	2	1	1	0	2	0	0	3
	16-Jun-22	Sabhapokhari Rural Municipality-Sankhuwasabha	1	2	2	0	1	0	0	3
	17-Jun-22	Bhotkhola Rural Municipality-Sankhuwasabha	1	2	2	3	0	0	0	3
SES, Co-Financing, Project Components at Local Level	20-Jun-21	Khandbari Municipality - Sankhuwasabha	1	2	2	1	0	0	0	3
	27-Jun-22	Chainpur Municipality-Sankhuwasabha	1	2	1	1	1	1	0	3
	27-Jun-22	Mahalaxmi Municipality, Dhankuta	2	2	3	0	1	0	0	4
	1-Jul-22	Silichong Rural Municipality-Sankhuwasabha	1	3	2	1	1	0	0	4
	1-Jul-22	Dharmadevi Municipality-Sankhuwasabha	2	2	3	0	1	0	0	4
	1-Jul-22	Salpasilichho Rural Municipality-Bhojpur	3	1	1	0	2	1	0	4
	1-Jul-22	Shadananda Municipality-Bhojpur	2	2	4	0	0	0	0	4
	6-Jul-22	Bhojpur Municipality-Bhojpur	2	0	2	0	0	0	0	2
	8-Jul-22	Solududhakunda Municipality, Solukhumbu	2	3	5	0	0	0	0	5
	11-Jul-22	Arun Rural Municipality, Bhojpur	3	0	3	0	0	0	0	3
	24-Jul-22	Tyamkemaipunm Rural Municipality, Bhojpur	1	1	2	0	0	0	0	2
	26-Jul-22	Pakharibas Municipality, Dhankuta	3	0	3	0	0	0	0	3
	4-Oct-21	Khumbupasanglamhu Rural Municipality, Solukhumbu	2	1	3	0	0	0	0	3
	4-Oct-21	Sotang Rural Municipality, Solukhumbu	1	2	3	0	0	0	0	3
	17-Oct-21	Makalu Rural Municipality-Sankhuwasabha	1	2	3	0	0	0	0	3



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18-Oct-21	Mahakulung Rural Municipality, Solukhumbu	1	2	3	0	0	0	0	3
4-Nov-21	Mapya Dudhkoshi Rural Municipality, Solukhumbu	2	1	3	0	0	0	0	3
5-Nov-21	Chichila Rural Municipality-Sankhuwasabha	2	2	2	1	1	0	0	4
14-Nov-21	Thulung Dudhkoshi Rural Municipality, Solukhumbu	1	2	3	0	0	0	0	3
16-Jun-22	Panchakhapan Municipality-Sankhuwasabha	1	3	2	0	1	0	0	4
16-Jun-22	Sabhapokhari Rural Municipality-Sankhuwasabha	1	3	3	0	1	0	0	4
17-Jun-22	Bhotkhola Rural Municipality-Sankhuwasabha	0	4	4	0	0	0	0	4
27-Jun-22	Chainpur Municipality-Sankhuwasabha	1	1	0	0	2	0	0	2
27-Jun-22	Mahalaxmi Municipality, Dhankuta	1	2	2	0	1	0	0	3
1-Jul-22	Dharmadevi Municipality-Sankhuwasabha	1	1	0	0	2	0	0	2
1-Jul-22	Salpasilichho Rural Municipality-Bhojpur	1	3	4	0	0	0	0	4
6-Jul-22	Bhojpur Municipality-Bhojpur	1	2	3	0	0	0	0	3
6-Jul-22	Chisankhugadhi Rural Municipality, Okhaldhunga	1	4	5	0	0	0	0	5
6-Jul-22	Kepilasgadhi Rural Municipality, Khotang	2	1	2	0	1	0	0	3
7-Jul-22	Siddhicharan Municipality, Okhaldhunga	2	1	3	0	0	0	0	3
7-Jul-22	Manebhanjyang Rural Municipality, Okhaldhunga	1	3	4	0	0	0	0	4
7-Jul-22	Diktal Rupakot Majhuwagadhi Municipality, Khotang	1	3	3	0	1	0	0	4
8-Jul-22	Solududhakunda Municipality, Solukhumbu	1	2	3	0	0	0	0	3
11-Jul-22	Arun Rural Municipality, Bhojpur	1	2	2	0	1	0	0	3
12-Jul-22	Halesi Tuwachung Municipality, Khotang	1	2	1	0	2	0	0	3
24-Jul-22	Tyamkemaipunm Rural Municipality, Bhojpur	1	2	1	1	1	0	0	3
26-Jul-22	Pakharibas Municipality, Dhankuta	1	3	2	0	1	0	0	4
26-Jul-22	Rawabesi Rural Municipality, Khotang	1	2	2	0	1	0	0	3
1-Aug-22	Ainselukharka Rural Municipality, Khotang	1	3	2	0	1	0	0	4
10-Aug-22	Nechasalyan Rural Municipality, Solukhumbu	1	3	4	0	0	0	0	4

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		Ramprasad Rai Rural Municipality, Bhojpur	1	3	2	0	1	0	0	4
		Chhathar Jorpati Rural Municipality, Dhankuta	1	3	1	0	2	0	0	4
Wider Stakeholder Consultation	6-Dec-21	Hybrid (MOF & Virtual)	107	30	31	2	86	9	9	137
Consultation with Academia, Research Institutions/INGOs/IGOs and UN Agencies			10	1	6	0	5	0	0	11
Private sector and Others on-blending financing and on-granting mechanism	7 - 11 March 2022	NMB Bank Ltd, Salleri	2	0	1	0	1	0	0	2
		Global IME Bank Ltd., Salleri	1	1	1	0	1	0	0	2
		Nirdhan Uthhan Laghubitta Sanstha Branch office, Salleri	3	0	0	0	3	0	0	3
		Young Star Club, Dorpu Bazaar, Salleri	3	0	0	0	3	0	0	3
		Thulung Dudhkoshi RM Office	4	0	1	0	3	0	0	4
		Mahakulung RM Office	13	0	8	0	4	1	0	13
		Everest Bank Ltd. Branch office, Mahakulung	2	0	1	0	1	0	0	2
		Sotang RM Office	9	1	4	1	5	0	0	10
		Mapya Dudhkoshi RM Sunrise Hotel, Salleri	4	0	1	0	3	0	0	4
		Laxmi Bank Ltd. Branch office, Salleri	2	0	1	0	1	0	0	2
		Century Commercial Bank Ltd. Branch office, Salleri	2	0	0	0	2	0	0	2
		Others consulted	28	6	2	0	31	1	0	34
	6-Oct-21	Nepal Tourism Board (NTB) - Virtual	4	0	0	0	4	0	0	4
	20-Oct-21	Independent Power Producer Association of Nepal (IPPAN) Meeting Hall	5	0	0	0	5	0	0	5
	7-Feb-24	Independent Power Producer Association of Nepal (IPPAN) Meeting Hall	7	2	3	0	5	1	0	9
Stakeholder Consultations for early	9 March - 2 April 2021	Middle Marsyangdi Hydropower Project	21	8	13	3	8	5	1	29
		Mother's Group	0	23	22	1	0	0	0	23

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warning system and Hydro-met station		Marsyangdi Youth Club	16	4	20	0	0	0	0	20
		Nache	36	25	59	0	1	1	0	61
		Dharapani	7	3	3	1	5	1	0	10
		Rawabasi	12	1	3	2	8	0	0	13
		Rabuwa Bazar	16	0	13	0	3	0	0	16
		Lamidada	31	10	20	3	15	3	0	41
		Jayaramghat - Thakle	19	11	12	1	16	0	0	30
		Manebhanjyang	8	0	3	0	4	1	0	8
Technical Clearance Workshop on Protecting	26-27 September 2021	Club Himalaya, Nagarkot	18	3	8	0	11	2	0	21
Addressing Climate Risks Reduction in Khumbu Region	20-Feb-24	Hotel Himalaya, Lalitpur	30	7	21	0	14	2	0	37
<b>TOTAL</b>			<b>1528</b>	<b>708</b>	<b>1432</b>	<b>83</b>	<b>653</b>	<b>61</b>	<b>11</b>	<b>2236</b>
			<b>Male</b>	<b>Female</b>	<b>IP</b>	<b>Dalits</b>	<b>Brahman/Chettri</b>	<b>Madhesi</b>	<b>Others</b>	<b>Total</b>
			<b>68%</b>	<b>32%</b>	<b>64.0%</b>	<b>3.7%</b>	<b>29.2%</b>	<b>2.7%</b>	<b>0.5%</b>	

*\*Details consultation report with minutes in the Stakeholders' Consultation Report.*

## APPENDIX TWO: GUIDANCE FOR SUBMITTING A REQUEST TO THE SOCIAL AND ENVIRONMENTAL COMPLIANCE UNIT AND/OR THE STAKEHOLDER RESPONSE MECHANISM

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*Empowered lives.  
Resilient nations.*

### Guidance for Submitting a Request to the Social and Environmental Compliance Unit (SECU) and/or the Stakeholder Response Mechanism (SRM)

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#### **Purpose of this form**

- **If you use this form, please put your answers in bold writing to distinguish text**
- **The use of this form is recommended but not required. It can also serve as a guide when drafting a request.**

This form is intended to assist in:

- (1) Submitting a request when you believe UNDP is not complying with its social or environmental policies or commitments and you believe you are being harmed as a result. This request could initiate a 'compliance review', which is an independent investigation conducted by the Social and Environmental Compliance Unit (SECU), within UNDP's Office of Audit and Investigations, to determine if UNDP policies or commitments have been violated and to identify measures to address these violations. SECU would interact with you during the compliance review to determine the facts of the situation. You would be kept informed about the results of the compliance review.

and/or

- (2) Submitting a request for UNDP "Stakeholder Response" when you believe a UNDP project is having or may have an adverse social or environmental impact on you and you would like to initiate a process that brings together affected communities and other stakeholders (e.g., government representatives, UNDP, etc.) to jointly address your concerns. This Stakeholder Response process would be led by the UNDP Country Office or facilitated through UNDP headquarters. UNDP staff would communicate and interact with you as part of the response, both for fact-finding and for developing solutions. Other project stakeholders may also be involved if needed.

Please note that if you have not already made an effort to resolve your concern by communicating directly with the government representatives and UNDP staff responsible for this project, you should do so before making a request to UNDP's Stakeholder Response Mechanism.

**Confidentiality** If you choose the Compliance Review process, you may keep your identity confidential (known only to the Compliance Review team). If you choose the Stakeholder Response Mechanism, you can choose to keep your identity confidential during the initial eligibility screening and assessment of your case. If your request is eligible and the assessment indicates that a response is appropriate, UNDP staff will discuss the proposed response with you and will also discuss whether and how to maintain confidentiality of your identity.

### Guidance

When submitting a request please provide as much information as possible. If you accidentally email an incomplete form, or have additional information you would like to provide, simply send a follow-up email explaining any changes.

### Information about You

Are you...

1. A person affected by a UNDP-supported project?

Mark "X" next to the answer that applies to you:

Yes:

No:

2. An authorized representative of an affected person or group?

Mark "X" next to the answer that applies to you:

Yes:

No:

*If you are an authorized representative, please provide the names of all the people whom you are representing, and documentation of their authorization for you to act on their behalf, by attaching one or more files to this form.*

3. First name:
4. Last name:
5. Any other identifying information:
6. Mailing address:
7. Email address:
8. Telephone Number (with country code):
9. Your address/location:
10. Nearest city or town:
11. Any additional instructions on how to contact you:
12. Country:

### **What you are seeking from UNDP: Compliance Review and/or Stakeholder Response**

You have four options:

- Submit a request for a Compliance Review;
  - Submit a request for a Stakeholder Response;
  - Submit a request for both a Compliance Review and a Stakeholder Response;
  - State that you are unsure whether you would like Compliance Review or Stakeholder Response and that you desire both entities to review your case.
13. Are you concerned that UNDP's failure to meet a UNDP social and/or environmental policy or commitment is harming, or could harm, you or your community? Mark "X" next to the answer that applies to you: Yes: No:



14. Would you like your name(s) to remain confidential throughout the Compliance Review process?

Mark "X" next to the answer that applies to you:      Yes:              No:

If confidentiality is requested, please state why:

15. Would you like to work with other stakeholders, e.g., the government, UNDP, etc. to jointly resolve a concern about social or environmental impacts or risks you believe you are experiencing because of a UNDP project?

Mark "X" next to the answer that applies to you:      Yes:              No:

16. Would you like your name(s) to remain confidential during the initial assessment of your request for a response?

Mark "X" next to the answer that applies to you:      Yes:              No:

If confidentiality is requested, please state why:

17. Requests for Stakeholder Response will be handled through UNDP Country Offices unless you indicate that you would like your request to be handled through UNDP Headquarters. Would you like UNDP Headquarters to handle your request?

Mark "X" next to the answer that applies to you:      Yes:              No:

If you have indicated yes, please indicate why your request should be handled through UNDP Headquarters:

18. Are you seeking both Compliance Review and Stakeholder Response?

Mark "X" next to the answer that applies to you:      Yes:              No:

19. Are you unsure whether you would like to request a Compliance Review or a Stakeholder Response?

Mark "X" next to the answer that applies to you:      Yes:              No:

### Information about the UNDP Project you are concerned about, and the nature of your concern:

20. Which UNDP-supported project are you concerned about? (if known):

21. Project name (if known):

22. Please provide a short description of your concerns about the project. If you have concerns about UNDP's failure to comply with its social or environmental policies and commitments, and can identify these policies and commitments, please do (not required). Please describe, as well, the types of environmental and social impacts that may occur, or have occurred, as a result. If more space is required, please attach any documents. You may write in any language you choose

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23. Have you discussed your concerns with the government representatives and UNDP staff responsible for this project? Non-governmental organisations?

