# ENVIRONMENTAL AND SOCIAL MANAGEMENT

# FRAMEWORK (ESMF)

# FOR

# POWER SECTOR REFORM AND SUSTAINABLE HYDROPOWER DEVELOPMENT PROJECT (PSRSHDP)

**Water and Energy Commission Secretariat (WECS)**

**And**

**Nepal Electricity Authority (NEA)**

**Nepal**

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**ENVIRONMENTALAND SOCIAL MANAGEMENT FRAMEWORK (ESMF)**
**FOR**
**POWERSECTOR REFORM AND SUSTAINABLE HYDROPOWER DEVELOPMENTPROJECT(PSRSHDP)**

## A. Background

1. The proposed **Nepal Power Sector Reform and Sustainable Hydropower Development Project (PSRSHDP)**intends to develop technical and analytical studies, capacity-building activities and policy dialog on the energy sector in Nepal, and preparation of next-step critical hydropower and transmission line projects to prepare Nepal for upcoming large-scale private and public investments in hydropower.

2. The project will provideadvisory services for preparation of hydropower and transmission line projects and associated capacity building, but will notfinance any civil works or physical implementation whatsoever, under any circumstance. Therefore, the PSRSHDP would not have any direct environmental or social impacts. To the contrary, the project overall is expected to result in significant environmental and social benefits by preparing critical studies, policy and planning recommendations, and capacity for improved management and integration of environmental and social considerations in the hydropower sector.

3. Nonetheless,the future infrastructure investments to be studied and prepared under the project may have significant environmental and social impacts. Likewise, the studies and activities related to water resources and basin planning, development and/or reform of regulations and guidelines, and capacity building in the power, and especially hydropower, sector will also shape how power sector investments take place in the future, with implications for the environment and affected communities.

4. This Environmental and Social Management Framework (ESMF) lays out the specific requirements, processes, and responsibilities for ensuring that the activities of the project are carried out in a manner that complies with World Bank safeguard policies and Nepal's environmental and social laws and regulations and to enhance the project's positive impact on enhancing environmental and social sustainability of power sector investments in Nepal.

## B. Brief Project Description

5. The Project Development Objectives are to (a) strengthen the capacity of the power sector agencies to plan and prepare hydropower and transmission line projects following international standards and best practices; and (b) improve the readiness of the power sector agencies for regulatory and institutional reforms.

6. This Project intends to offer a holistic and coherent set of technical and analytical studies, capacity-building activities and policy dialog on the energy sector, and preparation of next-step critical hydropower and transmission line projects to prepare Nepal for upcoming large-scale private and public investments in hydropower.

7. The proposed Project has three components: (i) Preparation of Hydropower and Transmission Line Investment Projects; (ii) Studies and Preparation for Policy Recommendations and Sector Reform; and (iii) Capacity Building for Safeguard Management and Hydropower Development.

8. **Component A: Preparation of Hydropower and Transmission Line Investment Projects:**This component will support preparation of two hydropower projects[1]as proposed by the GoN, and one priority high voltage transmission line project following recommendations of the Transmission System Master Planning[2] supported under the on-going NIETTP.

9. **Component B: Studies and Preparation for Policy Recommendations and Sector Reform**
This component will address critical power sector issues. This Component will prioritize and sequence study recommendations for actions, build consensus and enhance capacity for follow-on implementation under the planned DPC operations. It will support preparation of (a) river basin planning with an integrated water resource management (IWRM) approach for selected river basins; (b) recommendations for improvement of water resources management and regulations, including updating of the Water Resource Act and capacity building of the WECS; (c) Power System Expansion Plan, including updating the Generation Master Plan; (d) establishment and operationalization of a power trading company; and (e) the NEA business restructuring for improved management and efficiency, including provision of computerized management tools and installations of smart meters to enhance the distribution business management, and conducting asset evaluation.

10. **Component C: Capacity Building for Safeguard Management and Hydropower Development**
The component will support improving the environmental and social safeguard management system and associated capacity building, including:
    - Conducting a Strategic Environmental and Social Assessment (SESA) as part of the integrated river basin planning under Component B;
    - Preparing recommendations for environmental and social regulations;
    - Safeguard capacity building for management of transmission line RoW issues; and
    - Project management.

## C. Environmental and Social Compliance Requirements

11. Although the studies and capacity building activities to be conducted under this project will not themselves generate any adverse environmental or social impacts, the future infrastructure investments which are the focus of studies under Component A, as well as development of policy reforms (in particular the corporate policy for compensation along transmission line ROWs) and preparation of integrated basin plansmay have significant potential environmental and social impacts and/or consequences (positive and negative). Therefore, environmental and social impact assessments and plans will be conducted to fully assess and identify necessary mitigation measures for negative impacts, as well as measures to enhance positive effects. The assessments will be done in compliance with and subjected to Nepal's own environmental social requirements, laws, regulations and approval processes, and the international conventions Nepal is a party to and has ratified. Furthermore, as the project is proposed to be financed by the World Bank, the project is required to meet the requirements of relevant World Bank environmental and social operational policies[3].Therefore, the project is

[1] The GoN has officially proposed the Upper Arun Hydropower Project (UAHEP, 335 MW) and Ikhuwa Khola Hydropower Project (IKHP, 30 MW) for Bank support for project preparation.
[2] On-going with assistance of international consultant, under the Bank-supported NIETTP Project.
[3]As of the date of this document, the World Bank has not committed to fund the implementation of the potential investments/projects with respect to which technical assistance is being provided under this Project. Any works related to potential investments for which technical assistance is provided under this Project which are initiated and/or undertaken during the period of implementation of this Project shall be undertaken in compliance with the ESMF and the applicable World Bank environmental and social safeguard policies regardless of the source of financing for such works. Furthermore, in the event that the Government of Nepal finances the implementation of

assigned an Environmental Assessment Category "A" as per World Bank Operational Policy (OP) 4.01. Classification of the proposed project as a Category A project will ensure that the environmental and social studies to be carried out for specific proposed investments, as well as technical guidance and preparation of regulations on environmental and social management aspects of hydropower, meet the requirements of these policies. This includes in-depth environmental and social impact assessment and management planning, as well as consultations with all stakeholders of the corresponding proposed hydropower and transmission line investments being prepared under Component A. The Project will engage stakeholder consultation and involvement more broadly with regard to basin planning and policy reform studies being carried out under Components B and C.

12. The following World Bank safeguard policies are likely to be triggered by the proposed project:

- Environmental Assessment OP4.01
- Natural Habitats OP4.04
- Forests OP4.36
- Physical Cultural Resources OP4.11
- Indigenous Peoples OP 4.10
- Involuntary Resettlement OP4.12
- Safety of Dams OP4.37
- International Waterways (OP 7.50)

## D. Environmental and Social Issues of the identified investment projects to be prepared under Component A

13. Under Component A, the GoN has included the Upper Arun (335 MW) Hydroelectric Project, which includes the Ikhuwa Khola (30 MW) Hydropower Project for funding of the preparation studies. The GoN will also identify and prepare an additional priority high voltage transmission line project during the implementation stage of the proposed project, which has not yet been identified.

### D1. Upper Arun and Ikhuwa Khola Hydropower Projects

14. Below is a brief summary of key project aspects for the proposed UAHEP and IKHP projects. More information on the project, as well as the study requirements,can be found in the final draft Terms of Reference for the detailed Environmental and Social Impact Assessment (ESIA), Cumulative Impact Assessment (CIA) and social planning studies.In addition, a map showing the locations of the proposed investments is included in Annex II.

15. **Upper Arun Hydropower Project (UAHEP).** The UAHEP is a proposed 335 MW hydroelectric facility to be located on the Arun River in Sankhuasabha District of eastern Nepal. The project area is situated within Longitude 87°20’00” to 87°30’00” East and Latitude 27°38’24” to 27°48’09” North, about 15km south of the international border with Tibet and 220 km east of Kathmandu. The proposed dam site is located in the Chepuwa Village, in a narrow gorge about 350m upstream of the Arun River’s confluence with the Chepuwa River. The proposed power plant site is located in the Hatiya Village 16km downstream of the dam site, near the Arun River’s confluence with the Leksuwa River. The right bank of the Arun River at the proposed UAHEP site falls within the Makalu

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the potential investments/projects that have been prepared under this TA project, with or without funding from the World Bank, then the Government of Nepal shall be responsible for ensuring the implementation of the said investments/projects are compliant with the corresponding studies and documents prepared under this TA project, and hence are compliant with requirements of the applicable World Bank policies.

BarunBuffer Zone, which is adjacent to the Makalu Barun National Park. The proposed UAHEP dam site is therefore located at the edge of the Buffer Zone. UAHEP is the upstream most of the three major hydropower projects currently identified and under preparation in the Arun Basin, the other two being the 900 MW Arun III project and the 300 MW Lower Arun project, both of which are more advanced in their preparation status and have already been licensed to IPPs.

16. **UAHEP salient features.** As informed by an initial feasibility study completed in 1991, the proposed UAHEP is designed to be a Peaking Run of the River (PRoR) project with gated weir across the Arun River. Intakes on the left bank of the river are proposed to divert the design discharge of 78.8 $m^3/s$ through an intake tunnel to three underground desanding basins, a headrace tunnel of 7.8 km, surge tank, drop shaft, pressure tunnel, and ultimately to the underground powerhouse for power generation. Water would be retained for a period of a few hours only in a peaking pond and then released through the tunnel during peak hours. After power generation, water will be released back to the Arun River. A capacity optimization study in 2011 established the proposed UAHEP's capacity of 335 MW and annual energy generation of 2598 GWh.

17. **Ikhuwa Khola Hydropower Project (IKHP).** NEA has also proposed to develop the 30 MW IKHP, a medium sized hydropower project, in tandem with the UAHEP. The proposed IKHP site is located on a tributary to the Arun River approximately 8 km downstream of the proposed UAHEP powerhouse site. The IKHP project is envisioned to provide a source of benefit sharing and also power supply to local communities, and may be jointly developed with the participation of the local community. The Department of Electricity Development (DoED) of the Government of Nepal is currently working on a feasibility study and an initial environmental examination (IEE) for IKHP.

18. **Site access.** The proposed UAHEP and IKHP sites are not presently accessible by motorableroad. Three access roads are proposed, including Num-Kimathanka access road, the UAHEP Project Access Road and IKHP Access Road.

19. **Power transmission.**For the power evacuation of UAHEP, a 220 kV double circuit transmission line shall be constructed from the powerhouse to a proposed substation at Tumlingtar. Total length of the proposed transmission line is about 49 km. Preliminary route alignment surveys have been completed for about 45 km, and the remaining 4 km of route survey are expected to be completed soon. According to the proposed alignment, the transmission line will start from the powerhouse site of Upper Arun at Sibrung at the left bank of Arun River and immediately follows the right bank of Arun River. The transmission line will cross the Arun River to the left bank in the vicinity of the proposed dam site for Arun-3 HEP and heads towards the proposed substation of Koshi Corridor Transmission line at Tumlingtar. There are 49 proposed angle points in the 45 km section that has already been surveyed. The substation at Tumlingtar will then be connected to the Inarwa substation of the 107 km Koshi Corridor transmission line, which is a separately financed project being developed by GoN to evacuate the power from several projects in this area. Inarwa substation, Tumlingtar substation as well as the 107 km Koshi Corridor transmission line will be the part of national grid. Power from IKHP would meanwhile be brought up to the proposed substation site at the UAHEP powerhouse (Sibrung) through about 10km of 132kV single circuit transmission line. The 49 km transmission line connecting from power house of UAHEP to Tumlingtar is part of the Project, and shall be covered in the ESIA for UAHEP and IKHP. The Koshi Corridor transmission line will start construction soon with financing from the Indian Exim Bank. Therefore, the total length of Transmission Lines to be covered by the ESIA for UAHEP and IKHP are the 10km 132kV single circuit line and the 49km 220kV double circuit line

20. **Ancillary works and other possible linked activities.** Various ancillary works will be required for project implementation, including contractor camps, diesel generators for construction-stage power

supply, spoil and waste rock disposal areas, borrow areas, NEA staff housing, etc. These, and any other activities associated with the project that could be considered "linked activities" as defined in World Bank OP 4.12 (Para 4) – e.g., activities which are directly related, necessary to achieve the Project objectives, and planned to be carried out contemporaneously – shall also be covered under studies funded by the proposed project.

21. **Key Environmental Issues:** The environmental impact on land, water, flora and fauna of the UAHEP and IKHP are expected to be widespread and potentiallysevere across the various projects sites and influence areas if not properly managed and these impacts would occur during the construction, operations and maintenance phases. The primary areas of influence would be the upstream catchment area, the temporary water storage area between peaking cycles, the Dam sites, the tunnel corridors, plant room location, the immediate area downstream of the Dam and upstream of the power house where the significantly reduced flows would be occur, areas further downstream to be affected by changes to river flows and water quality/turbidity, the access roads, the quarry sites, disposal areas and campsites. Given the mountainous area and undulating landscape that is fairly untouched and pristine at the current time, erosion and sedimentation issues would need to be evaluated and managed in all areas during the construction, operation and maintenance, including ensuring that slope areas are well protected and drained. Managing water quality in the upstream areas and ensuring adequate environmental/riparian flows are also issues to be evaluated and managed carefully. In addition, influx of workforce and changes to local livelihoods as a result of the project may indirectly increase pressures on forests and other natural resources in the broader project area. Cumulative effects on hydrology, sediment movement and erosion, aquatic and terrestrial biodiversity, and other environmental aspects of UAHEP, IKHP and other planned hydropower projects in the Arun River watershed (notably Arun III and Lower Arun) may also result.

22. **Physical Cultural Resources:** There is currently no documentation available of archaeological or other physical cultural resource sites within the various project site locations. These would be investigated as part of the ESIA process and procedures for chance finds of any artifact/site of archeological significance occurs during construction or any contemporary structures and/or places of spiritual and religious importance are put in place.

23. **Key Social Issues:** The proposed project will require land acquisition and possibly small number of relocations. Given the sparse population in the project areas and the deep gorge of the reservoir area, these impacts are expected to be small according to impact screening at feasibility study. There are indigenous communities in the project areas. They will be subject to adverse impacts under the project, but they are also among the project beneficiaries. In addition to project benefits of power generation, the project is expected to contribute to and promote the socioeconomic development in the local areas, benefitting local communities, particularly the indigenous and vulnerable communities.

## E. List and Scope of Studies and Safeguard Instruments to be Prepared during Implementation of the Proposed Project.

### E1. Safeguards documents required for Component A (Upper Arun (UAHEP) and Ikhuwa Khola (IKHP) Hydropower Projects),

Details of each are available in the final draft TOR for the ESIA for UAHEP and IKHP (II).

- Environmental and Social Impact Assessment (ESIA) for both UAHEP and IKHP

- Environmental and Social Management Plan (ESMP)for UAHEP
- Environmental and Social Management Plan (ESMP) for IKHP
- Cumulative Impact Assessment (CIA) of the Arun River Watershed
- Resettlement Policy Framework (RPF)
- Resettlement Action Plan (RAP)
- Vulnerable and Indigenous Peoples Development Plan
- Downstream Impacts Management Plan
- Gender Assessment and Action Plan
- Benefit-sharing Action Plan
- Public Health Assessment and Action Plan
- Public Participation and Consultation Plan
- Communication Strategy and Action Plan
- One Executive Summary of these documents, in both English and Nepali
- Dam Safety Plans

**Responsibility for preparing them**: Nepal Electricity Authority (NEA)
**Expected Start Date**: July 2015
**Terms of Reference for these studies:**Final draft is available
**Source of financing:** Financed under Component A of the proposed project

**Broad scope of each study/document**

24. **Environmental and Social Impact Assessment** – ESIA will be carried out by consulting firms independent of the engineering forms and proponents. The consultant will carry out screening and scoping, modification of the TOR as necessary depending on results of scoping, collection and analysis of primary and secondary data, and consultations with stakeholders in order to identify and assess qualitatively and quantitatively, the potential and adverse environmental and social impacts be they direct, indirect, induced and cumulative including impacts on critical natural habitat. The assessment will identify necessary measures to first avoid, or otherwise reduce, mitigate and/or manage and/or compensate for such negative impacts and enhance positive effects, in accordance with Government of Nepal's requirements and the World Banks triggered safeguard policies.

25. **Environmental and Social Management Plans**– Each ESIA report will include an ESMP as a chapter or volume, which will contain all the required mitigation and monitoring measures (including indicators to measure performance) to be implemented during construction, and operations and maintenance phases. The ESMPs will specify the institutional responsibilities for carrying out each measure or action, as well as management arrangements, timelines, budget, and required capacity building measures for their implementation. The ESMPs will contain sub-plans as appropriate to cover specific issues. For example, one critical issue already identified to be covered under the ESMPs relates to ecological flows, given that the construction of the dam will alter the natural flow of the river thus affecting the river ecosystems and the human livelihoods that depend on them. To ensure that these impacts are reduced and avoided and that adequate flow is maintained downstream for sustaining fresh water, the ESMPs shall contain ecological management plans for UAHEP and IKHP. These plans will quantify the required environmental flow through various studies and analysis which will address the river's extreme low flows, high flow pulses, small floods, and large floods and restore sediment deposition, addressing the life-cycle needs of fish/ aquatic life as well as wildlife, if relevant and addressing the river-based livelihoods of communities.

26. **Cumulative Impact Assessment (CIA) –** will focus on identified Valued Environmental (and Social) Components (VECs) which may be affected by the UAHEP and IKHP projects, and other development activities planned or underway throughout the Arun River watershed, including the upstream catchment, irrespective of their source of financing. The CIA will recommend project level as well as strategic planning level recommendations for minimizing negative impacts and maximizing positive impacts associated at the basin level.

27. **Resettlement Policy Framework (RPF) –** will contain the measures and procedures that must be complied with when land acquisition that has not been identified during the planning process is required.

28. **Resettlement Action Plan (RAP) –** will identify all impacts of known land acquisition and resettlement, requirements of complying with GoN and World Bank requirements and policies when land acquisition occurs, and the entitlement policy and matrix, and the detailed plan to implement these measures and entitlements prior to the land being acquired. The RAPs will contain, inter alia, an inventory survey of physical impacts, census survey of affected populations, review of relevant legal policies, entitlement plans, livelihood restoration and development measures and the grievance redress and monitoring mechanisms.

29. **Vulnerable and Indigenous Peoples Development Plan** – as the UAHEP and IKHP areas are inhabited by several indigenous communities classified and officially recognized by the GoN, the plan will contain measures to avoid or minimize adverse impacts and maximize positive impacts on these communities.

30. **Downstream Impacts Management Plan –** as the dams will alter natural river flows downstream of the location of these dams, anticipated adverse environmental, social, cultural and economic impacts in the downstream areas will occur. To ensure these adverse impacts are avoided, minimized or mitigated or otherwise managed, the plan will identify, analyze and assess the possible downstream impacts, identify and inventory communities that are likely to be affected and will contain the necessary mitigation strategies and intervention measures based on the above analyses.

31. **Gender Assessment and Action Plan -** Women are important stakeholders in hydropower development, falling among both the affected and the beneficiaries. It is important to understand the gender dimensions of the project and the differential impacts on women so as to maximize project benefits.

32. **Benefit-sharing Action Plan -** will cover, but not be limited to; consultations with local stakeholders, in particular with local indigenous communities, over their expectations from this project;Review of benefit-sharing proposal from project feasibility studies for UAHEP and IKHP;Define "benefit-sharing," design, and propose a benefit-sharing scheme for the project; and Include differential benefit analysis for those whose livelihoods and land values will be disproportionately enhanced by road provisioning/improvements.In addition, mechanisms like the PES (payment for environmental services) will also be included in review of benefit sharing. This type of mechanism which targets participatory conservation for promoting proper land use management in the uplands to reduce siltation will be proposed.

33. **Public Health Assessment and Action Plan -** The construction of the full project will have adverse public health impacts due to dust, noise, pollution, and migration of construction workers into the project. The transportation of heavy machine and equipment to the project area by road may cause additional hazards, accidents and human injuries. It is therefore necessary to generate awareness of

potential impacts, and initiate both preventive and mitigation measures to minimize risks and possible harmful effects on public health.

34. **Public Participation and Consultation Plan -** Drawing from the stakeholder consultation strategy developed during the screening and scoping phase, this plan will cover the following objectives: (a) outline of the specific activities, logistics and schedule for the consultation and inter-agency coordination processes to take place throughout the environmental and social assessment and planning stage, ensuring that consultations are coordinated and executed together with different entities and at different levels (government, municipality, NGOs, local communities etc.) in order to capture a range of participants, and also to ensure the stakeholder consultation is continuous throughout the project; (b) possible avenues of public interaction, in addition to interviews and public meetings, especially through proactive use of social media and newer communication technology; (c) will identify points of entry for ensuring local people as more active participants (rather than simply respondents) in consultations, and (d) a strategy and required actions, including implementation arrangements, responsibilities and budget, for ongoing engagement, consultations, and grievance / dispute resolution activities throughout the life of the Project.

35. **Communication Strategy and Action Plan -** Given the remote location of the UAHEP and IKHP, the high profile of hydropower development, and the history of hydropower development in the Arun Valley in particular, it is important to develop a communication strategy for continuous communication between the project implementation authorities and all other stakeholders throughout the life of the projects. The objectives are to (i) help strengthen public understanding and support for the projects and create an enabling environment for their implementation; (ii) enable public communication and continuous flow of information on project activities, impacts, and benefits; (iii) manage relationships with key external stakeholder constituencies; and (iv) facilitate dispute resolution and public monitoring of project implementation.

36. **Dam Safety Plans -** this would include preparation and implementation of detailed plans for construction supervision and quality assurance for each dam (UAHEP and IKHP); instrumentation plans; operation and maintenance plans; and emergency preparedness and response plans. Prequalification of bidders during procurement and bid tendering for civil works and electromechanical contractors, and periodic safety inspections of the dams after completion, will also be required and specified in appropriate contractual documents.

**Dam Safety Panel of Experts**

37. In accordance with World Bank OP 4.37, a Dam Safety Panel of Experts will be appointed by NEA to undertake periodic, comprehensive and independent reviews of the design, construction and if needed, the initial reservoir filling of the completed dams.

**Responsibility:** The Dam safety Panel will be appointed by and report to the NEA.ToR of Dam Safety Panel of Experts will be cleared by the World Bank. **Expected start date: July 2015**
**Source of financing:** financed under Component A of the proposed project.

**Environmental and Social Panel of Experts**

38. In addition, given the potential high degree of sensitivity and complexity of the environmental and social issues related to the UAHEP and IKHP , the NEA in accordance with World Bank OP 4.01 will engage an environmental and social panel of experts to provide independent advice and quality assurance for the environmental and social studies and management plans, and support NEA to

effectively integrate the findings and recommendations of the various safeguards documents into the design, implementation plan and operational plan of the UAHEP and IKHP.

**Responsibility:** The Environmental and Social Panel of Experts will be appointed by and report to the NEA.ToR of Environmental and Social Panel of Experts will be cleared by the World Bank.
**Expected start date: July 2015**
**Source of financing:** financed under Component A of the proposed project.
**Capacity building of NEA**

39. The final draft TOR for the ESIA, CIA and Social Planning studies for UAHEP and IKHP furthermore includes a requirement for the consultant hired to help build NEA's capacity on all aspects of environmental and social assessment and management planning for hydropower projects. In this regard, the consultant will be required to carry out training activities for NEA engineers, environmental and social staff, and to involve them to the maximum extent in all aspects of the studies as they are being executed. In this manner, NEA will not only gain experience of overseeing the aforementioned studies through the TA project, but will become more fully equipped to manage future hydropower investment planning processes in line with international standards on environmental and social aspects.

### E2. Safeguards Approach for the yet to be identified Transmission project to be prepared through the proposedTA project

40. During implementation of the proposed project, the GoN may seek the World Bank's concurrence for the project to finance the required preparation studies and documentationfor a new transmission lines project.

41. Once the target priority transmission line investment is identified, the NEA and the World Bank will screen the proposed project to determine the applicable Banks safeguards policies as well as national laws and regulations,and to develop detailed Terms of Reference for the corresponding required environmental and social studies in accordance with applicable GoN legal requirements and World Bank safeguard policies. The impact assessments of the power transmission line will also consider cumulative impacts of other relevant linear infrastructure such as roads and other transmission lines, and contribute to coordination among the linear infrastructure planning and development so as to optimize land-uses, avoid/ minimize adverse impacts such as resettlement footprints, deforestation, landslides/ soil erosion and reduce RoW expenditures.

### E.3 Studies to be prepared and other activities for other aspects of the proposed project, covered under Components B and C.

42. **Studies under Component B (including Strategic Environmental and Social Assessment for river basin planning).** Under Component B, a number of studies will be financed, which include inter alia, basin-wide approach for water resource and hydropower development planning for several major basins in Nepal. This will involve developing integrated basin wide planning methodologies (considering the upper catchments, land use and land use changes in the basin, existing and planned water uses and user groups, etc.), in which environmental and social considerations will be keyfactors. Smart meters at consumers' premises will also be piloted under this component. The installation of smart meters is expected to enhance the efficiency and distribution business management. A flexible

approach will be used in piloting the installation of smart meters, and hence the smart meters will be installed in some selected consumers premises. Replacement of all meters is not the scope. Some existing consumers will receive new smart energy meters as and when their existing meters are damaged/ become non-functional. Smart energy meters will also be installed in some new consumers while giving new connections. In the case of the existing consumers, NEA will collect the old meters and store them. The damaged meters have good scrap value, and hence NEA auction them from time to time. The damaged meters will not be left littered or will not be disposed of haphazardly. These will not contain haphazard chemicals.

43. **Studies and activities under Component C.** This component specifically focuses on improving the environmental and social safeguard management system and associated capacity building of key agencies in GoN responsible for power development, especially hydropower. The studies, policy development activities and capacity building initiatives themselves will draw from World Bank safeguard policy standards as well as related and emerging international good practices in the targeted areas (i.e., cumulative/strategic impact assessment, ecological flows, hydropower resettlement and benefit sharing, gender equity, integrating climate change and disaster risk management aspects into hydropower planning, basin planning, and NEA corporate policy for compensation of transmission line ROW). The activities under this component are thus expected to be highly beneficial from a social and environmental perspective, by equipping GoN to develop its hydropower potential in a more sustainable manner at a sectoral level.

44. The Water and Energy Commission Secretariat (WECS) will commission a Strategic Environmental and Social Assessment (SESA) under Component C to provide the necessary analysis of critical environmental and social aspects and considerations that need to be integrated into planning decisions for water resource management and hydropower generation at a basin scale (including, for example, decisions regarding location and scale of investments, alternatives, and key mitigation measures).The SESA will also advise on institutional arrangements and processes for ongoing stakeholder involvement for basin management and monitoring. The outputs of the SESA will inform the actual planning processes to be carried out for the pilot basins selected.

## F. Institutional and Monitoring Arrangements

45. The overall project will be managed by their respective Project Management Units (PMUs). The technical work will be contracted and overseen by the following specific agencies within GoN- NEA will be responsible for the studies for specific investments under Component A; WECS will be responsible for the studies under Component B& C including integrated basin planning, conducting SESA as a part of river basin planning; and NEA and WECS will be responsible for the studies and capacity building activities under Component C. Component B and C will be further coordinated by a high level central Project Steering Committee, reporting directly to the Energy Secretary.

**Public consultations and brief description of the Communications Strategy**

46. Table 2 on the page 17-18presents the public consultation and disclosure approach for the project. This section also summarizes the approach for each component.

47. For Component A, for each investment being prepared under the TA, consultations on the environmental and social aspects of the investments are required with diverse stakeholders – including potentially affected peoples and communities, other local communities as well as NGOs,

institutions, industry, academics and any others – at least twice, once at the TOR stage for each investment and once on the draft studies, in accordance with OP 4.01. However, following international good practice, the investment-specific studies to be commissioned will include a more comprehensive stakeholder engagement program.

48. Therefore, this ESMF hereby specifies that each investment specific ESIA TOR shall include a requirement for stakeholder identification and mapping process and development of stakeholder consultation plans for purposes of ensuring effective, inclusive, and culturally appropriate consultation and engagement throughout the course of study of each specific investment. The arrangements for consultation and disclosure of specific investments under Component A are summarized in Table 2 further below.

49. In the case of UAHEP and IKHP, the first formal consultation event was held on the initial draft TORs for the ESIAs and the social planning studies that are to be carried out for these investments as part of preparation of this TA project, and the TORs have been updated by NEA to reflect the feedback received. The minutes of this consultation event are provided in Annex 1.