Mark "X" next to the answer that applies to you:      Yes:              No:

If you answered yes, please provide the name(s) of those you have discussed your concerns with

Name of Officials You have Already Contacted Regarding this Issue:

First Name	Last Name	Title/Affiliation	Estimated Date of Contact	Response from the Individual

24. Are there other individuals or groups that are adversely affected by the project?

Mark “X” next to the answer that applies to you: Yes: No:

25. Please provide the names and/or description of other individuals or groups that support the request:

First Name	Last Name	Title/Affiliation	Contact Information

Please attach to your email any documents you wish to send to SECU and/or the SRM. If all of your attachments do not fit in one email, please feel free to send multiple emails.

### Submission and Support

To submit your request, or if you need assistance please email: [project.concerns@undp.org](mailto:project.concerns@undp.org)

## APPENDIX THREE: INDIGENOUS PEOPLES PLANNING FRAMEWORK

### Introduction

In line with the relevant international legal framework, the UNDP Standard 6 on Indigenous Peoples, the following Indigenous Peoples Planning Framework has been developed to ensure that all due efforts will be made to respect, include, and promote issues important to Indigenous Peoples, Dalits and other excluded/marginalized groups during project implementation, including their right to Free, Prior and Informed Consent (FPIC).

The framework will constitute the basis for the engagement of Indigenous Peoples, Dalits, and other excluded/marginalized groups as project *stakeholders*, promote ongoing consultations and communication throughout the project's lifespan, develop a feedback and grievance mechanism, clarify monitoring and evaluation arrangements, promote measures to minimize and mitigate any potential adverse effects and ensure project activities are implemented in a culturally appropriate manner.

'Excluded' or marginalized groups in Nepal are defined as include those who have experienced inter-generational discrimination and have been systematically excluded due to their "*economic [situation], caste, ethnicity, gender, disability, sexual orientation, and geographical reasons*" (GESI Working Group 2017). This includes groups including women, poor people, Dalits, Adivasi/ Janajati, Madheshis, Muslims, people with disabilities, third gender and people living in remote areas. Initiatives in Nepal which are focused on social inclusion and support to marginalized communities therefore tend to include Dalits along with vulnerable indigenous groups.

### Baseline Information

In Nepal, indigenous peoples are popularly known as Adivasi or Janajati. The Act to Establish the Foundation for the Development of Indigenous Nationalities (2002) defines Indigenous Nationalities as "...ethnic groups or communities who have their own mother tongue and traditional customs, different cultural identity, distinct social structure, and written and oral history". While 59 indigenous nationalities are formally identified within this act, a technical committee established by the Government of Nepal in 2010 identified 81 Adivasi/ Janajati groups in Nepal. There are over 9.5 million indigenous peoples living in Nepal, representing around 35% of its population.

The Nepal Federation for Indigenous Nationalities (NEFIN) has categorized the indigenous nationalities of Nepal into four geographical regions (Mountain, Hills, Inner-Terai and Terai), and five categories of developmental status based on their level of socio-economic development (advanced, disadvantaged, marginalized, highly marginalized and endangered). Over half of Indigenous Nationalities of Nepal are considered marginalized or highly marginalized. Ten indigenous nationalities are considered endangered, of which 50% are in the hill region and the remaining 50% in the inner-Terai and Terai regions.

Although many indigenous groups have been able to control their traditional way of life in the mountain areas, in the Hills, Inner-Terai and Terai regions, indigenous peoples have been gradually losing control due to the cultural, economic and political influence of more dominant groups. The majority of indigenous peoples lost ownership and control of their ancestral lands by the 1960s due to land policies such as Birta (feudal rulers allocating land for patronage), Jagir (land given in lieu of salary) and the abolition of Kipat (communal/collective land ownership) land tenure systems. The establishment of national parks, wildlife reserves and other protected areas has also sometimes clashed with indigenous claims to lands, including forced relocation. As a result of these socio-economic and political factors, many marginalized indigenous communities are located in remote, marginal or hazard-prone areas.

Table A3-1 Classification of Indigenous Nationalities of Nepal based on ecological zones

Ecological Zone	Advanced	Disadvantaged	Marginalised	Highly marginalised	Endangered
<b>Mountain (18)</b>	Thakali	Bara Guanle, Byanshi, Chhairotan,	Bhote (Bhutia), Dolpo, Larke, Lhopa, Mugali,	Siya, Lhomo (Shingsawa), Thudam	

		Marpahali-Thakali, Sherpa, Tangbe, Tinguale	Topkegola, Walung		
<b>Hill (23)</b>	Newar	Chantyal, Gurung, Jhired, Limbu, Maga, Rai, Yakha, Hyalmo	Bhujel, Dura, Pahari, Phree, Sunuwar, Tamang	Baramu, Thami, Chepang	Bankariya, Hayu, Kushbadiya, Lepcha, Sural
<b>Inner Terai (8)</b>			Darai, Kumal	Bote, Danuwar, Majhi	Raji, Raute, Kusunde
<b>Terai (10)</b>			Dhimal, Gangai, Rajbanshi, Tajpuriya, Tharu	Dhanuk, Jhangad, Satar	Kisan, Meche

This, along with the heavy dependence of indigenous and marginalized communities on natural resources for livelihoods, makes indigenous, Dalit and excluded/marginalized groups disproportionately affected by climate change. Although climate effects are cross sectoral, rural livelihoods are most affected and become increasingly vulnerable as climate variations affect the natural resources base on which these livelihoods and cultures are dependent.

### *National policies and international commitments*

Historically indigenous peoples have often experienced cultural discrimination, economic exploitation, social exclusion and political oppression. The political consolidation of Nepal under a feudal regime throughout the 19th and 20th centuries discriminated against these groups, as did the Panchayat regime of the 1950s-80s.<sup>153</sup> The creation of national parks in the 1970s also displaced many indigenous peoples from their ancestral lands and led to loss of customary rights of indigenous peoples over land, forest and water resources.

Issues of social exclusion and discrimination came to the forefront after the 1990 democratic movement opened the floor for conversation regarding Nepal's Indigenous Peoples. The Constitution of 1990 and Interim Constitution of 2007 recognise the distinct cultures and rights of Indigenous Peoples. The Constitution of Nepal (2015) includes a Right to Equality stating that all citizens should be equal before the law, that they should not be denied equal protection and that nothing should bar the making of special provisions for the protection, empowerment or advancement of those lagging behind, including Indigenous Peoples. A sub-article dealing with social justice and inclusion exists and it supports the securing of rights to Indigenous Peoples to live with their respective identities, be included in decision making processes and have their traditions, culture and social practices preserved and maintained.

The first legislation specifically on Indigenous Peoples, The National Foundation for Development of Indigenous Nationalities Act was passed in 2002. The law established the National Foundation for Development of Indigenous Nationalities (NFDIN), an independent organization that works as the link between the Government and Indigenous Peoples with the mandate to implement programs that support the development of all Indigenous Peoples and to recommend to the government strategies to improve the social, economic and cultural development of Indigenous Peoples. This act replaced the previous National Committee for Development of Nationalities with NFDIN, which defines Indigenous Peoples (Adivasi/Janajati) and promotes the overall development of Indigenous Peoples, preservation and promotion of traditional knowledge, skill and technology, inclusion of IPs in decision processes and building of an equitable society.

Nepal has also ratified the International Convention on the Elimination of All Forms of Racial Discrimination in 1971 to secure the rights of Indigenous Peoples, Dalits and others who have suffered racial discrimination. The ratification of the International Labour Organization (ILO) Convention in 2007 further represents Nepal's commitments to address the needs of indigenous nationalities. In particular, the ILO Convention states that Indigenous Peoples have the right to self-determination and can freely determine their political, economic, social and cultural status and development. Although there have been many difficulties in the efficient implementation of these treaties and conventions, the ILO Office in Nepal has actively been engaging with the Nepali Government and Indigenous Peoples to support their implementation. Nepal has also made several other international commitments to non-discrimination, gender equality and social justice. These include, among others:

- Universal Declaration of Human Rights

- Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities
- Beijing Declaration and Platform for Action
- Durban Declaration and Programme of Action
- International Decades of the World's Indigenous People
- United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

### National Laws and Policies

- Constitution of Nepal (2015). The Constitution states that it is the responsibility of the state to make "special arrangements to ensure the rights of Adivasi Janajatis (indigenous ethnic groups) to lead a dignified life with their respective identities, ensuring their participate in decision making processes that concern them, and preserving and maintaining the traditional knowledge, skills, experience, culture and social practices of Adivasi Janajatis and local communities" (Article 51, j, 8).
- Nepal National Climate Change Policy (2019) makes clear mention of Indigenous Peoples, Women and other marginalised communities.
- Framework on Local Adaptation Plans of Action (LAPA) 2019 – requires vulnerable community assessments.
- Nepal Environment Policy 2019
- Environment Protection Act 2019
- Environment Protection Regulation 2020
- National DRR/ M Strategy Plan of Action 2018- 2030 and ( 7 provinces )
- DRR/M Act 2017
- Local Disaster and Climate Resilient Management Planning Guidelines
- Fifteenth Plan 18 (2019/2020-2023/2024)

### Consultation with Indigenous Peoples

As part of the project development, specific consultation with IP representatives from the project areas was undertaken by NEFIN. The activities undertaken and outcomes are detailed the report NEFIN (2018) "Indigenous Peoples Consultation to Understand Potential Glacial Lake Outbursts Flood Risks For Safeguarding Livelihood".

Total of five hundred ninety five people were consulted. The consultation was conducted with the representatives of 18 wards of 9 districts. Those districts are in 3 different provinces and in 2 different river basins namely Koshi and Gandaki. Communities within the defined rural municipalities were selected based on the concentration of population, accessibility, feasibility of conducting consultation in the given timeframe and the resources available. The research team collected data through Joint Consultation Workshop, Key Informant Interviews (KIIs), Timeline, Focus Group Discussions (FGDs) and Community Consultation Workshop in the communities of 9 districts.

## UNDP'S POLICY ON INDIGENOUS PEOPLES

UNDP has an established Social and Environment Standards with three overarching principles that apply to Human Rights, Gender Equality and Women's Empowerment, and Environmental Sustainability. There are seven project level standards, including Standard 6 on Indigenous Peoples. The applicability of Standard 6 is established during the SES process and applies to all projects that may affect human rights, natural resources, territories and traditional rights of IPs, regardless of

- whether the Project is located within or outside of the lands and territories inhabited by the indigenous peoples in question
- whether or not title is possessed by the affected indigenous peoples over the lands and territories in question, or
- whether the indigenous peoples are recognized as indigenous peoples by the country in question.

Table A3-2 summarises the requirements of UNDPs Standard 6.

UNDP will ensure that particular attention is paid to women and children of IP groups, most marginalised and vulnerable IP groups, uncontacted and voluntarily isolated IPs, cultural heritage, etc. If the project is determined to affect the rights, lands, resources and territories of IPs, an IP Plan will be prepared in consultation with IPs and in accordance with the UNDP Indigenous Peoples Plan.



Table A3-2 Requirements of UNDPs Standard 6 and Relevant Nepalese Legal Instruments

UNDP Standard 6 Requirement	Relevant Nepalese Law/Policy
<b>Respect for domestic and international law:</b> UNDP does not participate in a project that violates the human rights of indigenous peoples as affirmed by Applicable Law and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).	Nepal is a signatory of ILO and UNDRIP
<b>Identification of indigenous peoples:</b> For purposes of the Standard, "indigenous peoples" refers to distinct collectives, regardless of the local, national and regional terms applied to them, who satisfy any of the more commonly accepted definitions of indigenous peoples eg has pursued its own concept and way of human development in a given socio-economic, political and historical context; has tried to maintain its distinct group identity, languages, traditional beliefs, customs, laws and institutions, worldviews and ways of life; has exercised control and management of the lands, territories and natural resources that it has historically used and occupied, with which it has a special connection, and upon which its physical and cultural survival as indigenous peoples typically depends; self-identifies as indigenous peoples; and/or pre-dates those who colonized the lands within which the collective was originally found or of which it was then dispossessed.	Constitution of Nepal (2015)  National Foundation for Upliftment of Adivasi/Janjati Act, 2002  United Nations Declaration on the Rights of Indigenous Peoples, 2007
<b>Land, territories and resources:</b> UNDP projects recognize that indigenous peoples have collective rights to own, use, and develop and control the lands, resources and territories that they have traditionally owned, occupied or otherwise used or acquired, including lands and territories for which they do not yet possess title. Project activities that may undermine or inadvertently weaken such rights are avoided. If the project involves activities that are contingent on establishing legally recognized rights to lands, resources, or territories that indigenous peoples have traditionally owned, occupied or otherwise used or acquired, then an action plan is developed to outline the steps and timetable for achieving legal recognition of such ownership, occupation, or usage. In such cases, UNDP, with the consent of the relevant authority or implementing partner, supports such activities aimed at delimiting, demarcating and titling such lands, resources, and territories with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.	Land Acquisition, Rehabilitation and Resettlement Policy, 2072 BS (2015 AD)  National Forest Policy, 2076 BS (2019 AD)  Convention (No.169) Concerning Indigenous and Tribal Peoples in Independent Countries  United Nations Declaration on the Rights of Indigenous Peoples, 2007  Local Governance Operation Act 2017
<b>Legal personality:</b> UNDP recognizes that indigenous peoples' right to legal personality is critical to the protection, respect and fulfillment of their human rights.	Constitution of Nepal (2015)  National Foundation for Upliftment of Adivasi/Janjati Act, 2002  UNDRIP 2007
<b>Involuntary resettlement:</b> No project supported by UNDP will result in the forcible removal of indigenous peoples from their lands and territories.	The United Nations Permanent Forum on Indigenous Issues
<b>Relocation:</b> No relocation of indigenous peoples will take place without the free, prior and informed consent (FPIC) of the indigenous peoples concerned and only after agreement on just	United Nations Declaration on the Rights of Indigenous Peoples, 2007