50. If the proposed transmission line investment is screened and assigned Category "A" as per OP 4.01, the draft TOR for the environmental and social studies for this investment will also be disclosed and subject to public consultation prior to its finalization.

51. Furthermore, NEA has established a project-specific website linked to NEA's corporate website, where information about the specific investments being prepared under the project (for now covering UAHEP and IKHP) can be accessed.

52. Draft and final reports will need to be disclosed both on the website as well as locally in hard copy, including executive summaries inNepali and tailored to the language, level of literacy, as well as cultural considerations for the local communities in each project affected area. For the transmission line project to be identified during implementation, similar processes will be followed. In accordance with the Bank's Access to Information Policy, the studies for each investment will also be disclosed on the World Bank Infoshop website.

53. The need for timely implementation of the project activities, effective Grievance Redress Mechanism (GRM), prompt addressing of the conflicts, timely disclosure of the safeguard documents and dissemination of correct information, and regular/ continuous consultations with the local and affected people are some of the lessons learnt from the implementation of the Bank-financed Khimti-Dhalkebar 220kV Transmission line (power sector project) which is currently under World Bank inspection panel investigation. These on site experiences thus also need to be carefully assessed and analyzed and incorporated in the ESIAs for each proposed future investment, to avoid the repetition of similar errors in project planning.

54. For Component B, with respect to the integrated basin planning activity, consultations started during the preparation of this project, which included an initial workshop in Kathmandu in September 2014 involving key stakeholders from across government and the donor community, as well as select key NGOs and academics. The workshop aimed to lay the initial groundwork for advancing integrated basin planning and management in Nepal at a national level by creating a mutual broad understanding of the key elements and components of such processes, stimulating consensus on the need for such an approach, exchanging information about current and planned donor supported activities in Nepal related to water resource management and planning, and identifying critical gaps or areas where more donor support would be helpful to advancing integrated basin planning.

55. During implementation of the proposed project, this initial workshop will be built upon further with additional capacity building activities involving diverse stakeholders at the level of the specific basins to be targeted through this TA project.

56. The SESA to be carried out in conjunction with the integrated river basin planning activity will furthermore require engagement with broad stakeholders, and will feed the recommendations and feedback of stakeholders on water resource management and hydropower development considerations within each basin into the basin planning processes.

57. The program to be supported through Component B furthermore aims to support WECS in developing a transparent digital platform for data and information sharing at a basin level, to facilitate better understanding of the interrelated effects of different water resource development activities within a basin on shared resources, and hence better decision making and collaborative management of water resources for both hydropower as well as other sector uses (in particular irrigation). All draft and final documents produced related to the integrated basin planning processes will furthermore be disclosed on the digital platform, and linked to from the project website. In accordance with the Bank's Access to Information Policy, the SESA will also be disclosed on the World Bank Infoshop website.

58. For Component C, the specific studies to be supported related updating of environmental and social regulations and procedures for hydropower will each require identification of relevant stakeholders at the national level, including public, private and civil society sectors, to contribute to each, and engagement with them throughout the course of study so that their inputs and perspectives are considered. Such a consultation is important in achieving the goals of facilitating the investments and safeguarding the environment and society. Stakeholder engagement also provides private developers and government with an understanding of the expectations different social sectors have in regard to hydropower development. All draft and final studies will also be disclosed by NEA and WECS.

59. For the overall project, this ESMF outlining the safeguards compliance strategy, requirements and processes across all project components, and including the detailed TORs for environmental and social assessments and studies for the UAHEP and IKHP investments, has been disclosed and consulted with project stakeholders by NEA on behalf of the GoN at a workshop in Kathmandu on December 23, 2014. This ESMF as well as all supporting materials are also available at http://www.nea.org.np/, and all future studies will be disclosed as well at the project website at http://www.nea.org.np/publications.html.

60. Summary minutes of consultations of this ESMF, and the previous consultations on the TORs for the ESIA, CIA and social planning studies forUAHEP and IKHP, are contained in Annexes1.

## G. Budget Arrangements for Safeguards Management

61. Financing is included under the project for all safeguards related studies and specialist advisors as set out above. Table 1 below, shows the breakdown of project costs, component by component.

| Project Components | Cost Estimation (US$ m) | Source of Financing |
|---|---|---|
| **Component A: Preparation of Hydropower and Transmission Line Investment Projects** | | |
| a) Preparation of the UAHEP and IKHP* | | |
| (i) Optimization, engineering design and bidding documents | 10.75 | IDA |
| (ii) ESIA and mitigation plan | 3.00 | IDA |
| (iii) Panels of experts<br>a) Environmental and Social<br>b) Dam Safety | 1.00 | IDA |
| b) Preparation of Priority Transmission Line Project | | |
| (i) Feasibility study, design, route survey, ESIA, and bidding documents | 2.00 | IDA |
| c) Project management | 1.25 | NEA |
| **Subtotal** | **18.00** | |
| **Component B: Studies and Preparation for Policy Recommendations and Sector Reform** | | |
| a) Integrated Water Resource Planning and Management | | |
| (i) River-basin planning for selected river basins | 2.00 | SAWI |
| b) Recommendations for Water Resources Management and Regulations<br>(i) Updating of Water Resource Act and capacity building of WECS | 0.10 | SAWI |
| c) Power System Expansion Planning<br>(i) System planning hardware and software<br>(ii)Updating Generation Master Plan | 0.25<br>0.25 | IDA<br>NEA |
| d) Establishment and operationalization of a power trading company | 0.50 | IDA |
| e) NEA business restructuring<br>(i) Providing computerized management tools and installation of smart meters, and assets evaluation | 2.50 | IDA |
| **Subtotal** | **5.60** | |
| **Component C: Capacity Building for Safeguard Management and Hydropower Development** | | |

| | | |
|---|---|---|
| a) SESA as part of river basin planning for selected river basins<br>b) Preparation of recommendations for environment and social regulations | 0.30 | SAWI |
| c) Safeguard capacity building - Management of transmission line RoW issues | 0.05 | SAWI |
| d) Project management | 0.05 | SAWI |
| **Subtotal** | **0.40** | |
| **Total** | **24.00** | |

**Table 2: Disclosure and consultation requirements for the proposed environmental and social studies under Component A**

| Reference component | Document | Disclosure responsibility(ies) and location(s) | Expected disclosure date | Consultation requirements and responsibilities |
|---|---|---|---|---|
| A | Upper Arun and Ikhuwa Khola ESIA, CIA and Social Planning TOR | NEA to disclose on website (as part of this ESMF and separately), and in hard copy at culturally appropriate public locations accessible to affected communities | Draft TORs were disclosed in April 2014. Any modification of the TOR, if any, after the initiate scoping work, will also be disclosed. | NEA consulted the TORs with international, national and local stakeholders and finalized in light of feedback received. Refer to Annex B of this document for detailed consultation minutes. |
| | Upper Arun and Ikhuwa Khola ESIA, CIA and social planning studies | NEA to disclose draft and final documents in full (English versions) as well as Executive Summary (in Nepali) on website and in hard copy at culturally appropriate public locations accessible to affected communities<br><br>Social planning studies including RAP and VIPDP to be disclosed in particular to their respective target populations in accessible and culturally appropriate form/manner.<br><br>WB to disclose on Infoshop | *Draft reports:* at minimum 2 weeks prior to holding consultations on the drafts<br><br>*Final reports:* upon completion (TBD). | NEA to broadly consult draft ESIA, CIA and social planning studies with international, national and local stakeholders and finalize study in light of feedback received<br><br>Social planning studies to be developed through consultative process with target populations for each.<br><br>Consultations with tribal peoples as part of ESIA, CIA and social planning study preparation must constitute Free, Prior and Informed Consultation. |
| A | Transmission line project (TBD) ESIA and social planning studies TOR | NEA to disclose draft and final versions on website and in hard copy at culturally appropriate public locations accessible to affected communities, when available. | Draft TOR: following initial screening / scoping; at minimum 2 weeks prior to consultations on TOR.<br>Final TOR: following finalization. | NEA to consult the TORs with international, national and local stakeholders and finalize in light of feedback received. |

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| | | NEA to also disclose summary minutes of the consultation meetings including an indication of how feedback was taken into account. | | |
| | Transmission line project (TBD) ESIA, and social planning studies | NEA to disclose drafts and final documents in full (English versions) as well as Executive Summary (in Nepali) on website and in hard copy at culturally appropriate public locations accessible to affected communities.<br><br>WB to disclose on Infoshop | *Draft reports:* at minimum 2 weeks prior to holding consultations on the drafts<br><br>*Final reports:* TBD. | NEA to broadly consult draft ESIA and Social planning studies with international, national and local stakeholders and finalize studies in light of feedback received.<br><br>Social planning studies to be developed through consultative process with target populations for each. Consultations with tribal peoples must constitute Free, Prior and Informed Consultation. |
| B | Basin plans for 3 pilot basins | Draft and final plans to be disclosed on WECS digital platform (to be established through project) and linked to project website. | TBD. | Integrated basin planning process to be carried out in a highly participatory manner, involving stakeholders throughout. |
| C | SESA for Integrated Basin Planning | WECS to disclose draft and final versions on WECS digital platform (to be established through project) and linked to project website. Hard copies to be made available to interested stakeholders. | TBD. Initial estimate: draft in spring 2015; final in summer 2015. | SESA to be carried out in a highly participatory manner, involving stakeholders throughout. At least one formal consultation will be held with stakeholders on the draft SESA. |
| C | Studies on key policy areas on environmental and social management | Draft and final studies will be disclosed by NEA and WECS on project website. | TBD | Stakeholder mapping will be done to identify relevant stakeholders to involve in the study process for each. |

# Annex I

## Part A: Consultation minutes on the initial draft ToR for the ESIA, CIA and Social Planning Studies for Upper Arun and Ikhuwa Khola Hydropower Projects

### Background

1. The project site of Upper Arun Hydroelectric Project (UAHEP) is located about 700 km East of Kathmandu in Sankhuwasava District of Mechi Zone in the Far Eastern Development Region of Nepal. This project was identified during the master plan study of Koshi River Water Resources Development in 1985. The site was subsequently the subject of a reconnaissance study conducted by the NEA in summer of 1986. In 1987, feasibility study of this project was carried out by the Joint Venture of Morrison Knudsen Corporation, Lahmeyer International, Tokyo Electric Power Services Co. and NEPECON on behalf of Nepal Electricity Authority. The review study of this project was completed by Nepal Electricity Authority in 2011.

2. Upper Arun Hydroelectric project is a peaking run of river type project. Intake of the project is located on left bank of Arun River near Chepuwa village. Three numbers of underground desanders are proposed just after the intake. The headrace tunnel is 7840 m long. The optimized diameter of the tunnel is 5.50 m and will be a circular in shape. Location and access for the adits will be reviewed depending on the access road. The surge shaft will be located on the hillside above the powerhouse and will have a finished diameter of 18 m. An underground valve chamber will be located immediately downstream of the surge tank and at the start of the vertical shaft. The 454 m long 2.80 m diameter vertical steel lined shaft and 60 m long 2.80 m diameter horizontal tunnels are constructed above the powerhouse. The underground powerhouse is located at the left bank of Arun River at Sibrung village. The installed capacity of the project is proposed to be 330MW.

3. Ikhuwa Khola Hydropower Project is located approximately 8 km downstream from the powerhouse site of Upper Arun HEP. This project is conceptualized to develop as an integral part of Upper Arun HEP for the social mitigation purpose. The feasibility study of the project is being carried out by the Department of Electricity Development.

4. NEA is planning to develop Upper Arun HEP and Ikhuwa Khola HEP (as an integrated part of Upper Arun HEP) at the earliest possible time. Hence, NEA is preparing EOI and RFP document to procure consulting services for engineering as well as environmental and social studies related to the project.

5. Presently, NEA has prepared Terms of Reference (ToR) for the social and environmental study using international consulting firms.

### Overview of the Consultation Event

6. A public consultation was organized for all the stake holders by Nepal Electricity Authority on April 30, 2014 at the Radisson Hotel in Kathmandu on the draft Terms of Reference of Environmental and Social Assessment, Planning and Design studies for the proposed Upper Arun and Ikhuwa Khola Hydroelectric Projects. The purpose of the stake holders meeting were:

(a) Disseminate project information to the stake holders
(b) Share and receive feedback on draft Terms of Reference (TOR) prepared for the procurement of international consultant for Environmental and Social Assessment, Planning and Design to be carried out, as per the Government of Nepal and World Bank requirements and standards

7. NEA, the project owner, publicized the event through formal invitation on its website: www.nea.org, letter/ fax/ e-mail to stakeholders. The list of invitees is attached on Annex 1.

8. The event was attended by Government Agencies, International Agencies & Donors, Academic Institutions, NGO's & INGO's, Local Representatives, Representatives of Tourism Sector & Experts. The full list of stakeholders in attendance is attached on section 2 of Annex A Part A.

9. Stake holders meeting was started with the welcome speech by Mr. Upendra Dev Bhatta, Deputy Managing Director, NEA. He highlighted current energy crisis of the nation and role of Upper Arun HEP on mitigating the crisis. He also highlighted the importance of the Environmental Guidelines of Nepal Government as well as the guidelines of World Bank regarding project preparation and implementation. He has also focused on development of the Ikhuwa Khola Hydroelectric Project as the integrated part of the UAHEP for public participation.

10. The next welcome speech was delivered by Mr. Jie Tang (World Bank). He highlighted that the present energy crisis is due to the under investment in energy sector. He suggested developing reliable, environmentally & socially sustainable & affordable projects in three different categories viz. short, mid & long term. He also focused on the World Bank investment (technical & financial) for both energy related private & public sector.

11. Technical presentation of both Upper Arun and Ikhuwa Khola HEP was presented by Mr. BishwoDhoj Joshi (Chief, PDD, NEA). The presentation mainly focused on Integrated Nepal Power System (INPS), technical aspects of Upper Arun HEP and Ikhuwa Khola HEP and further steps required for the timely implementation of the Project. Question and Answer session started followed by the presentation.