and fair compensation and, where possible, with the option of return.	
<p><b>Full, effective and meaningful participation and FPIC:</b> At the earliest stage of project conceptualization and design, and iteratively throughout implementation and closure, mechanisms are identified and implemented to guarantee the meaningful, effective and informed participation of indigenous peoples on all matters. Culturally appropriate consultation are carried out with the objective of achieving agreement and FPIC is ensured on any matters that may affect—positively or negatively—the indigenous peoples' rights and interests, lands, territories (whether titled or untitled to the people in question), resources, traditional livelihoods, and/or tangible and intangible Cultural Heritage. This includes any potential relocation and activities proposing the development, utilization or exploitation of mineral, forest, water or other resources on lands and territories traditionally owned, occupied or otherwise used or acquired by indigenous peoples, including lands and territories for which they do not yet possess title. Project activities that may adversely affect the existence, value, use or enjoyment of indigenous lands, resources or territories are not conducted unless agreement has been achieved through the FPIC process.</p>	<p>National Foundation for Upliftment of Aadibasi/Janjati Act, 2002</p> <p>Right to Information Act, 2007</p> <p>Convention (No.169) Concerning Indigenous and Tribal Peoples in Independent Countries</p> <p>United Nations Declaration on the Rights of Indigenous Peoples, 2007</p>
<p><b>Documentation:</b> Engagement processes with indigenous peoples require at a minimum documentation of (i) a mutually accepted process to carry out good faith negotiations, (ii) outcomes of good faith negotiations, including all agreements reached as well as disagreements and dissenting views, and (iii) efforts aimed at accommodating indigenous peoples' expressed interest and concerns in the final programming design.</p>	
<p><b>Prior social and environmental impact study:</b> projects that may impact the rights, lands, resources and territories of indigenous peoples undertake prior review and/or assessment of potential impacts and benefits. Such reviews and assessments will be conducted transparently and with the full, effective and meaningful participation of the indigenous peoples concerned.</p>	<p>Environment Protection Act, 2019</p> <p>Environment Protection Regulations 2020</p> <p>National Environmental Policy 2019</p> <p>Land Use Policy 2015</p> <p>National Forest Policy 2019</p> <p>Forest Act 2019</p> <p>The Lands Act 1964</p>
<p><b>Appropriate benefits:</b> UNDP ensures that arrangements, evidenced in a documented outcome, are concluded with indigenous peoples for the equitable sharing of benefits to be derived by the project in a manner that is culturally appropriate and inclusive giving full consideration to options preferred by the indigenous peoples concerned. The provision of compensation and benefits takes into account the institutions, rules, and customs of affected indigenous peoples and may occur on a collective basis with mechanisms for effective distribution of benefits to all members of affected groups, as far as practical. Indigenous peoples affected by project activities should share equitably in</p>	<p>United Nations Declaration on the Rights of Indigenous Peoples, 2007</p>

benefits derived from any commercial development of indigenous peoples' lands, territories or resources or from the use or development of indigenous peoples' Cultural Heritage	
<b>Support rights implementation:</b> UNDP projects support countries to implement their duties and obligations under domestic and international law regarding the rights of indigenous peoples, including relevant treaty obligations.	United Nations Declaration on the Rights of Indigenous Peoples, 2007

### GCFs Policy on IPs

The GCF Indigenous Peoples Policy recognises that indigenous peoples often have identities and aspirations that are distinct from mainstream groups in national societies and are disadvantaged by traditional models of mitigation, adaptation and development. The GCF IP policy reflects the importance of fully and effectively engaging with indigenous peoples in the design, development and implementation of the strategies and activities to be financed by GCF, while respecting their rights

The implementation of this IPPF, along with Nepalese Law, the project ESMF, Stakeholder Engagement Plan and the Greivance Redress Mechansim will ensure that the project is aligned with the GCF IP policy.

### Potential Impacts to Indigenous Peoples

Section 4 of the ESMF describes the potential impacts of the project in general. The following section outlines the potential impacts associated with indigenous peoples.

Output 1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.	
Potential Adverse Impacts	Mitigation Measures
<i>Activity 1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.</i>	
Discrimination of women	At least 50% of project beneficiaries will be women, including proportional representation from indigenous groups and marginalized communities (including Dalits)  Gender Action Plan includes measures to promote women's empowerment and gender equality within the framework of the project. Diverse groups of women need to be included, such as indigenous women, dalit women, non-dalit and non-IP women etc.
Discrimination or limited engagement of Indigenous Peoples, Dalits, and other marginalized groups	IPPF includes measures for the engagement and participation of indigenous peoples.  Invitation of indigenous federations, Dalit organizations and ethnic minority organizations to participate within the project management platform, as well as in the role of project partners supporting awareness raising, training processes and implementation activities. This would include the use of customary institutions of Indigenous Peoples.  Promotion of proportional representation within project beneficiaries of indigenous peoples, Dalits, women from diverse groups, and marginalized communities.

	Knowledge and communication focused activities will include information from national experiences, international best practices as well as local and indigenous knowledge. The integration of knowledge from diverse actors into extension and knowledge sharing platforms will promote social inclusion, and allow diverse groups to build on local experiences and knowledge.
<i>Activity 1.2. Develop public-private partnerships for sustainable investment in GLOF and flood risk information services</i>	
Messaging may not meet needs of beneficiaries, in particular IPs and vulnerable groups	<p>Implementation of the IPPF will ensure that IPs are appropriately engaged and their needs understood.</p> <p>Stakeholder Engagement Plan to implemented and messaging to be targeted towards IPs where needed.</p> <p>Information to be accessible to multiple levels of user</p>

**Output 2. Improved hazard monitoring and the generation of early warnings, including the dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events**

Potential Adverse Impacts	Mitigation Measures
<i>Activity 2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk</i>	
Impacts associated with installation of equipment.	Where no existing observation station exists, then IPPs to determine if specific actions required based on consultation with IPs. FPIC potentially required where a new site to be used in area of IP interest.
Training - selection of staff to be inclusive/equitable	<p>Through implementation of IPPF and engagement with IPs, their training needs and preferred mechanisms should be identified.</p> <p>Training of trainers for the for the implementation of project activities should include men and women from indigenous groups, Dalit communities and other marginalized groups.</p> <p>LRPs who speak local languages should support trainers as well as awareness raising and information dissemination processes</p>
<i>Activity 2.2. Develop and implement early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards in vulnerable sectors and communities</i>	
Selection of trainees within DHM discriminates	<p>Training to be inclusive and non-biased.</p> <p>IPPF to be implemented, and where potential candidates exist, weighting be given to IPs.</p>
Information dissemination may not reach all people including illiterate people	<p>IPPF to be implemented to ensure appropriate engagement with IPs.</p> <p>Board / committee members of community-based organizations, customary institutions, and Local Resource Persons will be local focal points who are able to facilitate ongoing communication with project beneficiaries.</p> <p>Local CSOs and project partners will be important to support information dissemination and communications at the local level, using locally accepted practices such as community-meetings, workshops, among other practices.</p>

Lack of culturally appropriate practices, technical assistance, and information dissemination for the implementation of Activity	<p>IPPF includes measures for the engagement and participation of indigenous peoples within the framework of the project.</p> <p>Invitation of indigenous federations, Dalit organizations and other organizations representing marginalized communities, among other CSOs to participate within the project management platforms.</p> <p>Training of trainers for the consultations and workshops, as well as extension support should include men and women from indigenous groups, Dalit communities and other marginalized groups.</p>
Physical impacts associated with installation of equipment eg towers and sirens	<p>Public land is proposed, however if the sites are within areas of significance to IPs (eg lake surrounds, religious forests, conservation ponds) then specific actions may be required, possibly even FPIC.</p> <p>IPPs to identify requirements</p>
Community-based disaster response plans fail to be inclusive or take into account local issues/variables	<p>Plans to be developed in a participatory way with communities and ward leader. Participatory planning will help ensure that plans empower and engage highly vulnerable households, including indigenous peoples and Dalits.</p> <p>Project to develop SEP.</p> <p>IPPF to ensure inclusion of IPs.</p>

### Output 3. Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds.

Potential Adverse Impacts	Mitigation Measures
Activity 3.1. Lower the levels of four of the highest risk glacial lakes.	
Some of the IP communities assign a special significance to the lakes, therefore works associated with the lake lowering might be construed negatively by IPs	<p>IPPF to ensure appropriate engagement of IPs and their inclusion in project planning and implementation.</p> <p>IPP IPs to identify any concerns and to detail specific requirements for each lake and interested parties.</p> <p>As the proposed works have potential for significant risk, and that lakes hold a special significance to some IPs, FPIC may be required.</p> <p>Specific ceremonies (eg blessings or traditional spiritual services) may be required by IPs and other communities prior to commencement, during or upon completion of works.</p> <p>GRM provides an additional avenue for grievances.</p> <p>ESMPs will be developed to ensure appropriate monitoring is in place</p>
Lake lowering structures could be perceived by IPs to have a negative visual impact on the landscape	<p>IPP to identify the relevant IPs for each catchment and specifically include in the stakeholder engagement discussions on potential visual impacts. Visual aids to be used to communicate likely impacts.</p> <p>Designs to consider inclusion of culturally appropriate elements, such as mani walls/stones, prayer wheels, stupas or prayer flag</p>



	poles, based on discussions with IPs and other community members.
<i>Activity 3.2. Construction of structural and non-structural measures (Civil and NbS/ Bioengineering) for the risk reduction of GLOF and flash flood.</i>	
Land required for installation of infrastructure	Public land is proposed to be used.  No forced private land acquisitions.  Where indigenous peoples have an interest over the public land eg religious forests, conservation ponds, then FPIC mechanism to be applied.
<i>Activity 3.3. Implement Eco-disaster Risk Reduction and nature-based solutions to reduce the impact of GLOFs and flash floods.</i>	
Land required for installation of eco-DRR and nature-based solutions	Public land is proposed to be used  No forced private land acquisitions.  Where indigenous peoples have an interest over the land, then FPIC mechanism to be applied.
Construction impacts (physical, biological)	IPs have a spiritual connection to the land and the natural environment, therefore engagement with IPs is important to understand site specific issues and requirements.  Implement IPPF, develop IPPs to complement the ESMPs.
In practice it may be challenging to have equal participation due to gender discrimination, especially against women from indigenous groups and marginalized minority groups	At least 50% of project beneficiaries will be women, promoting proportional representation from indigenous groups, Dalit communities and other marginalized groups.  Gender Action Plan includes measures to promote women's empowerment and gender equality within the framework of the project. The plan includes detailed measures that target women and aims to empower them within the project, whilst considering their differentiated contexts and vulnerabilities.
Sourcing of materials eg trees and shrubs, rock could provide employment opportunities for IPs	The establishment of small-scale community-based nurseries will comply with relevant national legislation (Forest Policy, Environmental Protection Act), and will promote equitable hiring policies ensuring equitable employment opportunities for women, indigenous peoples, Dalits and other marginalized households.  Existing legal quarries or other sources of rock only to be used.

### Activities where FPIC Could be Required.

Through the implementation of the IPPF and the development of the three IPPs, activities or sites requiring FPIC will be identified / confirmed. However, it is considered that FPIC could be required if activities involve the following:

- Lakes – as noted above, IPs often ascribe spiritual significance to the mountain lakes, and the lowering of the lakes represents a potential significant impact. Therefore, FPIC may be required to undertake the lake lowering works.
- New weather or gauging station sites – the project intends to upgrade numerous existing manual weather stations and gauging stations, however where there is no existing station, then land will be required. It is proposed to use

public land, however IPs may still have an interest in the land therefore FPIC may be required for sites where there is no existing station.

- Religious Forests – activities within religious forests may require FPIC
- Conservation Ponds (Pokari ponds) – activities in or around conservation ponds may require FPIC.

## **Implementation Arrangements for the Indigenous Peoples Planning Framework**

The IPPF is aligned with the project implementation arrangements (refer to ESMF for organisational chart). The Ministry of Energy, Water Resources and irrigation (MoEWRI), in consultation with the relevant partners, including the NEFIN, and UNDP will set up a monitoring mechanism of the IP Plan. The project will ensure meaningful participation of indigenous peoples throughout the project cycle.

The consultation framework for indigenous peoples will follow the structure typically used in Nepal as shown in Figure A3-1.

The GRM outlined in the ESMF will also apply to IPs. That is, all grievances are to be processed on an equal basis.

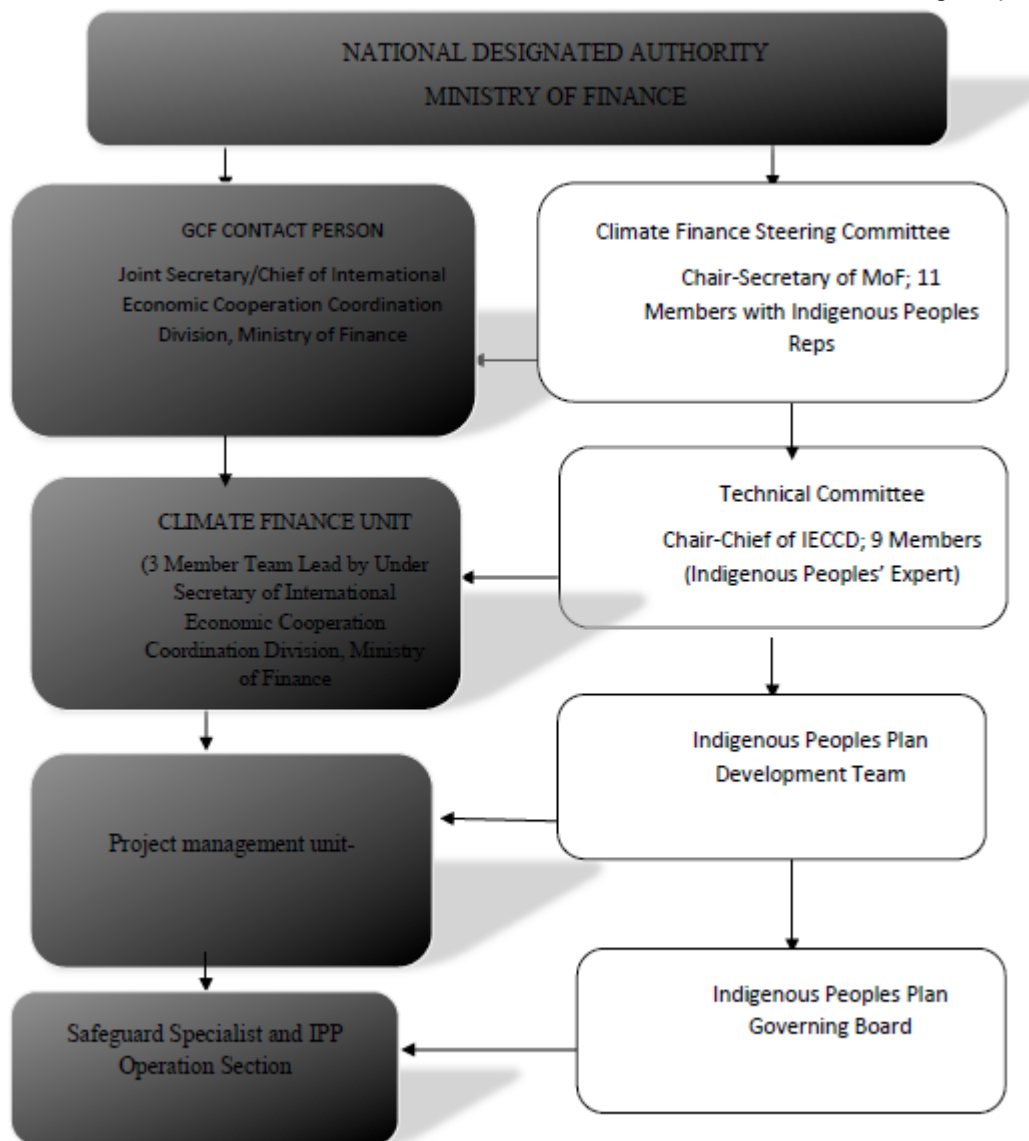


Figure A3-1 IP consultation hierarchy

### Social and Environmental Assessment and Indigenous Peoples Plans – key elements and outline

When project activities are implemented in locations where IPs reside, and where their land and resources are likely to be impacted, Standard 6 is determined to be applicable and the full range of potential social and environmental impacts have to be assessed.

This assessment of potential impacts and adoption of appropriate mitigation and management measures are to be completed, disclosed and discussed with stakeholders prior to implementation of project activities that may cause social or environmental impacts.

This assessment with detailed data and assessment reports is prepared in the form of an IP Plan, with the full participation of the affected IPs. As indicated in the IP Plan outline, their inputs will be recorded and reflected in the assessment report. UNDP's Guidance Note on Social and Environmental Assessment provides the guidance and general steps for assessing the potential impacts of Moderate, Substantial and High Risk projects.<sup>99</sup>

The preparation of IPPs will be done at the initial phase of project implementation and integrated into the design and implementation of the project. It is proposed to develop three IPPs, one for each catchment. This is in line with the proposed development of three ESAs and three ESMPs, thus the documents will complement each other.

UNDP has an established a process for developing an IPP (*Annex I: Indicative Outline of Indigenous Peoples' Plan*) which aligns with the GCF's guidance under the Indigenous Peoples' Policy. The IPP will ensure that that the activities proposed will be consistent with applicable law and obligations of the state and relevant international treaties and agreements, particularly with regards the FPIC during project and programme design, implementation, and expected outcomes related to the risks and impacts affecting the indigenous peoples.

The IPP will explicitly describe the involvement of indigenous peoples, including women, girls, and youth, in the design and implementation of the activities, and provide detailed outcomes of the consultation process of the indigenous peoples. The Plan will also include documented evidence of agreement between parties on the outcome of the negotiations.

As per guidance provided by GCF, and in line with UNDP's SES, the Indigenous People' Plan will include the following elements:

- Baseline information (from independent and participatory environmental and social risks and impacts assessment processes);
- Key findings and analyses of impacts, risks and opportunities;
- Measures to avoid, minimize and mitigate negative impacts, and enhance positive impacts and opportunities;
- Community-based natural resource management;
- Results of consultations (during environmental and social risks and impacts assessment processes), including a list of people and organizations that participated, a timetable, who was responsible for each activity, the free, prior and informed consent, and future engagement plans;
- Gender assessment and action plans;
- Benefit sharing plans;
- Tenure arrangements;
- Grievance redress mechanisms;
- Costs, budgets, timetables, institutional arrangements, organizational responsibilities for implementation of the IP Plan; and
- Monitoring, evaluation and reporting: The IP Plan will clearly spell out a) the manner in which indigenous peoples will participate in monitoring activities, b) progress indicators and an estimated budget to ensure robust monitoring, c) the participatory selection and involvement of an independent expert, where needed, d) schedules for monitoring activities, and e) the mechanism for redress and corrective action

<sup>99</sup>

[https://info.undp.org/sites/bpps/SES\\_Toolkit/SES%20Document%20Library/Uploaded%20October%202016/Final%20UNDP%20SES%20Indigenous%20Peoples%20GN\\_Jan2017.pdf](https://info.undp.org/sites/bpps/SES_Toolkit/SES%20Document%20Library/Uploaded%20October%202016/Final%20UNDP%20SES%20Indigenous%20Peoples%20GN_Jan2017.pdf)

As noted in the ESMF and UNDP Standard 6 Guidance Note, while all consultations with indigenous peoples should be carried out in good faith with the objective of achieving agreement, Standard 6 stipulates circumstances in which FPIC must be pursued (Annex 2) and secured before proceeding with the specified actions:

- **Rights, lands territories, resources, traditional livelihoods:** FPIC will be ensured on any matters that may affect the rights and interests, lands, resources, territories (whether titled or untitled to the people in question) and traditional livelihoods of the indigenous peoples concerned. Project activities that may adversely affect the existence, value, use or enjoyment of indigenous lands, resources or territories shall not be conducted unless agreement has been achieved through the FPIC process. (Requirement 9)
- **Resettlement:** No relocation of indigenous peoples will take place without the free, prior and informed consent (FPIC) of the indigenous peoples concerned and only after agreement on just and fair compensation, and where possible, with the option of return (Requirement 8).
- **Cultural Heritage:** UNDP will respect, protect, conserve and not take or appropriate the cultural, intellectual, religious and spiritual property of indigenous peoples without their free, prior and informed consent (Requirement 13d).

To determine whether project activities may require an FPIC process, the UNDP Checklist for Appraising Whether an Activity May Require an FPIC Process (refer below) will be used. If the answer is 'Yes' to any of these questions, FPIC will likely be required from the potentially affected peoples for the specific activity that may result in the impacts. In such a case, the potentially affected IPs will be engaged to confirm the need for FPIC and reach agreement on the scope and format of the FPIC process and the scope of the IPP/IPPF. This process should be launched as early as possible.

In all cases, no activities predicated on the granting of FPIC will be initiated until the outcomes of the FPIC process and the associated project IPP are validated and any required mitigation measures are in place.

The indigenous peoples who may be affected by the project will have a central role in defining the FPIC process and the establishment of the IPP. A facilitator who speaks the necessary languages should be hired to lead the process, if required. The facilitator needs to be available throughout the sub-project, be aware of the project context, and be culturally and gender-sensitive. If possible, the facilitator should be identified by the affected indigenous peoples.

Facilitators, in cooperation with the government and stakeholders, are responsible for ensuring, among other things, that the following key arrangements are part of the FPIC process:

Full, accurate information regarding the project (e.g. positive and negative, potential risks and short and/or long term impacts, benefits) is communicated in the most appropriate language and medium, ensuring that is easily understandable and accessible.

Information reaches all members of affected ethnic minority community and is consistent with the community's mechanisms for information sharing

A secure, culturally appropriate and trusted environment for discussions is provided

Decision-making processes, timelines, and languages for communicating are determined by the affected IPs without interference

Customary laws and practices of the affected IPs are respected.

The overall aim of the FPIC process with all stakeholders is to obtain a signed agreement or oral contract witnessed by an independent entity agreed to by both parties, ensuring that the greatest number of community members are involved and represented, including potentially marginalized groups. The community's customs and norms for participation, decision making and information sharing are to be respected.

While the objective of the FPIC process is to reach an agreement (consent) on the project or project components and the IPP/IPPF between the relevant parties—be it a signed agreement or otherwise formalized oral contract— this does not mean that all FPIC processes will lead to the consent of and approval by the rights-holders in question. At the core of FPIC is the right of the peoples concerned to choose to engage, negotiate and decide to grant or withhold consent, as well as the acknowledgement that under certain circumstances, it must be accepted that the activities (or project) for which FPIC could not be ascertained will not proceed and/or that engagement must be ceased if the affected peoples decide that they do not want to commence or continue with negotiations or if they decide to withhold their consent to the activities and/or project.

The FPIC process should be well-documented in writing and reflected in the sub-project IPP and made publicly available. The outcomes documentation should clarify if consent was provided or withheld and record whether the community provided consent through an oral contract. It is important to document the whole FPIC process in the IPP (or subsequent reports), including



commitments and requirements agreed upon to reach such agreement as well as ideas, questions and concerns raised, so that it is possible to review the whole process during monitoring and in the event a grievance or dispute arises.

This will ensure that all activities will avoid adverse impacts on IPs, and when avoidance is not possible, will minimize, mitigate and/or compensate appropriately and equitably for such impacts, in a consistent way and improve outcomes over time; promote benefits and opportunities; and respect and preserve indigenous culture, including the IP's rights to lands, territories, resources, knowledge systems, and traditional livelihoods and practices.

### Indicative Outline for Indigenous Peoples Plan

An "Indigenous Peoples Plan" (*IPP*) needs to be elaborated and included in the Project documentation. The *IPP* is to be prepared and implemented in a manner consistent with the UNDP Social and Environmental Standards and have a level of detail proportional to the complexity of the nature and scale of the proposed Project and its potential impacts on indigenous peoples and their lands, resources and territories. With the effective and meaningful participation of the affected peoples, the *IPP* shall be elaborated and contain provisions addressing, at a minimum, the substantive aspects of the following outline:

#### Executive Summary of the Indigenous Peoples Plan

This section concisely describes the critical facts, significant findings, and recommended actions.

#### Project Description

This section provides a general description of the project; discusses project components and activities that may bring impacts on Indigenous Peoples/Ethnic Minorities; and identify project area.

#### Description of Indigenous Peoples

A description of affected indigenous people(s) and their locations, including:

1. description of the community or communities constituting the affected peoples (e.g. names, ethnicities, dialects, estimated numbers, etc.);
2. description of the resources, lands and territories to be affected and the affected peoples connections/ relationship with those resources, lands, and territories; and
3. an identification of any vulnerable groups within the affected peoples (e.g. uncontacted and voluntary isolated peoples, women and girls, the disabled and elderly, others).

#### Summary of Substantive Rights and Legal Framework

A description of the substantive rights of indigenous peoples and the applicable legal framework, including:

An analysis of applicable domestic and international laws affirming and protecting the rights of indigenous peoples (include general assessment of government implementation of the same).

Analysis as to whether the Project involves activities that are contingent on establishing legally recognized rights to lands, resources, or territories that indigenous peoples have traditionally owned, occupied or otherwise used or acquired. Where such contingency exists (see Standard 6 Guidance Note, sections 6 & 7), include:

- i. identification of the steps and associated timetable for achieving legal recognition of such ownership, occupation, or usage with the support of the relevant authority, including the manner in which delimitation, demarcation, and titling shall respect the customs, traditions, norms, values, land tenure systems and effective and meaningful participation of the affected peoples, with legal recognition granted to titles with the full, free prior and informed consent of the affected peoples; and

- ii. list of the activities that are prohibited until the delimitation, demarcation and titling is completed.

Analysis whether the Project involves activities that are contingent on the recognition of the juridical personality of the affected Indigenous Peoples. Where such contingency exists (see Standard 6 Guidance Note, section 7):

- iii. identification of the steps and associated timetables for achieving such recognition with the support of the relevant authority, with the full and effective participation and consent of affected indigenous peoples; and
- iv. list of the activities that are prohibited until the recognition is achieved.

### Social Impact Assessment

A summary of the findings and recommendations of the required prior social and environmental impact studies (e.g. limited assessment, ESIA, SESA, as applicable) – provides baseline information on the demographic, social, cultural, and political characteristics of the affected Indigenous Peoples/Ethnic Minorities; the land and territories that they have traditionally owned or customarily used or occupied; and the natural resources on which they depend. This should include the manner in which the affected indigenous peoples participated in such study and their views on the participation mechanisms, the findings and recommendations.

identifies key project stakeholders and elaborate a culturally appropriate and gender-sensitive process for meaningful consultation with Indigenous Peoples/Ethnic Minorities at each stage of project preparation and implementation, taking the review and baseline information into account;

assesses, based on meaningful consultation with the affected Indigenous Peoples/Ethnic Minority communities, and the potential adverse and positive effects of the project. Critical to the determination of potential adverse impacts is a gender-sensitive analysis of the relative vulnerability of, and risks to, the affected Indigenous Peoples/Ethnic Minority communities given their particular circumstances and close ties to land and natural resources, as well as their lack of access to opportunities relative to those available to other social groups in the communities, regions, or national societies in which they live;

Where potential risks and adverse impacts to indigenous peoples, their lands, resources and territories are identified, the details and associated timelines for the planned measures to avoid, minimize, mitigate, or compensate for these adverse effects. Identification of special measures to promote and protect the rights and interests of the indigenous peoples including compliance with the affected peoples' internal norms and customs.