12. Presentation on "Social and Environment Assessment and Planning Requirements of GoN, World Bank and Upper Arun and Ikhuwa Khola HEP ESIA: Key elements of Draft ToR (Environmental and Social Assessment, Planning and Design Studies); Scope; Influence Area; key Potential Issues/concerns; VECs in the basin, process and timelines for execution, etc." by Mr. Prakash Gaudel (Environmentalist, NEA). He highlighted the guidelines (GoN, World Bank, EPR etc.) to be following during study. He also highlighted on the World Bank Safeguard policies, Requirement of Consultation (WB and GoN), Independent Panels of Experts, who conduct the studies and activities, Methodology of study and how it relate to Engineering Design, Scoping of studies & specific Study outputs etc. After the presentation, Q&A and floor discussion session was started.

13. The whole program was filmed/recorded. Both Nepali & English languages were used to deliver the program. The hardcopy of presentations were distributed to the participants. The total length of event was approximately 3 hrs.

**Issues Highlighted by NEA**

14. NEA has incorporated benefit sharing at the local level as a guiding principle for hydropower project development. Benefit sharing was successfully integrated as a key component in the development of Upper Tamakoshi, which received wide support from a range of local stakeholders. Means for local development and benefit sharing will be explored extensively through the UAHEP – IKHP joint project. IKHP is being studied and planned in tandem with UAHEP as a mechanism to increase local ownership and share benefits of the project with the local community.

15. NEA is keen to partner with the World Bank in developing UAHEP as a public project owned by GoN, not with private sector involvement through the IFC.

16. Due to the rural setting, social impacts of the project are anticipated to be minimal. The topography of the site also means that the flooded area will be minimal, with high firm power production considering overall environmental impacts. However, it is to be noted that the Makalu Barun Conservation Area is in the vicinity of the project site. Environmental and social impacts will be managed during project implementation in a way that mitigates negative impacts of the project and maximizes positive impacts.

17. NEA is responsible for extensive coordination between the engineering and environmental consultants throughout the parallel process of the detailed engineering design and ESIA studies to ensure one informs the other. NEA will develop a coordination strategy that delineates this process and its role in the process, specifying also how inputs from the ESIA will be considered in the development of the detailed engineering design.

**Presentation on Technical Details of Project**

**18. Technical features of UAHEP**

- Upper Arun captures Arun 4, 5 and 6 identified in the 1985 feasibility study; similarly Lower Arun captures Arun 1 and 2.
- The UAHEP site is strategic due to its proximity to load centers in the east, high head, and its potential of generating high firm power in relatively low project cost.
- Major infrastructure development in the two decades since development in Arun Valley was first explored (through preparation of Arun III) – a fair weather access road has been constructed from Khadbari to Num. DoR is currently extending the road from Num to Kimathanka – this road is under construction and initial tracks from Num to Gola should be open in about four months, with further upgrading over the coming year. This road passes close to the UAHEP power house site and will facilitate construction of the UAHEP project.
- An access road to the project site, constructed under the UAHEP umbrella, will connect the Num-Kimathanka road from Gola to the UAHEP power plant and then to the headworks location; it will involve a bridge and a tunnel. The current design of the road follows the alignment delineated in the initial feasibility study. It is necessary to build the access road before the rest of the project to allow project construction to commence. NEA's ESSD is doing IEE. NEA will hire consultant for detailed engineering design of the access road.
- NEA is exploring, to be confirmed by the Consultants under the Project, three power evacuation options explored during update of feasibility study in 2011:
    - Through the interconnection point at Tumlingtar (proposed Koshi Corridor 220 kV line to be implemented by the Exim bank) – preferred option among three; NEA estimates possible completion by 2021;
    - Through Arun III plant's substation;
    - Through the substation at Duhabi (Terai).

**19. IKHP**

- IHKP is developed under the UAHEP umbrella. It will allow locals to invest in a component of the UAHEP through a PPP model.
- Inception report submitted to NEA
- DoED is conducting IEE and feasibility, expected to be completed by end of fiscal year

**20. Further steps**

- IEE for UAHEP project access road has been contracted out to ESSD, NEA and is expected to be completed by 2015. Feasibility study of 1991 fixed the alignment of the road; no major changes in environmental/social conditions in the local area since then, hence current thinking on road alignment is the same. Local consultant to be selected for detailed design of access road and construction scheduled to be completed by end of 2017. Crucial to complete construction of access road before project construction commences.

**Summary of comments, questions, and feedback received**

21. The table below summarizes the key issues raised (including those not relevant to the proposed two projects) by stakeholders, and responses from NEA.

| Stakeholder category #1 (CENTRAL GOVERNMENT AGENCY OFFICIALS) | | |
|---|---|---|
| Stakeholder comment | NEA response | Remarks/Additional actions / agreed follow-up |
| 1. (WECS) | | |
| •Location not clear (Lat, Long)<br>•Economic Analysis?<br>•Given high head and firm water supply, what is the possibility of including reservoir and cascading power plants to maximize power generation?<br>•TOR appears to be a general checklist. It has only grazed Makalu Barun. Not enough details are provided for us to provide feedback. This project is definitely going ahead; but with more detail, we would be able to provide inputs to manage impacts better. | •Suggestion taken<br>•Economic Analysis has been done but the presentation mainly focused on the technical aspect<br>•Due to very steep gradient of river, there are no possibilities of reservoir development.<br>• The ToR will be updated and discussed with more detailed information after the initial scoping work done by the Consultant, and will be disclosed again for comments. | Agreed to clear the location of the project (will present on Latitude & Longitude) |
| 2. (DOED) | | |
| •DoED is conducting the feasibility study and environmental study of IKHEP – If NEA is again conducting studies on IKHEP, does this translate to double expenses and duplication of studies? | •Clarified that the study of Ikhuwa Khola HEP shall wholly accepted by NEA as studied by DOED | Agreed that the feasibility study of Ikhuwa Khola HEP shall not be unnecessarily repeated thereby saving Govt. money. |
| 3. (Department of Mines & Geology) | | |

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| • Where is the quarry site? Where will construction material be brought from? Current policy allows extraction of sand/gravel only from areas approved by the District Development Community. Since a large volume of material will be required for the project; a separate source might need to be identified<br>• Quarry site having IEE or EIA should only be selected. | • The Consulting services under the proposed Project: (a) detailed engineering and bidding design; and (b) ESIA, will cover these aspects and make proposals. | Agreed. |
| 4. (Ministry of Forest) | | |
| • Access road, project site will affect forested areas. Clearance from the Ministry of Forest is a legal requirement: IEE or EIA alone is not enough. Coordination needed between consultants who will conduct project implementation and MoF, local forest governance entities, to ensure compliance and avoid implementation delays | • Suggestion taken. | Agreed. |
| 5. (WECS) | | |
| • Draft ToR only check list. Detail?<br>• Discussion? | The ToR will be updated and discussed with more detailed information after the initial scoping work done by the Consultant, and will be disclosed again for comments. | |
| 6. (NEA) | | |
| • Difference in Annual Generation, why?<br>• 2050 GWh in the year 1991 & 2598 GWh in 2011. | This is initial estimation based on the system demand, and will be reviewed and confirmed by the Consultants. | |
| Stakeholder category #2 NGOs and INGO,s | | |
| Stakeholder comment | NEA response | Remarks / Additional actions / agreed follow-up |
| 1. (INHURED) | | |
| • Why Ikhuwa only? Has other options nearby been | • From every aspect Ikhuwa is best suited for the assignment of addressing social part of the project. | A lesson learned for NEA is to involve |

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| properly assessed (for benefit sharing)?<br>• What about integrating all possible options<br>• Why are all structures underground, isn't this a costly option | • NEA is just another developer, selection of project options was DOED's part of the job and must have fairly judged the fact.<br>• It's totally technical argument. Geographically, putting structures underground is the most suitable in UAHEP. And this is to be confirmed by the Consultants. | the local community in any hydropower development project. By allowing the community to participate in IKHP, we give them a sense of ownership, provide a means of income. Size and proximity to the UAHEP, IKHP was found to be very suitable to integrate into UAHEP. There are many other potential HP sites, which other developers are welcome to develop. For the project's current scope, IKHP is most optimal. Will be incorporated in detailed engineering design. Also suggested by Mr. Jie Tang to will be focused on ESIA & CIA. |
| 2. (ICIMOD) | | |
| • Availability of detail hydrological modeling & GLOFs.<br>• Agree to provide the required related information & data.<br>• Sharing of Knowledge. | • Appreciate sharing of data by ICIMOD.<br>• GLOF study is included as part of the ESIA. | • Thanks for close incorporation. |
| 3. (INHURED) | | |
| • Why so late to process to implement UAHEP (After 23 yrs)?<br>• Public private ownership in Proposed Federalism? Who will own the project –the federal government/the local state government<br>• Due large catchment lies in China, consumptive/ | • The question is hard to answer here.<br>• The project study will be continued; later on state will decide ownership issue.<br>• There is no consumptive use of water at the UA catchment (within China). | |

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| diversion of water may affect UPHEP (riparian rights both U/S & D/S)? | | |
| • (INHURED) | | |
| •There will be multiple activities and mobility of people/ migration (inbound and outbound). There is possibility of increased security risks/ crimes and impacts on local and indigenous people. A component is needed to manage this aspect. | Suggestion taken. | Agreed. |
| • (ISET Nepal) | | |
| •We are reviewing EIA for several projects. Two observations: (i) EIA documents are not accessible – please make project documents visible and easily accessible; (ii) Solid waste management Act and Local Self Governance acts need to be reviewed in the ESIA.Communityupliftment plan is also needed. | •Separate web site already launched:<br>• http://www.nea.org.np/publications.html<br>•All related acts & regulation shall be reviewed.<br>•Community development plan, which is to enhance benefits to all local communities, will be prepared in line with relevant WB Safeguard Policies. The final product will be disseminated in the NEA websites. | Suggestion taken & Agreed. |
| 4. (ICIMOD) | | |
| •Consideration of strategic environment impact assessment before conducting ESIA & CIA.<br>•ICIMOD has done a detailed modeling of the hydrology of the project area, including impacts of GLOF, and impacts of any development in the region on flow regime. We would like to share our findings and contribute to project if given the opportunity particularly for GLOF studies.<br>•Suggest expanding exploration beyond the area of influence (AOI) by using a strategic | •SEA is included as part of the Project.<br>•Appreciate sharing of data by ICIMOD.<br>•<br>•The proposed Project includes a basin-wide approach for river development planning and associated SEA. | •Suggestion taken. Mr. Jie Tang also added that WB is supporting NEA for two activities of this project -<br>•Detailed preparation and design of bidding documents<br>•ESIA process, which will provide inputs into detailed engineering design. The two processes will be conducted in parallel to allow engineering design to incorporate ways to minimize environmental |

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| environmental impact analysis – which is not confined to a project approach, but takes a basin-wide approach. ICIMOD is eager to contribute to any exploration of effects of development in the basin – we have some resources. Lots of work done on EIA and CIA – these need to be reviewed during the study | | impact. |
| 5. (Hydro Consult) | | |
| • The VECs should be properly selected so that the deliverable will not be another EIA instead of CIA. | Agree.<br>A major consultation on the TOR of the ESIA has reviewed the VECs and comments from a wide audience have been received. | |
| 6. (INHURED) | | |
| • Clash between developers & consumers. Need to be treated psychologically.<br>• Deficit of Long term mitigation measures such as health, education etc. in affected area.<br>• Political &economic study may be impracticable issues.<br>• ESIA governs the changes in pre-design project configuration.<br>• CIA shall be done by higher level government body rather than project developer. | • Suggestion taken. Through early consultation and benefit sharing options the project will engage with local communities to gain their support.<br>• Yes, it will be part of the ESIA to be developed by the Consultants.<br>• Will try.<br>• ESIA and the project concept design go hand-in-hand and that is why two consulting firms will be hired and work in parallel, interacting with each other.<br>• Agree. CIA and SEA will both done by Government Authorities. | |
| 7. Mr. Deepak Thapa (Social Science Baha:) | | |
| • The approach needs to go beyond meeting minimum requirements to delineate how to preserve cultural heritages and intangible assets (not only physical/tangible heritage) | • Suggestion will be covered in the ToR for the ESIA. | |

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| that will be lost because of project implementation.<br>• The presentation stated that consultations will be conducted at the VDC level. This is a huge project; a lot more consultations at various levels need to be carried out. Flow of information should be continuous and not be limited to consultations.<br>• A political economy analysis is absolutely necessary tounderstand the dynamic of the project area, inform benefit sharing etc.<br>• Stakeholder consultation should be continuous throughout the project. | • Agree that consultations and information disclosure will be conducted at various level as appropriate.<br>• Agree and the project will try to have a quality political economy analysis.<br>• Yes, as stated above. | |
| Stakeholder category #3 (Academic Institutions) | | |
| Stakeholder comment | NEA response | Remarks / Additional actions / agreed follow-up |
| 1. Mini & Micro Hydropower Association | | |
| • Why NEA does not study the project itself?<br>• One reason for slow/no progress is NEA does none of the work itself. Why does NEA hire consultants to do the detailed engineering design for which initial feasibility study was conducted two decades ago? For microhydro, a single entity conducts design, construction, | • While NEA will manage, participate and own the studies, given complexity and size of the studies required, this would over-stretch the capacity of the NEA in house team, so consultants need to be hired. In addition, contracting out will help to ensure greater independence in analysis.<br>• Both engineering and ESIA for Upper Arun need to be updated in the current regional nd country context, and need to be mover to the level of details ready for project implementation. Consultants will need to be hired to assist NEA in this work as stated above. | • Suggested to limiting on ESIA and CIA of the project. |

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| implementation etc. | | |
| 2. (Mini & Micro Hydropower Association) | | |
| •In the Nepali context, ESIA is more of a formality; it is not actually implemented. We need to focus on relevance and implementability rather than number of plans. Also, there should be coordination between plans: In the case of Bhotekoshi – plastics come in from Khasa and are collected/incinerated near the powerhouse – this is against Nepal's waste management policy<br><br>•In the Nepali context again, resettlement is done, but not in an organized, equitable manner.<br>•TOR must ask to come up with a practical, equitable proposal on resettlement | •Agree. Under this project the ESIA and associated Action Plans will be part of the Hydropower and transmission line Projects to be implemented.<br><br>•The proposed Project is designed for how resettlement process and benefit sharing could be improved.<br><br>•Agree. | • This project will require minimal resettlement, but the RAP is expected to be detailed, following international guidelines and implementable in a locally practicable manner. |
| Stakeholder category #4 (Tourism Sector & Experts) | | |
| Stakeholder comment | NEA response | Remarks / Additional actions / agreed follow-up |
| 1. (NESS) | | |
| • Access road appears to be on slope at the edge of the Makalu Barun National Park. The area is rich in bio-diversity with dense vegetation. Access road will be disruptive to the conservation area, especially with the tunnel and large amount of spoils disposal. Can the entire road be constructed above the surface, possibly along the riverbank or make use of planned Koshi Highway on the other side of the Arun River (instead of constructing road on both | •.<br>• How the road and the Upper Arun project will be built is part of the work to be reviewed by both consulting firms: one for engineering aspects and one for ESIA, and the ESIA will provide inputs to the engineering design of the project to ensure that the impacts on the national Park is avoided/mitigated to acceptable level. | Agreed to spoil destination. |