If the Project will result in the relocation of indigenous peoples from their lands and territories, a description of the consultation and FPIC process leading to the resulting agreement on relocation and just and fair compensation, including the possibility of return.

A description of measures to protect traditional knowledge and cultural heritage in the event that the Project will result in the documentation and/or use and appropriation of such knowledge and heritage of the indigenous peoples and the steps to ensure FPIC before doing so.

identifies and recommends, based on meaningful consultation with the affected Indigenous Peoples/Ethnic Minorities communities, the measures necessary to avoid adverse effects or, if such measures are not possible, identifies measures to minimize, mitigate, and/or compensate for such effects and to ensure that Indigenous Peoples/Ethnic Minorities receive culturally appropriate benefits under the project.

### Information Disclosure, Consultation, Participation and FPIC Processes

Describes the information disclosure, consultation and participation process with the affected Indigenous Peoples/Ethnic Minority communities that can be carried out during project preparation;

Summarizes their comments on the results of the social impact assessment and identifies concerns raised during consultation and how these have been addressed in project design;

In the case of project activities requiring broad community support, documents the process and outcome of consultations with affected Indigenous Peoples/Ethnic Minority communities and any agreement resulting from such consultations for the project activities and safeguard measures addressing the impacts of such activities;

Describes consultation and participation mechanisms to be used during implementation to ensure Indigenous Peoples/Ethnic Minorities participation during implementation; and

Confirms disclosure of the draft and final to the affected Indigenous Peoples/Ethnic Minority communities.

### **Beneficial Measures**

This section specifies the measures to ensure that Indigenous Peoples/Ethnic Minorities receive equitable social and economic benefits that are culturally appropriate and gender responsive, including a description of the consultation and consent processes that lead to the determined benefit sharing arrangements.

### **Mitigative Measures**

This section specifies the measures to avoid adverse impacts on Indigenous Peoples/Ethnic Minorities; and where the avoidance is impossible, specifies the measures to minimize, mitigate and compensate for identified unavoidable adverse impacts for each affected Indigenous Peoples/Ethnic Minorities.

### **Capacity Building**

Description of Project activities aimed at increasing capacity within the government and/or the affected indigenous peoples, and facilitating exchanges, awareness, and cooperation between the two.

Description of measures to support social, legal, technical capabilities of indigenous peoples' organizations in the project area to enable them to better represent the affected indigenous peoples more effectively

Where appropriate and requested, description of steps to support technical and legal capabilities of relevant government institutions to strengthen compliance with the country's duties and obligations under international law with respect to the rights of indigenous peoples.

### **Grievance Redress Mechanism**

A description of the procedures available to address grievances brought by the affected indigenous peoples arising from Project implementation, including the remedies available, how the grievance mechanisms take into account indigenous peoples' customary laws and dispute resolution processes, as well as the effective capacity of indigenous peoples under national laws to denounce violations and secure remedies for the same in domestic courts and administrative processes.

### **Monitoring, Reporting and Evaluation**

Mechanisms and benchmarks appropriate to the Project for transparent, participatory joint monitoring, evaluating, and reporting, including a description of how the affected indigenous peoples are involved.

Define the mechanisms put in place to allow for periodic review and revision of the IPP in the event that new Project circumstances warrant modifications developed through consultation and consent processes with the affected indigenous peoples.

### **Institutional Arrangement**

Describes institutional arrangement responsibilities and mechanisms for carrying out the measures contained in the *IPP*, including participatory mechanisms of affected indigenous peoples. Describes role of independent, impartial entities to audit, conduct social and environmental assessments as required, and/or to conduct oversight of the project.

### **Budget and Financing**

This section provides an appropriately costed plan, with itemized budget sufficient to satisfactorily undertake the activities described.

**Note:** The **IPP** will be implemented as part of Project implementation. However, in no case shall Project activities that may adversely affect indigenous peoples – including the existence, value, use or enjoyment of their lands, resources, or territories – take place before the corresponding activities in the **IPP** are implemented. The relationship between the implementation of specific **IPP** measures and the permitted commencement of distinct Project activities shall be detailed within the **IPP** to allow for transparent benchmarks and accountability.

Where other Project documents already develop and address issues listed in the above sections, citation to the relevant document(s) shall suffice.

### Determining if FPIC is required

If the risk assessment using UNDP SESP indicates that IPs are likely to be impacted and that Standard 6 is triggered, the following checklist will be used to determine whether FPIC is required.

Checklist for appraising whether an activity may require an FPIC process (partial listing) <sup>100</sup>	Yes/No
1. Will the activity involve the relocation/resettlement/removal of an indigenous population from their lands?	
2. Will the activity involve the taking, confiscation, removal or damage of cultural, intellectual, religious and/or spiritual property from indigenous peoples?	
3. Will the activity adopt or implement any legislative or administrative measures that will affect the rights, lands, territories and/or resources of indigenous peoples (e.g. in connection with the development, utilization or exploitation of mineral, water or other resources; land reform; legal reforms that may discriminate de jure or de facto against indigenous peoples, etc.)?	
4. Will the activity involve natural resource extraction such as logging or mining or agricultural development on the lands/territories of indigenous peoples?	
5. Will the activity involve any decisions that will affect the status of indigenous peoples' rights to their lands/territories, resources or livelihoods?	
6. Will the activity involve the accessing of traditional knowledge, innovations and practices of indigenous and local communities?	
7. Will the activity affect indigenous peoples' political, legal, economic, social, or cultural institutions and/or practices?	
8. Will the activity involve making commercial use of natural and/or cultural resources on lands subject to traditional ownership and/or under customary use by indigenous peoples?	
9. Will the activity involve decisions regarding benefit-sharing arrangements, when benefits are derived from the lands/territories/resources of indigenous peoples (e.g. natural resource management or extractive industries)?	
10. Will the activity have an impact on the continuance of the relationship of the indigenous peoples with their land or their culture?	

***If the answer is 'Yes' to any of these questions, it is likely that FPIC will be required of the potentially affected peoples for the specific activity that may result in the impacts identified in the questions.***

### NOTES ON FREE, PRIOR AND INFORMED CONSULTATIONS (FPIC)

Indigenous Peoples or *Masyarakat Adat* (Customary Communities) may be vulnerable to the loss of, alienation/resettlement from or exploitation to natural and cultural resources. IPs communities are often among the poorest of the poor in the community and closely tied to their settlements, lands and related natural resources upon which the sustenance of their livelihoods depends. Frequently, these lands and settlements are traditionally owned or under customary use and often not legally recognized by national laws. In recognition of this vulnerability, interventions introduced through this project with the objectives to

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[https://info.undp.org/sites/bpps/SES\\_Toolkit/SES%20Document%20Library/Uploaded%20October%202016/Final%20UNDP%20SES%20Indigenous%20Peoples%20GN\\_Jan2017.pdf](https://info.undp.org/sites/bpps/SES_Toolkit/SES%20Document%20Library/Uploaded%20October%202016/Final%20UNDP%20SES%20Indigenous%20Peoples%20GN_Jan2017.pdf)

improve land administration and address informal settlements may potentially alienate and/or displace IPs if the mechanisms for *Free, Prior and Informed Consultations* (FPICs) to obtain broad support are not built into project design and implementation.

### Objective.

The extent, frequency and degree of engagement required by the consultation process should commensurate with the identified project risks and adverse impacts and with the concerns raised by affected IPs. FPICs are built on mutually accepted process between affected communities and project actors.

### Procedures.

FPICs should be orientated towards obtaining broad community support and by which, broad community support consists of a collection of expressions by affected community members and/or their recognized representatives in support of the proposed project/sub-project activities.

FPICs do not necessarily require unanimity and in some instances, decisions may be achieved even individuals or groups within the community disagree, FPICs lay out organized and iterative processes through which decisions and measures adopted by the project incorporate the views of the affected IPs on matters that affect them directly.

The stakeholder engagement needs to be built on gender-sensitive and intergenerationally inclusive approaches. Effective FPICs are built upon two-way processes that should:

- Involve members of affected communities and their recognized representative bodies and organizations in good faith.
- Capture the views and concerns of men, women and vulnerable community segments including the elderly, youth, displaced persons, children, people with special needs, etc. about impacts, mitigation mechanisms, and benefits where appropriate as reflected in sub-project design. If necessary, separate forums or engagements need to be conducted based on their preferences.
- Begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise.
- Be based on the prior disclosure and dissemination/socialization of relevant, transparent, objective, meaningful, and easily accessible information which is in a culturally appropriate language(s) and format and is understandable to affected IPs. In designing consultation methods and use of media, a special attention needs to be paid to include the concerns of Indigenous women, youth, and children and their access to development opportunities and benefits.
- Focus on inclusive engagement on those directly affected than those not directly affected;
- Ensure that the consultation processes are free of external manipulation, interference, coercion and/or intimidation. The ways the consultations are designed should create enabling environments for meaningful participation, where applicable. In addition to the language(s) and media used, the timing, venues, participation composition need to be carefully thought through to ensure everyone could express their views without repercussions.
- Be documented.

In deciding whether to proceed with the activity, the project team in consultation with IPs whether affected IPs provide their broad support to the project. Where there is such a support, then the PMU should ensure that the following is prepared:

- Documented evidence of FPICs as well as measures taken to avoid and minimize risks to and adverse impacts of the affected IPs. This includes list of participants, meeting minutes and other documentation (e.g. photos, video, etc.);
- Additional measures, including project design modification, alternative locations, and where applicable compensations to address adverse effects on affected IPs and to provide them with culturally and socially appropriate benefits;
- Action plan and recommendations for FPICs during project implementation, monitoring, and evaluation, and



- Any formal agreements reached with affected IPs and/or their representative organizations.

### Requirements.

To ensure that FPICs can be ascertained, the following requirements are needed to determine whether:

- The level of engagement in a way that enables informed participation of affected IPs is acceptable;
- The level of support and dissent among affected IPs for the project is taken into account into decision making and development of mitigation measures.

Consideration	Requirements
Project's strategy and principles on engagement	<ul style="list-style-type: none"> <li>Community Participation Framework to mainstream FPIC;</li> <li>Project Operational Manuals on FPICs;</li> <li>Budget and personnel provisions;</li> <li>Consultation schedules and other supporting documentation.</li> </ul>
Stakeholder identification and analysis	<ul style="list-style-type: none"> <li>Stakeholder analysis</li> </ul>
Community Engagement	<ul style="list-style-type: none"> <li>Consultation plan, public consultation and disclosure plan, and stakeholder engagement plan;</li> <li>Schedule and record of community engagement including discussions and consultations with community members and their representatives.</li> </ul>
Information disclosure	<ul style="list-style-type: none"> <li>Disclosure plan, including schedules</li> <li>Materials prepared for disclosure and consultations;</li> <li>Record/minutes of discussions/consultations with community members and their representatives</li> </ul>
Free, Prior, and Informed Consultations	<ul style="list-style-type: none"> <li>Record/minutes of discussions/consultations with community members and their representatives;</li> <li>Documentation of measures taken to avoid/minimize risks to and adverse impacts on affected IPs based on community feedback;</li> <li>Draft of Action Plan;</li> </ul>
Consultations with vulnerable groups	<ul style="list-style-type: none"> <li>Engagement and public consultation plan</li> <li>Record/minutes of discussions/consultations with members and representatives of vulnerable groups</li> <li>Documentation of measures taken to avoid/minimize risks to and adverse impacts on vulnerable groups based on community feedback</li> <li>Draft of Action Plan</li> </ul>
Grievance redress mechanism	<ul style="list-style-type: none"> <li>Organizational structure and responsibilities and procedures to manage grievances;</li> <li>Record of grievances received, including expressions of support or dissent;</li> <li>Record/minutes of discussions with community members or representatives with regards to grievance redress.</li> </ul>
Feedback to affected IPs (to demonstrate that concerns and recommendations have been accommodated in the project and rationale why	<ul style="list-style-type: none"> <li>Documentation of risk mitigation measures</li> <li>Record/minutes of discussions with community members and their representatives;</li> <li>On-going reporting on implementation of Action plan;</li> </ul>

recommendations have not been accommodated)	<ul style="list-style-type: none"> <li>• Revisions in project/sub-project activities and Action Plan;</li> <li>• Surveys/interview records of affected IPs.</li> </ul>
Formal expressions of support or dissent	<ul style="list-style-type: none"> <li>• Record/minutes of meetings/public consultations with community members and their representatives;</li> <li>• Formal letters/written petitions of support/objection submitted by the community and/or their representatives;</li> </ul>
Informal expressions of support or objection	<ul style="list-style-type: none"> <li>• Photographs, media reports, personal letters or third-party accounts (NGOs, CBOs, etc.)</li> </ul>
Evidence of good faith consultations	<ul style="list-style-type: none"> <li>• Face-to-face interviews with community members/representatives in the consultations;</li> <li>• Agreements reached with affected IPs (e.g. MoU, Letters of Intent, Joint Statements, etc.)</li> <li>• Action plan, e.g. benefit sharing, development plan, etc.</li> </ul>



## APPENDIX FOUR: DNPWS LETTERS REQUESTING SUPPORT IN UPDATING NATIONAL PARKS MANAGEMENT PLANS

 **Government of Nepal**  
**Ministry of Forests and Environment**  
**Department of National Parks & Wildlife Conservation** 

Ref No: 3949

7<sup>th</sup> July 2023

Dear Mr. Bernardo,  
Office-in-Charge  
UNDP, Kathmandu, Nepal



**Subject: Collaboration for Preparing the Climate Resilient Management Plan Framework and Management Plan of Protected Areas**

In reference of the letter dated 5<sup>th</sup> July 2023 regarding collaboration for preparing the Climate Resilient Protected Areas Management Plan Framework and the management plan of Protected Areas, Department of National Parks and Wildlife Reserves (DNPWC) would like to thank UNDP about your commitment to collaborate and support DNPWC to prepare the Climate Resilient Protected Areas Management Plan Framework, revise the management plan of Makalu Barun National Park (including Initial Environment Examination (IEE) to make it climate resilient), and prepare the Initial Environment Examination of Climate Resilient Management Plan of Sagarmatha National Park (SNP).