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| side of the Arun River)? | | |
| 2. (NESS) | | |
| • How will coordination between the engineering design and environmental design consultants be ensured? Why are they conducted in parallel?<br>• Clarity needed on the access roads and transmission lines. Are these components separate from the UAHEP?<br>• Why International Consultant? | • The TORs define that the two firms will work hand-in0-hand in parallel to ensure coordination. NEA will manage the contracts and ensure the coordination as defined in the TOR. Hiring of the two firms in parallel is exactly to ensure that both can work side by side to ensure coordination.<br>• Access roads and transmission line are integral parts of the UAHEP and will be assessed together with the hydropower project itself..<br>• to ensure learning from international experiences. | |
| 3. (NESS) | | |
| • Who will decide the scopes of VECs? Proponent, stakeholders, people etc.<br>• What % of water release for dry weather flow as environmental flow? e.g. special species of fishes.<br>• Effect on calculation of energy generation due to environmental release.<br>• Make a range of energy generation. | • Through stakeholder consultations.<br>• This is a question to be answered by the ESIA.<br>• Energy output will be assed based on the minimum ecological flow is ensured.<br>• Yes, depending on the range of river hydrology regime. | |
| Stakeholder category #5 (Local Representatives) | | |
| Stakeholder comment | NEA response | Remarks / Additional actions / agreed follow-up |
| 1. Upper Arun Local Representative | | |
| • Ikhuwa Khola is very suitable for energy generation.<br>• Local inhabitants have a tendency to oppose new development initiatives; I am committed to mediate local objections/discord at the local level and do all I can to facilitate smooth project implementation. | • Yes.<br>• Thanks for such support, which is absolutely needed. | Agreed. |
| 2. (CA Member, Sankhuwasabha) | | |
| • Thanks to WB & NEA.<br>• Anticipation to complete | • Thanks for supporting.<br>• Yes this is the timeline planned for the preparation | • Thanks for supporting. |

| | | |
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| the project on 2017/2018 AD.<br>• As a locally elected representative, I want to ensure you that local community and local political parties will not oppose the project in any way. I take the responsibility of resolving any conflicts/opposition at the local level. We have formed a local body, consisting of all local political parties, with the purpose of not allowing private development of areas inherent to UAHEP. We will not allow caste etc. to be used as an excuse to oppose the project. Since IKHP is a small component, we urge you to start this component before UAHEP. IKHP is close to DoR's road, hence should be easy to construct. | of the UAHEP and other investment projects.<br>• Thank you for ensuring the local support and support by the political parties. We will continue engage with you and all other stakeholders to ensure support of and benefit sharing with the local communities. | |
| • Stakeholder category #6 (Media Representatives) | | |
| • Stakeholder comment | • NEA response | Remarks / Additional actions / agreed follow-up |
| • The project should proactively use the media for stakeholder consultations, and to take the word to the local level. Proactively use the media. Do not see stakeholder consultation as a formality; the project can be made better through stakeholder input. The people have a legal right to information through the Right to Information Act.<br>• Rainfall patterns have changed because of climate change. Let us not assume that water | • The Project will engage meaningful consultation with all stakeholders and proactively approach the media for information disclosure and consultation and support. Today's consultation meeting, at the earliest stage of the project preparation, is also a part of public consultation process for the project<br>• A separate Climate Change Impact assessment for all hydropower in South Asia region including | |

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| availability will not change in the future. The impact of Climate change on hydrology needs to be assessed. This project needs robust planning. Dam/power house safety needs to incorporate climate change concerns.<br>• Sedimentation in the Koshi River is very high; sediment concerns need to be incorporated<br>• Who will do the monitoring of the ESIA implementation? Besides the key players mentioned in the ILO 169, local inhabitants should also be involved during the project preparation and implementation | Nepal, is underway, supported by the World Bank. The Project design and ESIA will take into account of the climate change effect.<br>• Agree.<br>• The ESIA will define th e monitoring mechanism as needed, NEA monitor the ESIA implementation and local stakeholders will be engaged. | |

**Event Closing**

22. The event closed at 12:40 PM by thanking the stakeholders for their attendance and participation. They were also informed about the future plans for continuing consultation and engagement related to the projects, place where information about the projects' planning and development could be retrieved (http://www.nea.org.np/publications.html), and how to get in touch with NEA with any further questions, concerns or suggestions.

23. The program was wrapped up with closing remarks of Mr. Arjun Kumar Karki, Managing Director, NEA. He thanked all participants for their valuable suggestions and thanked World Bank for their support to develop Upper Arun Hydropower Project. He showed his commitment to execute ESIA & CIA under the relevant guidelines of Nepal Government and World Bank. He promised to address local issues and assured the local participation in Ikhuwa Khola HEP. He also highlighted the importance of UAHEP in INPS and also anticipated that UAHEP will not face the same faith as of Arun III. He urged World Bank to develop UAHEP as public project and clarified that NEA could not and will not develop UAHEP in the company format. The project components will be determined as per geological condition & it will be more or less intact as per previous study. Finally, one more time, He heartily thanked to all participants & hoped to complete the UAHEP within schedule time of 2021/2022 AD.

24. Participants were furthermore informed that this summary would be made publicly available (both in English and Nepali) at NEA's website within 45 days of the event.

**Conclusions and Recommendations on draft TOR**

- Modifications needed in the draft TOR in response to all the questions raised and responses provided
- by NEA as provided in the Matrix above, whioch will include but not limited to:

- Clarify purpose of IKHP in the TOR – change from provision of electricity to UAHEP construction to benefit sharing mechanism with local community.
- Clarify construction power to be supplied by diesel generator – specify capacity, need for fuel management
- /noise management etc.
- Update transmission line info with NEA's current thinking – Koshi Corridor transmission line up to Khadbari (financed by Indian EXIM bank), NEA to extend a 220kV line 45km to UAHEP site. Koshi Corridor presumed to be a "linked" activity, to be covered in the studies.
- Clarify transmission line approach for IKHP.
- Clarify that access road for UAHEP will be packaged separately from the rest of the project, since access road needs to be completed (hence fast-tracked), before project construction can begin. Access road for IKHP meanwhile would be covered as part of the ESIA for that component.
- Clarify that currently considered project access road alignment is derived from the initial feasibility study, and that ESIA to be commissioned by NEA will explore environmental implications for this alignment as well as for alternative alignments.
- Add IKHP Inception Report, available to NEA, to the list of documents to be provided to the consultant.
- Clarify how the coordination between engineering design and E&S consultants will be done by NEA in practice. Key issues in particular requiring coordination are: alternatives analysis, determination of environmental flow, etc.
- Clarify the "Phase 1" and "Phase 2" approach given that alternatives analysis needs to also continue during the ESIA process, as the detailed engineering design process unfolds in parallel. Rework this to clarify the iterative nature of the alternatives analysis on the design and construction aspects that are still to be determined.

- **Other agreed next steps**

  - NEA to develop communications strategy related to the project and studies underway ASAP, to keep stakeholders proactively informed about project progress and upcoming consultation and engagement opportunities. This will include project website among other elements.
  - Commission fisheries expert ASAP to review existing information and scope the baseline data collection process, methodology, locations, etc., and to start the baseline data collection immediately rather than waiting for full consultancy to be awarded. .NEA to commission Panel of Experts.

**Section 1: Detailed list of consultation invitees:**

| List of Invitees of the Consultation Meeting | |
|---|---|
| **S.No.** | **Invitees** |
| | **Government Offices** |
| 1 | Ministry of Science, Technology and Environment |
| 2 | Ministry of Forest and Soil Conservation |
| 3 | Ministry of Energy |
| 4 | Water and Energy Commission Secretariat |
| 5 | Department of Electricity Development |
| 6 | Department of Forest |

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| 7 | Department of National Park and Wildlife Conservation |
| 8 | Department of Hydrology and Meteorology |
| 9 | Department of Mines and Geology |
| 10 | Department of Water Induces Disaster Prevention |
| 11 | Department of Archeology |
| 12 | Nepal Electricity Authority (including ESSD) |
| | **International Agencies and Donors** |
| 13 | International Centre for Integrated Mountain Development |
| 14 | Department for International Development |
| 15 | Norwegian Embassy |
| 16 | Asian Development Department |
| 17 | USAID, US embassy Maharajgunj, Kathmandu |
| | **Academic Institutions** |
| 18 | Central Department of Environment Science, TU |
| 19 | Department of Environmental Science and Engineering , KU |
| 20 | Nepal Academy of Science and Technology, NAST |
| 21 | Independent Power Producers Association of Nepal(IPPAN) |
| 22 | Small Hydropower Developers' Association Nepal(SHDAN) |
| | **NGO's and INGO's** |
| 23 | National Trust for Nature Conservation |
| 24 | World Wildlife Fund of Nepal |
| 25 | World Conservation Union (IUCN) Nepal |
| 26 | The Mountain Institute |
| 27 | Nepal Forum of Environmental Journalists |
| 28 | NGO Federation of Nepal |
| 29 | Federation of Community Forestry Users Nepal (FECOFUN) |
| 30 | Nepal Federation of Indigenous Nationalities (NEFIN) |
| 31 | INHURD (International), |
| | **From Project Area (locals)** |
| 32 | Sankhuwasava-Kathmandu Journalist Association |
| 33 | Members of CA from , Sankhuwasava |
| 34 | Ex-Members of Parliament /CA from Sankhuwasava |
| 35 | Representatives of Main Political Parties, Sankhuwasava |
| | **Tourism Sector and Experts** |
| 36 | Nepal Association of Rafting Agencies (NARA) |
| 37 | National Association of Community Electricity Users Nepal (NACEUN) |
| 38 | Institute for Social and Environmental Transition (ISET Nepal), Ajay Dixit |
| 39 | Toran Sharma, Nepal Environmental & Scientific Services (NESS) |
| 40 | Pranav Acharya,Hydro Consult |
| 41 | Hem SagarBaral(Bird Expert) |
| 42 | Ram Prasad Yadav(Fish Expert) |
| 43 | Deepak Thapa, Social Science Baha |
| 44 | Ram Bahadur Khadka, SCHEMES |
| 45 | World Bank Office |
| | |

**Section 2: Detailed list of consultation Participants**

In total 57 persons, from local and international NGOs, politicians, local communities, media, development partners, NEA and WB participated the this consultation workshop. Name list, their organizations, titles and contact information are recorded in the Project File of NEA.

**Section 3: Photo log of event**

**(see project File, NEA)**

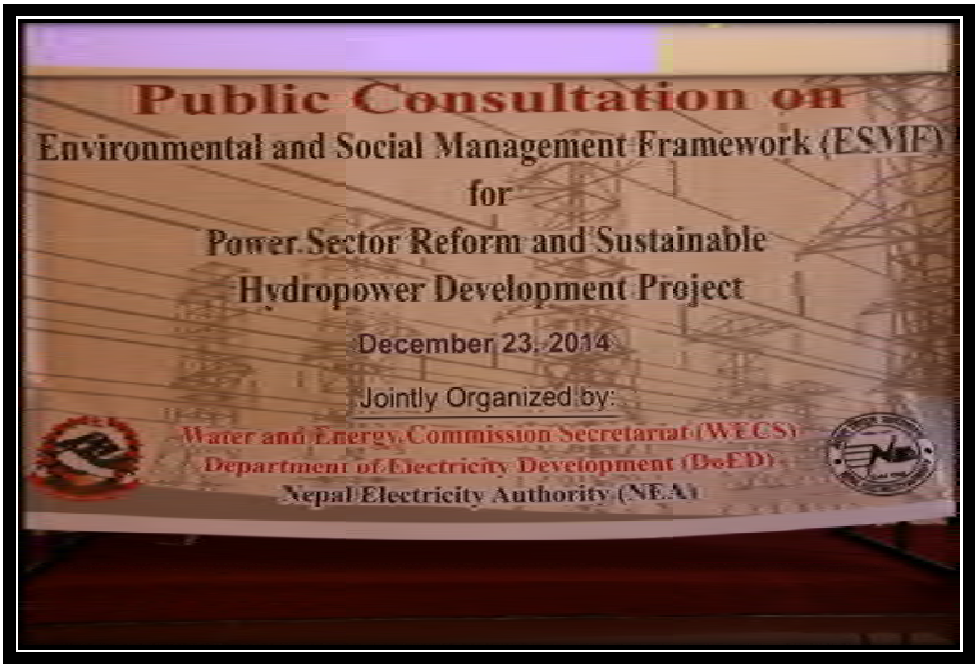
## Annex 1

### Part B: Consultation minutes on this ESMFfor thePower Sector Reform and Sustainable Hydropower Development Project

THE WORLD BANK GROUP
PUBLIC CONSULTATIONS RECORD

DRAFT ENVIRONMENTAL SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR POWER SECTOR REFORM AND SUSTAINABLE HYDROPOWER DEVELOPMENT PROJECT (PSRSHDP)

**12/23/2014**



**PUBLIC CONSULTATIONS RECORD OF**
**DRAFT ENVIRONMENTAL AND**
**SOCIAL MANAGEMENT FRAMEWORK (ESMF)**
**FOR**
**POWER SECTOR REFORM AND SUSTAINABLE HYDROPOWER DEVELOPMENT PROJECT (PSRSHDP)**

**Background:**

1. The proposed Nepal Power Sector Reform and Sustainable Hydropower Development Project (PSRSHDP) intends to develop technical and analytical studies, capacity-building activities and policy dialog on the energy sector in Nepal, and preparation of next-step critical hydropower and transmission line projects to prepare Nepal for upcoming large-scale private and public investments in hydropower.
2. The proposed Project has three components: (i) Preparation of Hydropower and Transmission Line Investment Projects; (ii) Studies and Preparation for Policy Recommendations and Sector Reform; and (iii) Capacity Building for Safeguard Management and Hydropower Development.

3. **Component A: Preparation of Hydropower and Transmission Line Investment Projects:** This component will support preparation of two hydropower projects4as proposed by the GoN, and one priority high voltage transmission line project following recommendations of the Transmission System Master Planning5 supported under the on-going NIETTP.

4. **Component B: Studies and Preparation for Policy Recommendations and Sector Reform**
This component will address critical power sector issues. This Component will prioritize and sequence study recommendations for actions, build consensus and enhance capacity for follow-on implementation under the planned DPC operations. It will support preparation of (a) river basin planning with an integrated water resource management (IWRM) approach for selected river basins; (b) recommendations for improvement of water resources management and regulations, including updating of the Water Resource Act and capacity building of the WECS; (c) Power System Expansion Plan, including updating the Generation Master Plan; (d) establishment and operationalization of a power trading company; and (e) the NEA business restructuring for improved management and efficiency, including provision of computerized management tools and installations of smart meters to enhance the distribution business management, and conducting asset evaluation.

5. **Component C: Capacity Building for Safeguard Management and Hydropower Development**
The component will support improving the environmental and social safeguard management system and associated capacity building, including:
    - Conducting a Strategic Environmental and Social Assessment (SESA) as part of the integrated river basin planning under Component B;
    - Preparing recommendations for environmental and social regulations;
    - Safeguard capacity building for management of transmission line RoW issues; and
    - Project management.

[4] The GoN has officially proposed the Upper Arun Hydropower Project (UAHEP, 335 MW) and Ikhuwa Khola Hydropower Project (IKHP, 30 MW) for Bank support for project preparation.
[5] On-going with assistance of international consultant, under the Bank-supported NIETTP Project.

The public consultation program was organized as per World Bank guidelines.

**Overview of the consultation event**

6. A public consultation was organized on Environmental and Social Management Framework (ESMF) by Water and Energy Commission Secretariat, Department of Electricity Development, and Nepal Electricity Authority on December 23, 2014 at the Yak and Yeti Hotel in Kathmandu. The objectives of the stakeholders meeting were to inform and discuss with the stakeholders about the Environmental and Social Management framework prepared for the proposed Nepal Power Sector Reform and Sustainable Hydropower Development Project (PSRSHDP).

7. NEA, on behalf of the Government of Nepal, publicized the event through a general announcement on its web site at www.nea.org.np, as well as through formal invitation via letter/ fax/ e-mail to specific key stakeholders to encourage their attendance. The list of invitees is attached on Annex 1. The event was attended by Government Agencies, International Agencies & Donors, Academic Institutions, NGO's & INGO's, Local Representatives, Representatives. The full list of stakeholders in attendance is attached on Annex 1.

8. Stake holders meeting commenced with the welcome speech by Mr. Lila Nath Bhattarai, Acting Deputy Managing Director, NEA. He highlighted the objectives of meeting as to disseminate information on proposed power sector reform and sustainable hydropower development and to obtain feedback on both objectives and draft environmental and social management framework. This consultation program is intended to maximize benefit from proposed projects with nominal impacts and improve project consultation process.

9. Technical presentation of Component A of the proposed Technical Assistance (TA) project, in particular the proposed Upper Arun Hydroelectric Project (UAHEP) and the proposed Ikhuwa Khola Hydropower Project (IKHPP), was presented by Mr. Sanjib Man Rajbhandari (Manager, PDD, NEA) and Mr. Rabindra Chaudhary (Manager, ESSD, NEA). The presentation mainly focused on technical, environmental and social aspects of UAHEP and IKHPP. The presentation followed the Question and Answer session which was actively participated. . This discussion built upon a previous dedicated consultation event that was hosted by NEA on April 30, 2041 in Kathmandu on the draft Terms of Reference (TOR) for the environmental and social studies to be carried out for UAHEP and IKHP.

10. In addition, the key elements of Components B and C of the proposed TA project, their potential environmental and social aspects and implications, and the manner in which these aspects will be further studied and treated through the studies and activities under the project, were presented by NEA, and discussed with stakeholders. The proposed consultation and disclosure aspects of all studies, planning and capacity building activities through the proposed TA were also discussed, and feedback solicited from stakeholders.

11. Audio and video recording of the whole consultation has been done. The presentation and discussion was facilitated in both Nepali & English languages for better interaction and communication. The hardcopy of presentations were distributed to the participants. The duration of the program was approximately for 2 hrs.

**Technical Presentation theUAHEP and IKHPP Projects (to be prepared through Component A of the proposed TA)**

12. Technical features of UAHEP
    - Upper Arun captures Arun 4, 5 and 6 identified in the 1985 feasibility study; similarly Lower Arun captures Arun 1 and 2.
    - The UAHEP site is strategic due to its proximity to load centers in the east, high head, and its potential of generating high firm power in relatively low project cost.
    - Major infrastructure development in the two decades since development in Arun Valley was first explored (through preparation of Arun III) – a fair weather access road has been constructed from Khadbari to Num. DoR is currently extending the road from Num to Kimathanka – this road is under construction and initial tracks from Num to Gola should be open in about four months, with further upgrading over the coming year. This road passes close to the UAHEP power house site and will facilitate construction of the UAHEP project.
    - An access road to the project site, constructed under the UAHEP umbrella, will connect the Num-Kimathanka road from Gola to the UAHEP power plant and then to the headworks location; it will involve a bridge and a tunnel. The current design of the road follows the alignment delineated in the initial feasibility study. It is necessary to build the access road before the rest of the project to allow project construction to commence. NEA's ESSD is conducting IEE of the proposed access road. NEA will hire consultant for detailed engineering design of the access road.
    - NEA is exploring three power evacuation options explored during update of feasibility study in 2011. The selection of the preferred option will include consideration of environmental and social aspects and will be further studied through in detail through the proposed TA, including all environmental and social impacts and management aspects:
        - Through the interconnection point at Tumlingtar (proposed Koshi Corridor 220 kV line to be implemented by the Exim bank) – currently preferred option among three; NEA estimates possible completion by 2021.
        - Through Arun III plant's substation
        - Through the substation at Duhabi (Terai)

13. IKHPP
    - IKHPP will be developed under the UAHEP umbrella. It will allow locals to invest in a component of the UAHEP through a PPP model.
    - Inception report submitted to NEA
    - DoED is conducting IEE and feasibility, expected to be completed by end of fiscal year. The overall environmental and social assessment and planning studies for UAHEP will also include IKHPP, to complement the IEE and ensure international standards are met.

14. Further steps

    IEE for project access road has been contracted out to ESSD, NEA and is expected to be completed by 2015. Feasibility study of 1991 fixed the alignment of the road; no major changes in environmental/social conditions in the local area since then, hence current thinking on road alignment is the same; however, this will be confirmed through the studies being undertaken, and adjustments made as appropriate to minimize social and environmental impacts. Local consultant to be selected for detailed design of access road and construction scheduled to be completed by end of 2017. Crucial to complete construction of access road before project construction commences.

**Summary of presentation and discussion on Components A, B and C of the project, including overall consultation and disclosure arrangements for the overall project**

15. The table below summarizes the key issues raised (including those not relevant to the proposed two projects) by stakeholders, and responses from NEA.

| Stakeholder comment | Response | Remarks/Additional actions / agreed follow-up |
|---|---|---|
| 7. USAID<br>• Details of Panel of Experts to be selected<br>• How will be the selection process? | • Two panels of experts-Technical (Dam Safety) and Environmental-Social.<br>• Following the WB procurement process for hiring experts. | Suggestion well received and will be incorporated |
| 8. Indigenous Peoples Representative<br>• Right of Indigenous people are to be included in project involvement<br>• Concerned in definition of local, why indigenous is not stated.<br>• Timely information on to Indigenous people shall decrease any future conflict.<br>• Holistic approach to project implementation and Local Indigenous involvement.<br>• Engagement of IPs at each level of project implementation | The stakeholder consultation includes consultation with indigenous and vulnerable community along with others.<br><br>A vulnerable and indigenous and peoples development plan will be prepared for the project in line with relevant WB Policies | Suggestions will be incorporated during the project study and implementation time |
| 9. Association of District Development<br>• Why not equity of local people, corporate house and national banks in case of UAHEP, why development partners are considered for this project?<br>• Why benefit sharing only in IKHPP not in UAHEP? | Nepal Government's Cabinet has decided to develop UAHEP by NEA under the ownership of Nepal Government. Hence, the project share could not be distributed to local people.<br><br>UAHEP being one of the attractive projects financially, the benefit of these resources should not be directed to any particular organization or private parties. Instead, the consumers in particular and country as a whole should benefit from such potential and attractive project.<br>With regards to the ownership of | |

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| | UAHEP meeting was held with local representative and assembly member and concurrence was made to develop IKHPP along with UAHEP and hand over the total ownership of IKHPP to the local public.<br>Fund form local resources for the project shall not be enough if project will be developed up to 800 MW (in Q-40) or more, thus fund from World Bank is required. | |

| | | |
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| 10. Investment Board of Nepal<br>• What are challenges associated with UAHEP considering the conservation areas nearby the construction sites?<br>How closely UAHEP is working with Arun-3?<br>• Does UAHEP affect the Arun 3 which is in downstream? | The construction site only touches the buffer zone of the Makalu Barun National Park. However, NEA has already applied for permission at relevant agency and recommendation will be followed as required. In addition, the full ESIA will further study the potential impacts to the park's buffer zone and any other critical habitats, and will ensure appropriate mitigation, management and offsets if required, in accordance with World Bank and national requirements and policies. | The detailed engineering design, ESIA andCIA studies will address this issue more deeply |
| How closely UAHEP is working with Arun-3?<br>Does UAHEP affect the Arun 3 which is in downstream? | UAHEP as well as Arun III both are designed as few hours peaking type.<br>The River basin Plan/Generation master Plan to be supported under this Project will coordinate the operation of these two projects on the same river. | |

| | | |
|---|---|---|
| 11. NAARC<br>• Presentation was more focused in the UAHEP& IKHPP Technical part.<br>• What about monitoring mechanism within the framework?<br>• What is the consideration on National Policies regarding project? | This document is framework covering the brief activities of the project and environmental and social documents to be prepared for the project.<br><br>The proposed ESIA of the proposed Project (PSRSHD) will develop a monitoring mechanism for all projects supported under the proposed Project. The ESIA will follow both applicable national policies and WB Safeguard Policies as well. | Suggestion is welcomed. Will be address during out environmental study |
| 12. IPPAN<br>• Why is road planned from Tumlingtar, not from Basantapur?<br>• Why the local owner ship (share) model is for Ikhuwa only why not in UAHEP?<br>• There must be incorporation of local people<br>• International Practice in these development<br>• By international donor is slowing down the project.<br>• International practice is only concentrated in the process not in the outcome.<br>• Why cannot financial fund be arranged from local level? | Access road alignment will be finalized during Detail Engineering Design Phase, and in consideration of findings of the ESIA.<br>UAHEP is sole government owned project. NEA is developing agency on behalf of GoN.<br>Even NEA will not get sole benefit. Government, general consumers and the whole tariff system will be benefitted from this project.<br>IKHPP is integrated part of UAHEP and they should not treated as individual project. So, there is no question of local share in UAHEP only.<br>UAHEP is still under study. If its capacity is finally determine to be 800MW (Q40) or 2000MW (Q25 design) financing from local level may not be possible. | |

| | | |
|---|---|---|
| 13. Forest Department<br>• Environment study should be updated.<br>• Consultants conducting the studies are in practice centrally based; and in many cases the information collected are not site specific and the sites are not visited and the genuine affected people are seldom consulted during the process.<br>• Forrest department is being blamed for not giving clearance for project. But actually the EIA (for projects, in general) are not comprehensive.<br>• There is no regular consultation and coordination at all level of project planning and implementation | The existing environment and social documents will be updated at different level of studies to be commissioned under the proposed project.<br><br>A bankable report will be prepared for this project following GoN and World Bank requirements. This includes robust stakeholder consultations, requirement for detailed fieldwork and in-depth site-specific analyses and management plans. | Suggestion will be incorporated during environmental study. |
| 14. Department of Soil Conservation and Watershed Management<br>• Land use management, Restoration, Reform, Catchment management including upper catchment should be dealt in integrated way for sustainability of project.<br>• New techniques like Payment for Environmental Services (PES) needs to be investigated with regard to benefit sharing | The ESIA will address watershed management issue at project level whereas the cumulative impact assessment will cover the watershed management issue in wider aspect. | Suggestion will be incorporation during detailed engineering design and environmental study |
| 15. Ministry of Energy<br>• What about dewater zone created by project at buffer zone of Makalu Barun Conservation Area?<br>• Does the access road lies within Makalu Barun Conservation Area?<br>• How was capacity of IKHPP determined as 30 MW? | Barun River is at about 14 km downstream from headworks. Required discharge as suggested by environmental study will be released. Entire access road is at the left bank of Arun River which is away from the Buffer zone of Makalu Barun Conservation Area.<br>Installed capacity of IKHPP | Detailed study will be carried out during detailed engineering study and environmental study |

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| | confirmed as 30MW as per review study of DoED. | |
| 16. NAARC<br>• What has been considered about G-flow (Genetic Flow)? | Investigation under process. Later it will be incorporated.<br>It will be addressed by environmental study.<br>Ecological flow management plan will be prepared as a part of Environment and Social Management Plan | |
| 17. Investment Board<br>• During Hydropower development, Environment act is followed. Is same act followed for both small and large hydropower projects?<br>Small<500MW, Large>500MW. | The act is only guiding document and the details will be covered as per the approved ToR, existing guidelines and prevailing practices.<br>The EIA guideline for energy sector is still at draft stage and needs to be finalized at earliest. | Study will be carried out to meet the requirements of Nepal Government as well as donor agency |
| 18. WECS concluding remarks<br>The activities in Component C (to support the decision system) is too many- this should be made concise so that outcomes/results are seen | Follow-up discussion and coordination will be carried among WECS, NEA and the WB to ensure consensus. | |

**Event Closing**

16. The event closed at 12:40 PM by thanking all the stakeholders for their kind attendance and active participation. The program was wrapped up with closing remark by Mr. Lila Nath Bhattarai (Acting DMD, NEA) and Dr. Sanjay Sharma (Joint Secretary, WECS). Both of them thanked all participants for their valued suggestions and for making the event successful.