We would appreciate your timely support to prepare the Climate Resilient Protected Areas Management Plan Framework, revise the management plan of Makalu Barun National Park including IEE, and prepare the IEE of SNP.

Thank you for your cooperation

  
Ajay Karki  
Deputy Director General



Government of Nepal  
Ministry of Forest and Environment  
Department of National Parks & Wildlife Conservation



Ref: 740/078/79

19 November 2021

To  
Bernardo Cocco  
Deputy Resident Representative  
United Nations Development Programme, Lalitpur, Nepal.

Sub: **Commitment for integrating GLOF reduction measures in the Management Plan of  
Makalu Barun National Park.**

In reference of the letter dated 28 October, 2021 regarding integrating GLOF risks reduction measures in the management plan of Makalu Barun National Park (MBNP), Nepal, Department of National Parks and Wildlife Reserves would like to thank UNDP about raising the important issues on the impacts of climate change in the park habitat and human settlements residing inside the bufferzone of the MBNP. The department is fully aware of the climate change induced disasters and understands that two lakes Hongu 2 and Lower Barun of MBNP are in potential danger of GLOF. Hence, as per your request, the management plan of MBNP, will be duly revised to integrate GLOF reduction measures, that will include the provisions of structural and non-structural GLOF reduction measures, and establishment of hydro-met stations and Early Warning System in the two lakes; Hongu 2 and Lower Barun, and the downstream areas as priority actions.

We would appreciate your timely support to revise and upgrade the existing management plan of MBNP.

Thank you for your cooperation.

Dr. Ram Chandra Kandel  
Director General  
Department of National Parks and Wildlife Reserves

## APPENDIX FIVE: DRAFT TERMS OF REFERENCE FOR ESIA

**Services/Work Description:** Preparation of impact assessments and management plans upon project inception

**Project/Programme Title:** Protecting livelihoods and assets at risk from Glacial Lake Outburst Floods (GLOFs) and climate change-induced flooding in glacial river basins of Nepal

### Background

Nepal is a landlocked country located between India to the east, south, and west and Tibet to the north. It extends roughly 800 km from east to west and 200km north to south. Nepal's topography varies dramatically, from the Himalayan heights (Everest 8,850m) to the Gangetic Plains of the Terai, however roughly 75% of the country is covered by mountains.

Increasing atmospheric temperature is causing glaciers to melt worldwide. Glacier melting leads to the formation of glacial lakes. Glacial lakes are formed when a glacier erodes the underlying terrain and subsequently melts, filling the depression with fresh water<sup>2</sup>. The resulting lakes are either dammed on the downstream end by moraines<sup>3</sup> or ice. Many of these lakes are considered extremely dangerous as their dams are unstable and have the potential to burst — resulting in devastating Glacial Lake Outburst Floods (GLOFs). In Nepal, there are ~3,800 glaciers and ~2,000 glacial lakes, of these, 47 are considered potentially dangerous<sup>4</sup>.

Historically, GLOFs have had catastrophic consequences in Nepal through the direct impacts of flooding and secondary impacts such as landslides, erosion, and sedimentation in river valleys. Since 1970s, 26 GLOF events have been recorded across 47 potentially dangerous glacial lakes, resulting in catastrophic consequences that have ranked Nepal, alongside Bhutan, as the most economically impacted country by glacial flood impacts. GLOFs cause severe flooding, landslides, and mudflows that damage infrastructure and private assets, and disrupt transportation networks, agricultural production, power supply from hydropower plants and tourism activities. In addition, floods often have substantial health impacts, with water- and vector-borne diseases spreading widely after flood events. Damages from GLOFs are often irreparable for decades, with considerable economic costs, particularly to downstream populations.

In addition to GLOFs, Nepal is susceptible to floods resulting from extreme rainfall events, which have similar but less intense impacts on the population in comparison to GLOFs. During heavy monsoon cloudbursts, flash floods occur in the mountains, while in the southern plains, water breaches riverbanks and inundates large areas of land. Furthermore, given the steepness of slopes and the swift flow of water bodies, heavy rains and flash floods often trigger landslides<sup>5</sup> that cause extensive loss of life and damage to infrastructure and the environment<sup>6</sup>.

To address the risk of GLOFs and the associated impacts on downstream communities, there is an urgent need in Nepal to shift away from reactive and uncoordinated response to GLOFs towards a proactive, sustainable, and integrated approach to GLOF risk reduction that combines implementing tangible upstream and downstream risk reduction measures with improved technical and institutional capacity at the national and local levels to respond to an impending GLOF event.

The Government of Nepal with support from UNDP, is formulating a project on adaptation to climate change impacts "Protecting livelihoods and assets at risk from Glacial Lake Outburst Floods (GLOFs) and climate change-induced flooding in glacial river basins of Nepal" for submission to the GCF. The project will seek to improve the resilience of vulnerable communities to climate change impacts.

Specifically, direct investments from the GCF combined with co-financing will be used to: i) reduce the impacts of a GLOF and its residual impacts on vulnerable communities; ii) promote the adoption of GLOF EWS measures among national- and local-level decision-makers to enhance rapid response to an



impending GLOF; and iii) strengthen the technical and institutional capacity of the Government of Nepal and local communities to implement GLOF risk reduction measures through targeted training and awareness raising. The combined effect of project interventions will result in the adoption and implementation of a climate-resilient, integrated approach to GLOF risk reduction and flood management.

Four glacial lakes in Nepal have been prioritised for urgent adaptation action: Thulagi Glacial Lake in the Manang district; Lower Barun Glacial Lake in the Sankhuwasabha; Lumding Tsho Glacial Lake and Hongu 2 Glacial Lake in Solukhumbu district.

The proposed project will have the following activities:

Output 1. Institutional and technical capacity strengthened to develop and integrate climate risk and hazard information into planning and development.

- Activity 1.1. Strengthen the knowledge base and technical capacities for improved climate research and risk reduction strategies.
- Activity 1.2. Develop public-private partnerships for sustainable investment in GLOF and flood risk information services.

Output 2. Improved hazard monitoring and the generation of early warnings, including the dissemination of early warnings to local communities and important economic sectors leading to reduced economic loss and loss of human lives from GLOF events.

- Activity 2.1. Improve observation network density in GLOF watersheds to strengthen the technical capacity of DHM for the monitoring of climate hazard and risk.
- Activity 2.2. Develop and implement early warning systems to strengthen adaptive capacity and response to GLOFs and other climate hazards in vulnerable sectors and communities.

Output 3. Reduced probability of GLOF events and flash floods, through disaster risk reduction measures implemented in priority glacial lake watersheds

- Activity 3.1. Lower the levels of four of the highest risk glacial lakes.
- Activity 3.2. Construction of structural and non-structural measures (Civil and NbS/ Bioengineering) for the risk reduction of GLOF and flash flood.
- Activity 3.3. Implement Eco-disaster Risk Reduction and nature-based solutions (NbS) to reduce the impact of GLOFs and flash floods.

### UNDP Social and Environmental Safeguard Procedure

Formulation process for project proposals for submission to the Green Climate Fund (GCF) also need to meet the UNDP's Social and Environmental Standards (SES) requirements. UNDP's SES underpin UNDP's commitment to mainstream social and environmental sustainability in its Programmes and Projects to support sustainable development. The objectives of the standards are to:

- Strengthen the social and environmental outcomes of Programmes and Projects
- Avoid adverse impacts to people and the environment
- Minimize, mitigate, and manage adverse impacts where avoidance is not possible
- Strengthen UNDP and partner capacities for managing social and environmental risks
- Ensure full and effective stakeholder engagement, including through a mechanism to respond to complaints from project-affected people

As part of the project development and Funding Proposal, an initial environmental and social risk screening (SESP) was undertaken. The SESP identified the project risk category as Substantial. An ESMF was also developed, which highlights procedures and possible ways forward.

Based on the UNDP SESP and the ESMF prepared as part of the project development, scoped ESIA have been identified as being required. Three ESIA are proposed, one for each watershed, to address the risks identified in the ESMF, specifically the moderate to substantial risks associated with Activities 2.1, 2.2, 3.1, 3.2 and 3.3.

Within this overall background, UNDP is seeking a Social and Environmental Impact Assessment Specialist to prepare the ESIA and ESMPs.

The Consultant shall ensure that the Environmental and Social assessment (ESIA) outputs of this assignment comply with and meet the legal and technical requirements of the Government of Nepal and the UNDP. These, include GoN requirements under Environment Protection Act, 1997 and Environment Protection Rules, 1997 (with amendment), Forest Act and regulations, National Park and Wildlife Conservation Act and regulations, environmental standards, work procedures, guidelines and manuals etc; and the UNDPs requirements under the SES. The Consultant shall ensure that all beneficial and adverse impacts associated with construction and operation of the project, including all associated/ancillary works and linked activities if any, are assessed and taken into account. Outputs include the preparation of the Nepal EIA as appropriate, and the ESIA packages, including an Environmental and Social Management Plan (ESMP).

### 1. Scope of work, responsibilities and description of the proposed work

The assignment will be carried out in a synchronized manner with the Detail Engineering Design (DED) for the lake lowerings, hazard warning, early warning systems and eco-DRR and nature-based flood reduction works, which will be contracted separately. The PMU will facilitate the interaction between the ESIA Consultant and the design consultants, including the sharing relevant information etc. It is expected that the outputs of both consultants are informed and influenced by the work of the other.

The Consultant shall document processes, methodologies, interim outputs etc in suitable forms and formats so that they can be further discussed and agreed upon with the PMU throughout the process.

The scope of consulting services for ESIA includes, but not necessarily limited to, the following:

#### Task 1: Environmental and Social Screening and Scoping

An initial screening and risk assessment has been undertaken as part of the project development. The UNDP SESP was followed and an ESMF prepared.

The Consultant, through initial consultations, site visits, and review available environmental and social information relevant to the sub-activities and their surrounding Project Influence Areas, shall, shall identify the proposed activities salient environmental and social setting and potential risks/ concerns / impacts that require to be addressed by the ESIA. This screening will help define the scope and work plan of the the ESIA.

The consultant will also , the

The following steps are key to the screening.

- Confirm presence of environmentally sensitive areas from secondary information and site observations
- Identify potential negative and positive direct or indirect impacts and provide clarity on issue, which needs to be investigated Category B EA type (for higher impact category requires ESIA, for medium impact category requires abbreviated EMP and for lower impact category require Best Environmental Practices-BEP).
- Incorporate feedback of public consultation and answer to published notice
- Additionally, GoN specific Environmental Impact Assessment (EIA)/Initial Environmental Examination (IEE)/Brief Environment Studies (BES) requirements to be complied with EPA/EPR 2020
- Determine applicable of regulatory and policy and requirement of clearances and permissions
- Identify of key environmental and social concerns and vulnerable groups

- Scope environmental and social impact assessment and mitigations.

The Scoping activities will include:

- Review all available existing information on environmental and social baseline conditions and potential impacts related to the proposed lake lowerings, hazard monitoring, early warning systems and eco-DRR/NbS interventions planned in each watershed.
- Develop description of the works that will be the subject of the ESIA based on descriptions developed by the PMU and/or DED Consultant, including alternatives considered or to be considered, by synthesizing and providing an integrated overview of all key aspects of the projects that will be relevant to the proposed ESIA studies.
- Carry out initial site visits, including formal and informal discussions/meetings with local communities, government entities and other key stakeholders, in each project affected area/ influence area (Municipality level and district level). Consultations shall be held in Nepali and/or relevant local language (or with translation). Consultations will enable both verification of the information reviewed from existing sources about the project's social and environmental context, updating the initial screening of likely environmental and social impacts and sensitivities (SESP), and for all relevant stakeholders to be informed about the potential projects.
- Inform potentially affected people and relevant stakeholders about the environmental and social scoping in advance, through appropriate means. In accordance with the requirements of the EPR, the Consultant shall publish a Scoping notice in a national daily newspaper mentioning the ongoing ESIA of the project with a brief description of the project and activities, a list of areas likely to be affected by the project, the potential area of influence, request for comments and suggestions along with address for communication. The copy of notice shall be made available in both English and Nepali and displayed in municipalities and other public places.
- Provide input relevant to the ESIA to enable the update of the Stakeholder Engagement Plan (SEP).
- Area of Influence and Impact Zones. Through the desk reviews and field screening and verification, define and describe the Project's Area of Influence, based upon the area likely to be affected either directly or indirectly by the proposed activities subject to the ESIA; as well as induced developments. Identify and describe environmental and social impact zones within the Area of Influence (e.g. direct, indirect, induced, etc).
- Update the initial assessment of the potential issues/impacts/risks identified in the ESMF.
  - Detail the scope and work plan for the further studies, assessment, plans and instruments required for the overall ESIA work.

The consultant will prepare specific Screening and Scoping Reports and ToRs for the ESIA to meet GoN environmental requirements. The Scoping Reports will consist of, but not limited to, the following;

- Project description and definition of overall project Area of Influence (including impact zones)
- Summary of findings on the key potential environmental and social issues/ risks/ impacts, and baseline features/aspects, which should be included for further study in the environmental and social assessment and planning studies.
- Applicable regulatory requirements of GoN, as well as UNDP and GCF
- Draft TORs/outlines of each of the further environmental and social assessments and instruments required, including a ToR(s) and Scoping Document(s) for ESIA(s) as required by the GoN environmental legislations including EPA/ EPR.
- The scoping report will describe the methodologies to be used for carrying out ESIA and other assessments and preparing various plans; and contain a detailed work plan to conduct the studies, prepare the plans etc.

The consultant, facilitated by PMU, will organize meetings to present and discuss the screening stage and scoping stage findings with the PMU, DED Consultant and key stakeholders.

The draft scoping report and ToR (s) will be reviewed by the PMU and UNDP. The Reports and ToRs will be revised based on the feedbacks received.

### Task 2: Environmental and Social Impact Assessment

The consultant shall develop the Environmental and Social Impact Assessment (ESIA) report based on both primary and secondary data collection and analysis. The process shall ensure compliance and consistency with Government of Nepal legal requirements including EPA/EPR requirements and the UNDP requirements for Environmental and Social Assessment as per the xxxxx.

Any contact or interviews for preparation of baselines or social assessment should be planned and carried out in a culturally appropriate manner, in a language acceptable and used by the communities and in coordination with any other preparation work being carried out about Indigenous Peoples.

The full and specific scope of this Task will be defined by the outputs of Task 1; nonetheless, it is presumed that the following will be include:

### **ENVIRONMENTAL AND SOCIAL BASELINE**

The Baseline of the area of influence, based on Task 1 and should include the following:

- Physical environment, including:
  - Geology, watershed, landslides and erosion: Include topography/ terrain, geology and geomorphology and slope stability & landslide/ soil erosion risk zones (noting the geological conditions, slope steepness, vegetation type, etc. Describe current status and trend).
  - Water, Rivers and Hydrology: rivers, their natures, floods & disasters, etc GLOFs, Landslide Dam-break Failure Floods (LDFs), very high river flows, etc
  - Physical cultural resources: identify and characterize any sites, structures, or natural features and landscapes– above ground, underground, or underwater – that are of archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Indicate whether any identified cultural resources are subject to special treatment under national law.
- Biological environment, including:
  - Forests and protected area: areas, types. characterization of terrestrial flora, fauna and natural habitats; migratory and endemic species (including any applicable conservation or protection status, and IUCN Red List status), economically or culturally important species, and others which play important ecological functions as food sources or sustainers of the habitat of identified key species. Migratory/ movement routes of birds and animals.
  - Aquatic species and natural habitats. including migratory and endemic species (including any applicable conservation or protection status, and IUCN Red List status), economically or culturally important species, and others which play important ecological functions as food sources or sustainers of the habitat of identified key species
  - Identification of Bio-diversity hot-spots (based on the above).
- Socioeconomic environment, including:
  - Demography and ethnicity: Develop a demographic and ethnic profile of the population in the project area. For communities specifically affected by the project, describe in detail their history, physical spread, social clustering, cultural and traditional characteristics, interactions and relations among various groups. Also discuss formal and informal institutions, social networks and social support systems, and their capacity and functioning; development needs and challenges.
  - Religion and culture: Provide relevant information on community festivals, rituals and religious and cultural monuments, practices, knowledge, skills, instruments, and other key resources to be affected by the subproject.
  - Socioeconomic development status: Map out the socioeconomic development status of the project area, including resource conditions, economic activities, employment sources and trends, infrastructure and service provision (education, transport, extension services etc.), as well as local development needs, priorities, challenges, and planned or ongoing development interventions.
  - Livelihood activities: Characterize economic and subsistence-oriented livelihood activities, both for communities residing within the project Area of Influence as well as for individuals or industries which depend on resources in the Area of Influence, including activities related to fisheries, forestry or forest

- products, or other natural resources, as well as agriculture and industry (tourism). Access to natural resources and their significance to local communities and livelihoods. Discuss gender related work load sharing and family economy; dependency and use of local and external resources; and production and marketing systems and patterns.
- Community health: Provide an overview of key health issues, focusing on the presence of any disease which may become more prevalent in the area due to the project, as well as the coverage and quality of health services available in the project area.
  - Land management- usage, ownership patterns
    - Land use: characterize current land uses and indicate major trends in land use change which are taking place irrespective of the proposed project. Identify Rural and urban areas including identification of areas with urbanization potential.
    - Land tenure: Characterize types of land tenure (e.g., titles, customary), formal and informal institutions related to land tenure, and modes of land transactions in the project area.
  - Vulnerable and Indigenous peoples:
    - Community Structures and Practices: Identification of any specific socio-cultural structure and practices that may influence the impacts of the project on the specific communities.
    - Patterns of inclusion and Exclusion: Presence of people based on vulnerability and compile information on their demographics, socio-cultural features, livelihood and employment patterns, use of natural resources, formal and information institutions, and interactions with other ethnic groups. Provide gender-specific information as possible.
  - Gender
    - Review of the legal and policy framework in Nepal relevant to gender;
    - Review of formal and informal institutional structures and processes that affect gender outcomes in the project and under the project setup;
    - Review of setup, capacity and constraints within relevant institutions to address gender concerns and considerations;
    - Analysis of local culture, particularly among different indigenous groups, regarding gender and women, focusing particularly on the informal institutions, cultural norms, behavior, and customs;
    - Review of traditional roles and current status of women in the social, economic, cultural, political and institutional contexts of the communities in the project areas.

### **ANALYSIS OF ALTERNATIVES**

As part of the ESIA process, the consultant compares feasible alternatives to the proposed project, including the “do nothing option”. This should build on the alternatives considered by the feasibility studies, alternatives considered by the DED Consultants, and ideal the alternative analysis would be done in collaboration with these consultants.

The alternative analysis, inter alia, will examine potential application of mitigation hierarchy of avoidance, minimization, mitigation, and offsetting/ compensation of the adverse impacts. The Consultant will compare alternatives in terms of potential environmental impacts; capital and operating costs; suitability under local conditions; and institutional, training and monitoring requirements etc. To the extent possible, costs and benefits of each alternative.

Findings of the alternative analysis, from early stage, will be shared with DED Consultant (PMU will facilitate the coordination and sharing) as an input to the decision-making in the process of final selection of the sites for the hazard warning/EWS equipment and eco-DRR/flood reduction interventions.

### **IMPACT ASSESSMENT AND ANALYSIS**

Assess direct, indirect and induced impacts and risks in the short- term and the long-term resulting from construction and operation activities of the project and propose mitigation measures for identified



impacts. While the full scope of the coverage of impact assessment/ analysis will be confirmed during Task 1 (screening and scoping), the following issues are likely considered to be relevant:

- Degradation or loss of forests, natural habitat including critical natural habitat from direct construction and/ or operation. This should include, in particular, impacts to the conservation area; natural habitats including migratory / movement routes of species, and impacts on the biodiversity hot-spots in the influence area.
- Landslide and soil erosion impact and slope instabilities (including due to changes to hydrology, quarrying, borrowing, site management, and spoil disposal);
- Noise Generation, air pollution and traffic impacts during construction phase.
- Impacts on health and safety (workers, as well as public/ community health and safety)
- Potential deterioration in water quality due to disposal of solid and liquid waste from labor camps and construction activities;
- Induced impacts from project-related influx – including increased stress on natural resources, pollution and waste management issues, strain on local services and infrastructure, safety issues for the local community etc and potential GBV issues.
- Impact and risk of discrimination, child labor and forced labor including the workers to be brought to the project by the contractors or labor brokers
- Impacts to public health via wastes and sanitation, waste and hazardous waste storage and disposal sites; etc
- Impacts of permanent and temporary land acquisition on land use patterns,
- Impacts to agricultural land, income, livelihood, and public and private asset/property.
- Impacts on archeological, historical and cultural heritage.
- Impacts from auxiliary facilities and associated facilities
- Both beneficial and adverse impacts related to lake lowering, hazard monitoring/EWS stations, and flood reduction interventions;
- Analysis of potential project impacts, both positive and negative, on women, including gender specific impacts on household activities, employment at project site, illegal trafficking etc.;
- Analysis of barriers, challenges, constraints to women's participation, including an assessment of women's capacity to participate;
- Combined/ Cumulative environmental impacts of the proposed lake lowerings and flood reduction interventions.

### **STAKEHOLDER ANALYSIS AND ENGAGEMENT**

The consultant will conduct stakeholder engagement during ESIA preparation as per the Project Stakeholder Engagement Plan (SEP). The consultant is to contribute to updating the SEP to include ESIA specific consultation and to ensure that all the project affected parties and different interest groups are identified and included in any ongoing engagement plans. The consultant will specifically identify those project-affected parties (individuals or groups) who, because of their circumstances, may be disadvantaged or vulnerable.

Stakeholder feedback received shall be analyzed, and the consultations shall determine how it can be addressed in the ESIA and project designs.

Stakeholder engagement should not be treated as a project information dissemination session but should be used to take into account the main interest of the stakeholders and improve the plan and design of the project and shall continue throughout the project life. The ESIA should reflect the comments and responses to various consultations.

Project information shall be disclosed as early as possible and, in a way, and timeframe that allows the stakeholders to understand the risks and impacts of the project, and potential opportunities and have meaningful consultations with the stakeholders on project design. Information will be disclosed in relevant local languages and in a manner that is accessible and culturally appropriate.

The ESIA's are to summarize and link to project Stakeholder Engagement Plan or ESMP that includes plan for consultations. Includes summary of consultations undertaken for development of ESIA

### Environmental and Social Management Plan (ESMP)

Develop an ESMP encompassing the following, based on the findings of the assessment process and details on all recommended measures to be taken during construction and operation of the project to avoid, minimize, mitigate, compensate and/or offset the identified adverse environmental and social impacts, as well as the recommended specific actions, indicators for monitoring and evaluation, institutional responsibilities, reporting arrangements, and budget needed to implement these measures.

### **ESIA EXECUTIVE SUMMARY**

The ESIA Executive Summary, including Plan summaries, should be translated into both Nepali and the local Indigenous Languages for public consultation and dissemination.

### Disclosure and Consultations on draft studies

The consultant will support the PMU conduct public hearings at least in three locations within the project influence area, as well as dissemination and consultation workshops at local, State and central level, once the draft environmental and social assessment and planning materials are available.

The Consultant shall produce full draft ESIA (in English), as well as an Executive Summary and summary plans in English, Nepali and relevant local indigenous languages. Additional materials can for consultations should be produced as required but the specific context.

Based on the SEP, Consultations should follow international good practices on stakeholder engagement consistent with or exceeding the GoN and UNDP requirements, with detailed records kept including locations and dates of all consultation events, participants' names and affiliations, a summary of topics discussed, a summary of comments received; and how those comments will be taken into account by the project. All the consultations should be conducted in the relevant local language and safeguards instruments (e.g. ESMP etc.) prepared will be made available to the concerned communities, local level NGOs and the others concerned in the subproject sites for the feedback.

Following consultations as well as review of the draft studies by PMU and the UNDP, the Consultant shall make necessary revisions and finalize the ESIA report and sub-plans. The Consultant shall submit the revised reports to PMU for the approval of UNDP and GoN.

The consultant will be responsible for the following activities:

- Become fully familiar with the UNDP's SES and those of relevant funding bodies
- Review and update the SESP and the ESMF
- Produce the three ESIA's/ESMPs
- As necessary, recommend issues for further discussion during stakeholder consultations undertaken during project implementation

## APPENDIX SIX: OUTLINE FOR LAND ACQUISITION PLAN

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The Land Acquisition Plan (LAP) will describe process for identification of tenure and process for obtaining legal use of land. Public land will be used for access tracks and structures and the majority of EWS stations. The LAP will provide the mechanism for ensuring that it is confirmed that land is publicly owned, or in the few cases where private land provides a better location for infrastructure such as EWS, that legal permission has been obtained to use it (eg via leases). Any land acquisition will be based on willing buyer/willing seller and the following conditions will be followed: (i) land markets or other opportunities for the productive investment of the sales income exist; (ii) the transaction took place with the seller's informed consent; and (iii) the seller was provided with fair compensation based on prevailing market values. No compulsory land acquisition will be undertaken by the project.

The application of the LAP and IPP will ensure that land is unencumbered and that land tenure at all project sites is confirmed as part of detailed site survey during implementation stage.

The following table of contents is proposed for the Land Acquisition Plan:

1. Introduction
  - 1.1 Overview of the project.
  - 1.2 Project Activity Requiring Land Acquisition
  - 1.3 Justification for Land Acquisition.
  - 1.4 Measures to minimize land acquisition and associated adverse impacts.
2. Legal Framework.
  - 2.1 General Description of Land in Nepal
  - 2.2 Applicable Nepalese laws and policies
  - 2.3 UNDP's SES Standard 5 on Displacement and Resettlement
  - 2.4 Abbreviated Plan
3. The Land Acquisition Process
  - 3.1 Participation and Consultations
4. Institutional Arrangements and Implementation Schedule.
  - 4.1 Institutional Arrangements
  - 4.2 Implementation Schedule
5. Project Level Grievance Redress Mechanism
6. Monitoring and Evaluation

### APPENDIX SEVEN: ELEMENTS OF BIODIVERSITY ACTION PLAN

Where biodiversity values of importance to conservation are associated with a project or its area of influence, the preparation of a Biodiversity Action Plan (BAP) provides a useful means to focus a project's mitigation and management strategy. For project activities that may affect natural habitats, critical habitats and protected areas, Standard 1 notes that a BAP needs to be in place. For projects solely designed to strengthen biodiversity and maintain or restore ecosystems in areas of critical habitat, the project document itself would constitute such a plan. Biodiversity plans are highly encouraged when also operating in modified habitats with biodiversity values of importance to conservation.

Targeted biodiversity-related mitigation and management measures may be integrated into more general Environmental and Social Management Plans (ESMPs) or related plans. However, a BAP provides focused attention to actions in ecologically critical areas. A BAP may be included as part of a broader ESMP.