17. Mr. Lila Nath Bhattarai explained that UAHEP project has been conceptualized as one of the potential project which can reduce the overall cost of energy production. Currently, 3/4 of the total installed capacity of Nepal is owned by NEA, even in this situation, NEA is struggling to improve its financial health, so this project is very important for NEA and to the country. IKHPP will be developed as an integrated part of Upper Arun and all of its ownership will be handed over to the local people however the mode of transfer will be decided in near future.
18. Dr. Sanjay Sharma focused on sustainable development of the project by the policy level changes. He also focused on involvement, consent, acceptance, information to the local people as an essence of

successful development of hydropower projects. Finally, He heartily thanked to all participants for successful participation and provision of feedback about the proposed TA project.

**Section 1: Detailed list of consultation participants**

In total 43 persons from all the three implementing agencies, GoN authorities, local environmentla and socia lexperts / consulting firms, independent hydropower developer associations, local NGOs, development partners, and the World Bank, participated the consultations. Name list, organization, detailed contact infriomation are available in the Project file (NEAand WECS).

# Attendance during Public Consultation on

## Draft Environmental and Social Management Framework (ESMF) for Power Sector Reform and Sustainable Hydropower Development Project (PSRSHDP)

**Organized by: WECS, DoED and NEA**

**Venue: Hotel Yak n Yeti**

**Date: 23rd December, 2014**

**Time: 10:00 AM Onwards**

| S. No: | Name | Organization | Designation | Phone number | Email Address |
|---|---|---|---|---|---|
| 1 | Gopal K. Lohia | Nepal Electricity Authority | Manager | 01-4153039 | lohiagopal@yahoo.com |
| 2 | Chandananda Raj Vaidya | " | D. Manager | " | vaidyachandan@hotmail.com |
| 3. | Jagdish prasad Yadav | " | Manager | 9841-250959 | jyadav.1957@yahoo.com |
| 4. | Rajesh Sapkota | " | Engineer | 9857058059 | rajeshsapkota@gmail.com |
| 5. | Suresh K. Wagle | NARC, FRD | Sen. Scientist | 9841107821 | wagleskk@yahoo.com |
| 6. | Shankar Khagi | USAID Nepal | Energy Sector | 9801076975 | skhagi@usaid.gov |
| 7. | Amanda Cats | USAID Nepal | Democracy Specialist | 9801070057 | acatsbaile@usaid.gov |
| 8. | Surya Narayan Shrestha | Nepal Electricity Authority | Engineer | 97510-82501 | surya.shrestha@nea.org.np |
| 9. | Santosh Budhathoki | NEA | Engineer | 9841063860 | budhathokisantosh@gmail.com |
| 10 | Shailendra Guragain | IPPAN | V-P | 985/034770 | guragain.shailendra@gmail.com |
| 11 | Nabin Kumar Singh | DUSDP, Lalitpur | Engineer | 9855025164 | nabinleads@gmail.com |
| 12. | Bishnu Dhy Karki | NEA | Manager | 9851022252 | 10527668x@ntc.com |
| 13. | Dipa Khakurel | NEA | Engineer | 9841448530 | deepakhakurel@hotmail.com |
| 14 | Bina Rai | NEA | Engineer | 9843683837 | bina.raee@gmail.com |
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## Attendance during Public Consultation on

### Draft Environmental and Social Management Framework (ESMF) for Power Sector Reform and Sustainable Hydropower Development Project (PSRSHDP)

**Organized by: WECS, DoED and NEA**
**Venue: Hotel Yak n Yeti**

**Date: 23rd December, 2014**
**Time: 10:00 AM Onwards**

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# Attendance during Public Consultation on

## Draft Environmental and Social Management Framework (ESMF) for Power Sector Reform and Sustainable Hydropower Development Project (PSRSHDP)

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**Section 2: Photo log of event**


## Annex II: Final Draft Terms of Reference for theESIA, CIA and Social Planning studies for IKHP and UAHEP

**Background**

1. The World Bank is providing financial support to the Government of Nepal, Ministry of Energy, through the Nepal Electricity Authority (NEA), to carry out environmental and social assessment detailed design studies, and preparation of bidding documents for the proposed Upper Arun Hydroelectric Project (UAHEP) and the supporting IkhuwaKhola Hydroelectric Project (IKHP).

2. **National power shortage context.** Nepal faces a significant and growing gap between power demand and supply. While 75 percent of the population of Nepal is estimated to have access to electricity (grid and off-grid) according to the 2013 census, they do not necessarily have service due to shortage of supply, with load shedding of up to 18 hours per day in grid-covered areas in the dry season. Average annual consumption in Nepal remains very low at about 70kWh per capita, compared to 733 kWh in India and 2,600 kWh in China. The current total installed capacity of the Integrated Nepal Power System (INPS) is 766 MW, and power demand is growing at a rate of 10% a year.

3. **The Nepal Electricity Authority (NEA).** The NEA is tasked with generating, transmitting, and distributing adequate, reliable, and affordable power by planning, constructing, operating, and maintaining all generation, transmission, and distribution facilities in Nepal's power system, both interconnected and isolated. NEA was formed in August 1985, under the Nepal Electricity Authority Act of 1984, as a vertically-integrated government-owned utility responsible for generation, transmission, and distribution of electricity in Nepal. NEA generates approximately 60 percent of the current electricity output in Nepal. Independent Power Producers (IPPs) also invest, own, and operate power generation facilities, mostly based on hydro resources. However, as the owner and operator of the national grid, NEA serves as the single buyer for the IPP-generated electricity for domestic grid-based electricity supply. NEA's Board of Directors is chaired by the Minister of Energy, and consists of representatives from the Ministry of Energy; Ministry of Finance; the industry, commerce, and financial sector; the consumer pool; and the non-government power sector.

4. To meet the increasing power demand, NEA is prioritizing the development of a suite of proposed hydropower projects, among which the 335MW UAHEP is a high priority due to its expected low generation cost and high availability of firm power. The ultimate purpose of power generation is to increase domestic energy supply through the national grid; in the future, surplus energy maybe exported. NEA is also responsible for the planning and implementation of the IKHP. A list of other projects currently at an advanced stage of planning and design by NEA are presented in Annex-1.(The proposed Upper Arun and IkhuwaKhola projects are not included in the annexed list as they are still in the early stages of design.)

5. **Project planning background.** The proposed UAHEP project site was first identified by the Master Plan Study of Koshi River Water Resources Development by JICA in 1985. A subsequent reconnaissance study was conducted by NEA in the summer of 1986. In 1991, a feasibility study of the project was completed on behalf of NEA by a Joint Venture of Morrison Knudsen Corporation, Lahmeyer International, Tokyo Electric Power Services Co., and NEPECON. A preliminary Environmental Assessment was also carried out. NEA had intended to develop the UAHEP only well after completion of the Arun III Hydropower Project. The two projects are not interdependent, and no specific sequencing is required to ensure the viability of each. After failing to achieve financial closure on Arun III, NEA shifted focus to the development of other hydropower projects outside the Arun Valley. In 2011, in order to meet increasing electricity demands and mitigate load shedding, NEA revisited and reviewed the feasibility study of UAHEP and re-affirmed it as a priority

project due to its relatively low cost of generation, its availability of high firm energy and potential to contribute to the Integrated Nepal Power System, and its location in the power deficient eastern region of Nepal. The review also identified changes in available infrastructure at and around the project site, and collected additional information contributing towards the detailed engineering design of the project.

6. In February 2013, a cabinet decision granted the NEA permission to implement the UAHEP under the ownership of the Government of Nepal. The Department of Electricity Development informed NEA that a Survey License would not need to be issued to NEA since NEA would be implementing the project on behalf of the Government of Nepal. The associated IKHP would be developed under the umbrella of the UAHEP, but unlike the UAHEP, which is wholly owned by the Government of Nepal, IKHP would have the option of being jointly developed with the participation of the local community. Nonetheless, irrespective of how the two projects are viewed under national law, for purposes of the proposed studies they are being treated in an integrated fashion.

7. **World Bank involvement**. The World Bank is supporting the proposed studies as part of its ongoing engagement with and support to the Government of Nepal in strategic planning and detailed project preparation for priority projects in the hydropower sector. While decisions related to the future financing of the project have not yet been taken, the proposed studies must be carried out in accordance with World Bank Operational Policies including Safeguard Policies and Environmental, Health and Safety (EHS) Guidelines, in addition to applicable national legislation.

**Project components to be covered by the ESIA, CIA and Social Planning Studies**

8. **The Project.** The project components to be covered under this consultancy will include Upper Arun Hydroelectric Project (UAHEP), IkhuwaKhola Hydroelectric Project (IKHP), various ancillary activities related to each hydroelectric component, and the required access roads and transmission line from the powerhouses of UAHEP and IKHP to the proposed substation of Koshi Corridor Transmission Line at Tumlingtar.These are described below and referred to collectively thereafter as "the Project," unless otherwise specified.

9. **Upper Arun Hydroelectric Project (UAHEP).** The UAHEP is a proposed 335 MW hydroelectric facility to be located on the Arun River in Sankhuasabha District of eastern Nepal. The project area is situated within Longitude 87°20'00" to 87°30'00" East and Latitude 27°38'24" to 27°48'09" North, about 15km south of the international border with Tibet and 220 km east of Kathmandu (see Annex 2). The proposed dam site is located in the Chepuwa Village, in a narrow gorge about 350m upstream of the Arun River's confluence with the Chepuwa River. The proposed power plant site is located in the Hatiya Village 16km downstream of the dam site, near the Arun River's confluence with the Leksuwa River. The right bank of the Arun River at the proposed UAHEP site falls within the Makalu Barun Buffer Zone, which is adjacent to the Makalu Barun National Park. The proposed UAHEP dam site is therefore located at the edge of the Buffer Zone. UAHEP is the upstream most of the three major hydropower projects currently identified and under preparation in the Arun Basin, the other two being the 900 MW Arun III project and the 300 MW Lower Arun project, both of which are more advanced in their preparation status and have already been licensed to IPPs (see Annex 3). These three projects are functionally interdependent from each other and do not require any specific sequencing or coordination in their development in order to be viable.

10. **UAHEP salient features.** As informed by an initial feasibility study completed in 1991, the proposed UAHEP is designed to be a Peaking Run of the River (PRoR) project with gated weir across the Arun River. Intakes on the left bank of the river are proposed to divert the design discharge of 78.8 $m^3/s$ through an intake tunnel to three underground desanding basins, a headrace tunnel of 7.8 km, surge tank, drop shaft, pressure tunnel, and ultimately to the underground powerhouse for power generation. Water would be retained for a period of a few hours only in a peaking pond and then released through the tunnel during peak hours. After power generation, water will be released back to the Arun River

(see Annex 4). Review study in 2011 suggested that the proposed UAHEP with 335 MW of installed capacity can generate total annual energy of 2598 GWh. The salient features of the proposed project as informed by the initial feasibility study are listed in Annex 5. NEA will be assisted by an international engineering consulting firm, being contracted in parallel to the consultancy described in these TOR, to inform the final decisions about siting and design of these salient features. NEA will facilitate coordination across the consulting teams to ensure that the inputs from the environmental and social assessment and planning studies described in these TOR feed into these final siting and design decisions.

11. **IkhuwaKhola Hydroelectric Project (IKHP).** NEA has also proposed to develop the 30 MW IKHP, a medium sized hydropower project, as an integral part of UAHEP. The proposed IKHP site is located on a tributary to the Arun River approximately 8 km downstream of the proposed UAHEP powerhouse site, and 5 km upstream of the proposed Arun III Hydropower Project headworks (see Annex 6). While developing a hydropower projects in Nepal, it is a common practice to involve local communities as shareholders so that the benefit from the project could be shared with the local people. As per the cabinet decision of Government of Nepal (GON), UAHEP will be developed as a public sector project under the ownership of GON through the NEA as an implementing agency. Since the project is completely owned by the GON, local communities will not be able to participate as shareholders in this project. In order to share the benefit of UAHEP development with the local communities, NEA plans to develop IKHP with UAHEP. NEA proposed to develop IKHP n a public private participation mode by establishing a special purpose vehicle, where local communities would be shareholders of this project. NEA plans to combine this project with UAHEP into a package so as to deliver other benefits as needed to the local communities in addition to the shareholding. This project is an activity associated with or linked to the UAHEP. The Department of Electricity Development (DoED) of the Government of Nepal plans to complete a feasibility study and an initial environmental examination (IEE) for IKHP in 2015.

12. **Access Roads:** Background: The proposed UAHEP and IKHP sites are not presently accessible by motorable road. The closest point of road access is Num Bazaar, which is close to the proposed dam site of Arun III Hydropower Project. Num Bazaar can be reached from Kathmandu by flight to Tumlingtar, then driving approximately 15km on an all season road to Khadbari, followed by approximately 40km on a fair weather road. The distance from Num Bazaar to the powerhouse of the Project is about 25 km. The fair weather stretch is planned to be upgraded to an all season road. The Department of Roads of the Government of Nepal is currently constructing the fair-weather North-South Koshi Road, which will connect Nepal from Num Bazar to the Chinese border at Kimathanka through Gola. The Project Access Roads to the proposed UAHEP and IKHP sites are planned as follows:

    a. *UAHEP Project Access Road:* To connect the UAHEP powerhouse with the dam site, the project will require building of a dedicated access road of approximately 24 km, including an estimated 1.7 km of road tunnel and a bridge over the Arun River. The proposed route would initiate from the Koshi Highway at Gola (about 800 m upstream of the confluence of Arun River with LeksuwaKhola) The access road will start from the proposed bridge over the Arun River at Gola followed by a 14.2km steeply climbing stretch up to the proposed location of the south portal of the tunnel an Namase village, through four villages. The 1.7 km tunnel (with maximum height of 5.5m and maximum base width of 6.0m) will extend roughly from Namase village to Rukma village, shortening the overall road length by approximately 5 times and also avoiding the crossing of a large landslide area. From the northern tunnel portal at Rukuma village, the access road will continue another 8km to the headworks, through Rukma village and then upstream parallel to the ArunRiverand over another bridge over ChepuwaKhola. The road will be approximately 5.0 m in width and average gradient is 8%. However in difficult terrain it is up to 12%.The road alignment has been selected to follow, as far as possible, the existing track/path

through this area to minimize earthworks as well as road induced erosion. Nonetheless, the environmental and social assessment process to be carried out through this consultancy will evaluate and propose potential adjustments to this alignment, as required, to minimize negative impacts.

b. *IKHP Access Road:* To connect the IKHP powerhouse to the Koshi Road, the project will construct about4 km road to descend from the Koshi Road and a bridge over Arun River at UwaGaun (approximately 600-700 m upstream of the confluence of Arun River and IkhuwaKhola stream). The proposed route would initiate from the Koshi Highway at UwaGaun (about 14 km from Num Bazar), and then continue on the other side of the bridge to the powerhouse area. An additional 12.5 km of hilly road will be constructed from the powerhouse site to the headworks side, along the right bank of IkhuwaKhola. This proposed alignment, is required, to minimize negative impacts.

c. Additional minor stretches of access road and tracks will also be required for on-site movement and storage of equipment and construction/quarry materials, disposal of spoils, etc., and for connectivity among the various project ancillaries.