National Biodiversity Strategies and Action Plans (NBSAP) are the primary instruments for implementing the Convention on Biological Diversity at the national level. A BAP is a more targeted instrument for enhancing and conserving biodiversity and ecosystem services in particular habitats, demonstrated on an appropriate geographic scale. A BAP should seek to achieve net gains to the biodiversity values for which the critical habitat was designated. A BAP is highly context specific.

There is no one widely recognized, cross-sectoral framework for the development of a BAP. Typically a BAP will be undertaken to address significant gaps in information for undertaking biodiversity-related actions (such as insufficient baseline data or understanding of key biodiversity values) and would articulate a management plan where/when adequate information is available for developing appropriate actions.

General elements of a BAP include the following:

**(1) Description of biodiversity context:** Identifies national and/or regional biodiversity context; location of projects site/s; relevant physiography; general description of relevant ecosystems, habitats, flora, fauna; priority biodiversity features and components of elevated significance.

**(2) Objectives and targets biodiversity actions and mitigation:** Identifies measures and actions to enhance and conserve biodiversity and/or in accordance with the mitigation hierarchy avoid, minimize, mitigate, potentially significant adverse social and environmental impacts to acceptable levels. Describes – with technical details – each biodiversity-related action/mitigation measure, including the type of issue/impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, implementation descriptions and operating procedures, as appropriate; takes into account, and is consistent with, other relevant mitigation plans (e.g. indigenous peoples, economic displacement).

**(3) Implementation action plan (schedule, cost estimates and source of financing):** Outlines an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and the capital and recurrent cost estimates and sources of funds for implementing the BAP (i.e. budget). Describes institutional arrangements, identifying which party is responsible for carrying out the actions/mitigation and monitoring measures.

**(4) Stakeholder Engagement:** Outlines context-specific plan to engage in meaningful, effective and informed consultations with relevant stakeholders, including locally affected groups. Includes information on (a) means used to inform and involve affected people and description of effective processes for receiving and addressing stakeholder concerns and grievances regarding the project's social and environmental performance.

**(5) Monitoring and reporting:** Identifies monitoring objectives and specifies the type of monitoring, with linkages to the biodiversity actions and mitigation measures. Describes parameters to be measured, methods to be used,

sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions. Establishes reporting schedule and format.



## APPENDIX EIGHT: LABOUR MANAGEMENT PROCEDURES AND REQUIREMENTS FOR LABOUR MANAGEMENT PLAN

### Labour Management Procedures Template

The Labour Management Procedures (LMP) facilitates planning and assists responsible parties to ensure that project implementation adheres to the requirements of SES Standard 7 on Labour and Working Conditions. The LMP (a) sets out the written labour procedures for the project, (b) identifies the main labour requirements and risks associated with the project, and (c) helps the project developer to determine the resources necessary to address project labour issues and risks and sets out an action plan.

The LMP summarizes key labour-related risks and issues and may be supplemented by more targeted analyses and plans (e.g. such as an occupational safety and health action plan, WBG EHS sector specific guidelines, ISO standards, contractor management matrices, etc.). The LMP (as with supporting analyses) should be undertaken by experts with relevant expertise.

The LMP may be prepared as a stand-alone document, or form part of other environmental and social management documents. The LMP is a living document, which is initiated early in project preparation, and is reviewed and updated throughout development and implementation of the project.

In preparing and updating the LMP, project developers should refer to the requirements of national law and S7 and its Guidance Note. The content of the LMP is indicative: some issues may not be relevant to the project while some projects may have other issues that need to be captured from a planning perspective. Where national law addresses requirements of S7 this should be noted in the LMP.

Where project workers under a single project may be engaged under significantly different circumstances (e.g. different regions of a country, different employment arrangements), it may be necessary to ensure that these differences are appropriately addressed in the LMP, or separate LMPs may need to be developed.

For projects utilizing an ESMF given that specific activities and/or subprojects have yet to be defined, the development of the LMP may need to be deferred. The ESMF should address as many potential issues outlined in the LMP as is feasible during project development, and the ESMF should include procedures for undertaking a specific LMP once locations and activities are defined.

A concise and up to date LMP will enable different project-related parties, for example, staff of the project implementing unit, contractors and sub-contractors and project workers, to have a clear understanding of what is required on a specific labour issue. The level of detail contained in the LMP will depend on the type of project and information available. Where relevant information is not available, this should be noted and the LMP should be updated as soon as possible.

Below is an indicative outline of the LMP.

1. **Overview of Labour Use in the Project:** This section describes the following, based on available information:
  - a. *Number of Project Workers:* The total number of workers to be employed on the project, and the different types of workers: direct workers, contracted workers, temporary or seasonal workers and community workers. Where numbers are not yet firm, an estimate should be provided.
  - b. *Characteristics of Project Workers:* To the extent possible, a broad description and an indication of the likely characteristics of the project workers e.g. local workers, national or international migrants, female workers, workers between the minimum age and 18.
  - c. *Timing of Labour Requirements:* The timing and sequencing of the project's labour requirements in terms of numbers, locations, types of jobs and skills required.
  - d. *Contracted Workers:* The anticipated or known contracting structure for the project, with numbers and types of contractors/subcontractors and the likely number of project workers to be employed or engaged by each contractor/subcontractor. If it is likely that project workers will be engaged through brokers, intermediaries or

agents, this should be noted together with an estimate of the number of workers that are expected to be recruited in this way.

- e. *Migrant Workers*: If it is likely that migrant workers (either domestic or international) are expected to work on the project, this should be noted and details provided.

**2. Assessment of Key Potential Labour Risks:** This section describes the following, based on available information:

- a. *Project activities*: The type and location of the project, and the different activities the project workers will carry out, including primary supplier(s)
- b. *Key Labour Risks*: The key labour risks that may be associated with the project (see, for example, those identified in S7 and the GN). These could include, for example:
  - the conduct of hazardous work, such as working at heights or in confined spaces, use of heavy machinery, or use of hazardous materials
  - likely incidents of child labour or forced labour, with reference to the sector or locality
  - discriminatory policies or practices that deny equal opportunity
  - restrictions on freedom of association and collective bargaining
  - likely presence of migrants or seasonal workers
  - risks of labour influx or gender based violence
  - possible accidents or emergencies, with reference to the sector or locality
  - general understanding and implementation of occupational health and safety requirements

**3. Brief overview of labour legislation, agreements and potential gaps with Standard 7:**

- **Core Labour Standards**: This section sets out the key aspects of national legislation implementing the ILO fundamental rights at work, i.e. prohibition of child labour/minimum working age; prohibition of forced labour, non-discrimination/equal opportunity; and freedom of association and collective bargaining. The overview should highlight any material gaps between national law and S7.9-19.
- **Terms and Conditions**: This section sets out the *key aspects* of national labour legislation with regards to term and conditions of work, and how national legislation applies to different categories of workers identified in Section 1. The overview focuses on legislation which relates to the items set out in S7, paras.5-8 (i.e. wages, deductions and benefits) and any material gaps with S7. The section should also identify the terms of any existing collective agreements that stipulate workplace terms and conditions.
- **Occupational Safety and Health (OSH)**: This section sets out the *key aspects* of the national labour legislation with regards to occupational health and safety, and how national legislation applies to the different categories of workers identified in Section 1. The overview focuses on legislation that relates to the items set out in S7, paras. 20-25 and any material gaps with S7.

**4. Responsible Staff:** This section identifies the functions and/or individuals within the project responsible for (as relevant):

- engagement and management of project workers
- engagement and management of contractors/subcontractors
- occupational safety and health (OSH)
- training of workers
- addressing worker grievances

In some cases, this section will identify functions and/or individuals from contractors or subcontractors, particularly in projects where project workers are employed by third parties.

**5. Policies and Procedures:** This section sets out :

- **Management systems:** Relevant management systems *in place* to implement S7, e.g. human resources policy, anti-harassment policy, staff handbook, grievance procedure, OSH management system, etc. These can be referenced or annexed to the LMP, together with any other supporting documentation. Where relevant, it identifies applicable national legislation.
- **Age of Employment:** Details regarding (see S7 paras. 16-19 and GN):
  - the minimum age for employment on the project
  - the process that will be followed to verify the age of project workers
  - the procedure that will be followed if underage workers are found working on the project
  - the procedure for conducting risk assessments for workers aged between the minimum age and 18
  - Where incidences of **child labour** are identified, describe how these will be remediated
- **Forced Labour:** Where the risk of forced labour has been identified, this section outlines how this risk will be mitigated, and how any instances of forced labour will be addressed (see S7 para. 14 and GN).
- **Occupational safety and health:** Where significant health and safety risks have been identified, summarize how these will be addressed in a manner consistent with national labour and employment regulations and the requirements of S7. (Note that a specific OSH plan may be necessary.)
- **Terms and Conditions:** This section sets out details regarding (see S7 paras. 5-8):
  - specific wages, hours and other provisions that apply to the project
  - maximum number of hours that can be worked on the project
  - any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions
  - other specific terms and conditions (e.g. benefits)
  - “Beyond compliance” initiatives e.g. to promote local employment or the hiring of traditionally underrepresented groups
- **Grievance Mechanism:** This section sets out details of the grievance mechanism that will be provided for direct and contracted workers and describes the way in which these workers will be made aware of the mechanism (S7, paras. 26-28).
- **Contractor Management:** This section sets out details regarding (see S7, paras. 29-31 and GN):
  - the selection process for contractors/third parties
  - the contractual provisions that will be put in place relating to contractors for the management of labour issues, including OSH
  - the procedure for managing and monitoring the performance of contractors
- **Community Workers:** Where community workers will be involved in the project, this section sets out details of the terms and conditions of work and identifies measures to check that community labour is provided on a voluntary basis. It also provides details of the type of agreements that are required and how they will be documented. This section sets out details of the grievance mechanism for community workers and the roles and responsibilities for monitoring such workers.
- **Primary Supply Workers:** Where a significant risk of violations of core labour standards<sup>101</sup> or serious safety issues in relation to primary suppliers has been identified, this section sets out the procedure for monitoring and reporting on primary supply workers (S7 paras. 32-34)

**7. Action Plan** This section sets out details of actions required to achieve and maintain compliance with national law and S7, including responsibilities, timelines and cost/resource estimates. The Plan will also include monitoring and reporting

<sup>101</sup> Child labour, forced labour, non-discrimination and equal opportunity, freedom of association and collective bargaining.

requirements appropriate to the nature of the project and associated labour risks and impacts. The Action Plan includes the following elements:

- Summary of required measures identified in above sections of the LMP.
- Describe schedule, institutional arrangements, and responsibilities and mechanisms for carrying out the identified measures, indicating who is responsible and when actions will be undertaken.
- Describe the monitoring framework for the project and key indicators for measuring progress in implementing the identified measures.
- Budget and Financing: Include an appropriately costed plan, with itemized budget sufficient to satisfactorily undertake the identified measures.

### APPENDIX NINE: INDICATIVE OUTLINE OF AN ESMP

An ESMP may be prepared as part of the Environmental and Social Impact Assessment (ESIA) report or as a stand-alone document.<sup>102</sup> The content of the ESMP should address the following sections:

**(1) Mitigation:** Identifies measures and actions in accordance with the mitigation hierarchy that avoid, or if avoidance not possible, reduce potentially significant adverse social and environmental impacts to acceptable levels.

Specifically, the ESMP: (a) identifies and summarizes all anticipated significant adverse social and environmental impacts; (b) describes – with technical details – each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; (c) estimates any potential social and environmental impacts of these measures and any residual impacts following mitigation; and (d) takes into account, and is consistent with, other required mitigation plans (e.g. for displacement, indigenous peoples).

**(2) Monitoring:** Identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the environmental and social assessment and the mitigation measures described in the ESMP.

Specifically, the monitoring section of the ESMP provides (a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and (b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

**(3) Capacity development and training:** To support timely and effective implementation of social and environmental project components and mitigation measures, the ESMP draws on the environmental and social assessment of the existence, role, and capability of responsible parties on site or at the agency and ministry level.

Specifically, the ESMP provides a description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (e.g. for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training).

Where support for strengthening social and environmental management capability is identified, ESMP recommends the establishment or expansion of the parties responsible, the training of staff and any additional measures that may be necessary to support implementation of mitigation measures and any other recommendations of the environmental and social assessment.

**(4) Stakeholder Engagement:** Summarizes and links to project Stakeholder Engagement Plan or outlines plan to engage in meaningful, effective and informed consultations with affected stakeholders. Includes information on (a) means used to inform and involve affected people in the assessment process; and (b) summary of stakeholder engagement plan for meaningful, effective consultations during project implementation, including identification of milestones for consultations, information disclosure, and periodic reporting on progress on project implementation. Require documentation of consultations (summaries including presentations, key points raised and responses provided, participation lists). Include information on project grievance mechanism (below) and on UNDP Accountability Mechanisms (SRM,SECU).

**(5) Grievance redress mechanism:** Describes effective processes for receiving and addressing stakeholder concerns and grievances regarding the project's social and environmental performance.

Describe mechanisms to provide stakeholders and potential affected communities avenues to provide feedback or grievances, and receive responses, with regard to the implementation of specific activities, policies, or regulations.

**(6) Implementation action plan (schedule and cost estimates):** For all four above aspects (mitigation, monitoring, capacity development, and stakeholder engagement), ESMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and

<sup>102</sup> This may be particularly relevant where contractors are being engaged to carry out the project, or parts thereof, and the ESMP sets out the requirements to be followed by contractors. In this case the ESMP should be incorporated as part of the contract with the contractor, together with appropriate monitoring and enforcement provisions.



recurrent cost estimates and sources of funds for implementing the ESMP. These figures are also integrated into the total project cost tables. Each of the measures and actions to be implemented will be clearly specified and the costs of so doing will be integrated into the project's overall planning, design, budget, and implementation.