13. **Power Transmission.**For the power evacuation of UAHEP, a 220 kV double circuit transmission line shall be constructed from the powerhouse to a proposed substation at Tumlingtar. Total length of the proposed transmission line is about 49 km. Preliminary route alignment surveys have been completed for about 45 km, and the remaining 4 km of route survey are expected to be completed soon. According to the proposed alignment, the transmission line will start from the powerhouse site of Upper Arun at Sibrung at the left bank of Arun River and immediately follows the right bank of Arun River. The transmission line will cross the Arun River to the left bank in the vicinity of the proposed dam site for Arun-3 HEP and heads towards the proposed substation of Koshi Corridor Transmission line atTumlingtar.There are 49 proposed angle points in the 45 km section that has already been surveyed. The substation at Tumlingtarwillthen be connectedto the Inarwasubstation of the 107 km Koshi Corridor transmission line, which is a separately financed project being developed by GoN to evacuate the power from several projects in this area.Inarwa substation, Tumlingtar substation as well as the 107 km Koshi Corridor transmission line will be the part of national grid. Power from IKHP would meanwhile be brought up to the proposed substation site at the UAHEP powerhouse (Sibrung) through about 10km of 132kV single circuit transmission line. The 49 km transmission line connecting from power house of UAHEP to Tumlingtar is part of the Project, and should be covered in this ESIA. The Koshi Corridor transmission line will start construction soon with financing from the Indian Exim Bank. Therefore, the total length of Transmission Lines to be covered by these TORs are the 10km 132kV single circuit line and the 49km 220kV double circuit line

14. **Ancillary works and other associated activities.** Various ancillary works will be required for project implementation, including contractor camps, diesel generators for construction-stage power supply, spoil and waste rock disposal areas, borrow areas, NEA staff housing, etc. . The Consultant will consult and discuss with NEA and World Bank to identify all such associated activities under the screening and scoping stage of the consultancy (Task 1, as outlined below).

**Objectives of this Consultancy**

15. The objective is to conduct and complete environmental and social impact assessment with associated environmental and social management plans, as well as planning and design for the Project in accordance with relevant laws and policies of the Government of Nepal (GoN) and the safeguard policies of the World Bank.[6]

[6]The Consultant is also encouraged to consider other relevant international standards including those of other international financial institutions, export credit agencies, and private sector investors (e.g., IFC Performance

16. The Consultant shall ensure that all positive and adverse impacts associated with construction and operation of the Project, including all associated/ancillary works and linked activities if any, are taken into account. Specific objectives of the consultancy include:

    - To carry out site investigations to collect primary data and review all available relevant secondary data to establish a comprehensive environmental and social baseline (including physical, biological, social, cultural and economic environments) for the Project Area of Influence;
    - To screen, identify and assess potential positive and adverse environmental and social impacts, including direct, indirect, and induced and environmental and social impacts associated with all Project activities, as well as cumulative impacts of the Project when taken together with impacts associated with the Arun III, Lower Arun and other development projects (hydropower, power transmission, or otherwise) planned or underway in the Arun River basin;
    - To develop proposed measures to avoid reduce, mitigate, manage and/or compensate for such impacts, including the institutional arrangements and required capacity building to implement all such measures and monitor their effectiveness;
    - To identify potential opportunities and design appropriate measures to maximize complementary economic, financial, environmental and social benefits of the Project;
    - To ensure that all affected people receive assistance to enable them to improve or retain their pre-Project living standards and be able to participate and share the benefits of the development;
    - To ensure that impacts on vulnerable and indigenous communities are avoided, minimized, mitigated and/or compensated, and that mechanisms are designed to ensure their meaningful participation during Project planning and implementation, and that they receive culturally appropriate benefits under the Project;
    - To confirm that the Project enjoys broad support from indigenous communities through free, prior and informed consultation;
    - To conduct a public consultation process that ensures that Project affected people and other stakeholders are informed about the Project and its possible impacts, as well as offered the opportunity to share their opinions and feedback so as to input into these environmental and social assessment, planning and design studies and their implementation; and
    - To document all of the above mitigation and development interventions in appropriate forms and formats to be further discussed and agreed upon with NEA and in line with World Bank standards.

17. The Consultant shall carry out this assignment by reviewing and drawing from information collected under previously conducted studies, supplementing it through additional literature research and field data collection and planning activities that would vary across the different assignment tasks. The Consultant shall validate and report on the quantity and quality of the available data.

18. The Consultant shall ensure that the environmental and social assessment, planning and design outputs of this assignment will comply with and meet the legal and technical requirements of the Government of Nepal and World Bank environmental and social policies.It is emphasized that under current procedures of the World Bank, the ESIA shall be prepared by an independent consultant that has no conflict of interest resulting from having been the lead consultant and/or member of a consortium or joint venture responsible for undertaking the feasibility and pre-design studies for the project. This assignment is considered complete only upon approval and clearance of the final versions of the required environmental and social assessment and planning documents by the Government of Nepal, with concurrence from the World Bank.

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Standards, International Hydropower Association Sustainability Guidelines, Equator Principles etc.), and detail applicable aspects of those standards in the assessment process when they are more stringent.

19. Given the size and complexity of the Project and its potential impacts, in accordance with World Bank Safeguard Policies, an Independent Panel of Experts (IPOE) will also be contracted separately by NEA to provide guidance throughout the environmental and social assessment and planning process. The Consultant's draft and final deliverables will thus also be subject to review by the IPOE, as part of the Government's review and approvals process.

**Scope of Services**

20. The assignment will be carried out in synchronization with the engineering design assignments for the Project, which will be contracted separately. NEA will facilitate the interaction between the Environmental and Social Consultant (hereafter, "the Consultant") and the Engineering Design Consultant. The two consulting firms shall be expected to interact and share data, analyses and recommendations as relevant to the other's assignment in a timely manner.

21. The ESIA will have to assess and verify the applicability of the World Bank Safeguards Policies in the context of the proposed operation.[7] In addition, if Bank financed, the proposed project would be subject to the provisions of the Access to Information Policy and other related World Bank requirements concerning the disclosure of environmental and social information. These requirements include disclosing the ESIA and its supporting studies in draft and final versions at the InfoShop of the World Bank, and with pertinent government agency(ies) (Ministries of Energy, Water, Environment, Agriculture, Health, and the Finance, etc.) within Nepal. Key documents should be made available in both English and Nepali.

22. The ESIA, CIA and Social Planning Studies shall cover the UAHEP, IKHP (including addressing gaps from the IEE for IKHP and conduct further study), access roads for both UAHEP and IKHP, transmission lines including approximately an 10kmline connecting IKHP to the UAHEP substations, and an approximately 49km line connecting the UAHEP substation to the proposed substation at Tumlingtaras well as any ancillary works associated activities.

23. The tasks covered are preliminary, and aim to provide overview of the Project and studies to be conducted under this assignment. The Consultant shall develop site specific ToR for ESIA to be completed following the procedure of Scoping as outlined below and in accordance with Environment Protection Rules (EPR) 1997 of Government of Nepal and World Bank Environmental and Social Safeguard Policies. The Consultant shall conduct the ESIA and other environmental and social assessment and planning studies based on the ToR cleared by the World Bank and approved by the Ministry of Science, Technology and Environment (MoSTE). Prior to conducting TOR or ESIA studies, the consultant will seek initial approval from the Ministry of Forest and Soil Conservation (MoFSC). Prior approval and consent from the MoFSC is mandatory as per the secretary-level decision made by the Government of Nepal.

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

24. As a first task , the Consultant is expected to identify the Project's salient environmental and social aspects and potential impacts to be studied in more detail, verify the scope of the detailed studies to be undertaken, carry out initial public consultations, and develop detailed a work plan to carry out the studies. The specific subtasks are outlined below:

    a. *Review of all available existing information* on social and environmental baseline conditions and potential impacts related to UAHEP, IKHP, access roads, transmission lines as well as other ongoing or planned projects and activities in the watershed, in particular the other hydropower

[7]The World Bank Safeguard Policies include: Environmental Assessment, Natural Habitats, Forests, Pest Management, Safety of Dams, Indigenous Peoples, Cultural Property, Involuntary Resettlement, and Projects on International Waterways.

projects planned for the same basin, as well as other economically productive activities carried out within the region/basin including agricultural production, manufacturing, and tourism. Several previously conducted studies will be made available by NEA – see Annex 8 for an initial list. The Consultant will also be responsible for identifying any other existing studies or data of relevance to the assignment.

b. In accordance with the requirements of the EPR, the VDCs, institutions and communities in the Project area shall be notified about the environmental and social scoping through a public notice. The Consultant shall publish a Scoping notice in national daily newspaper mentioning the ongoing ESIA of the Project with a brief description of the Project and activities, a list of districts and VDCs likely to be affected by Project, the impact areas, request for comments and suggestions along with address of communication. The copy of notice shall bemade available in both English and Nepali and displayed in all Project-affected VDCs and a *muchulka* (signature of witnesses) confirming the display of the public notice shall be prepared.

c. Carry out an *initial site visit* including formal and informal discussions / meetings with local communities, government entities and other key stakeholders, in order to ground truth the information reviewed from existing sources about the Project's social and environmental context, complete an initial screening of likely environmental and social impacts and sensitivities, and enable logistical planning of additional required fieldwork to complete the full analyses and plans. All site visits will be arranged with the relevant stakeholders with advance notice.

d. Develop a *detailed Project description encompassing UAHEP, IKHP, associated access roads and transmission lines* for purposes of the ESIAs for each as well as other required environmental and social studies. The Project description would be based on descriptions developed under the feasibility analyses for each hydroelectric component and their major ancillaries, but should synthesize and provide an integrated overview of all key aspects of relevance to the proposed studies. This would include, for example: location of each hydroelectric component and their energy generation capacity; Project components for each and their basic design, including all ancillary aspects (e.g., dam and reservoir, diversion tunnels and powerhouse, power transmission lines, access roads and tracks (including envisioned traffic volumes during construction and operation), resettlement sites, characterization of volumes and types of spoil materials from tunneling and blasting/cutting, borrow and disposal areas, construction camps, etc.); time-sequenced explanation of primary activities to be carried out during pre-construction, construction, operation and maintenance; indication of support facilities and services required including any required off-site investments; life span of the investments. Define and describe the Project's *Area of Influence*, based upon the area likely to be affected either directly or indirectly by each component, including ancillaries and linked activities; as well as unplanned induced developments (for example, spontaneous settlement, logging, land clearing along access roads, etc). The Area of Influence should include, for example: (a) the direct footprint of all Project components; (b) off-site areas required for resettlement or compensatory tracts; (c) the airshed (e.g., where the impacts of blasting activities, exhaust or dust may be felt); (d) the Arun River watershed, including tributaries, forests and other areas which may be either directly impacted or which have demonstrable ecological or social connectivity to the directly affected areas; (d) human and aquatic and terrestrial habitats, as well as migratory routes of humans and of terrestrial and riverine flora and fauna, particularly where they relate to public health, economic activities, or environmental conservation; and (e) areas used for livelihood activities (hunting, fishing, grazing, gathering, agriculture, etc.) or religious or ceremonial purposes of a customary nature which may be affected by the Project. The Area of Influence should also consider any transboundary implications of the Project activities or linked/associated investments.

e. Through desk reviews and field screening and verification, identify and describe the Project's Environmental and Social Impact Zones, which would form a subset of the total Project Area of Influence and should cover the areas directly affected by all civil works planned under the Project, as well as possible activities that are not financed by the Project but considered as "linked" as described in paragraph 14 above. This is an initial and general assessment and will provide a basis for the development of the social planning task (Task 3 below). Develop a matrix to document i) identified Environmental and Social Impact Zones against civil works activities, ii) identified categories/kinds of social impacts, including direct physical impacts and the impacted population, and iii) a preliminary assessment of the expected degree of impacts (scale and severity).

f. Prepare a detailed *Scoping Report*, to consist of the following components:

   i. Initial Project description and definition of overall Project Area of Influence (including Environmental and Social Impact Zones);

   ii. Summary of findings on the key social and environmental baseline aspects and potential impacts, including an indicative assessment of scale and severity, which should be included for further study in the environmental and social assessment and planning studies (to incorporate the social impact matrix as described above);

   iii. Confirmation on the applicable World Bank safeguard policies as well as EPR 1997 and other national standards and regulations which apply to the Project (such as Solid Waste Management Act, Local Self Government Acts, etc.,), broken down by the Project's major components;

   iv. Draft TORs / outlines of each of the environmental and social assessment and planning studies to be undertaken based on the issues identified during scoping process.

g. The format of the report should include both a write-up as well as a summary presentation (in both English and Nepali) to use in the first round of formal stakeholder consultations.

25. **Stakeholder consultation strategy for the planning phase, and initial consultations**. Given the high profile and the history of hydropower development in Nepal, stakeholder engagement and consultations needs to start early as part of the planning process. Following incorporation of feedback on the draft Scoping Report provided by NEA and the World Bank, the Consultant will:

a. Conduct VDC level stakeholder consultation meetings in each Project affected VDC to discuss the findings of the Scoping, major issues of the project and plan of the studies. Similar consultation shall be made with Buffer Zone Management Authority and Makalu Barun National Park Authority. Consultations shall be held in Nepali and/or other locally appropriate languages (and/or with appropriate translation).In addition during the household surveys as part of the social assessment, it might be appropriate to engage a translator for local language other than Nepali, present in project area in order to ensure adequate consultations with local people particularly women who are less likely to be fluent in Nepali. This may be confirmed during the screening/scoping stage. The comments and suggestions received from the participants shall be collected and incorporated in Scoping and ToR documents.

b. Conduct district level stakeholder meeting to discuss the findings of the Scoping, major issues of the Project, and plan of the studies. The key stakeholder like District Forest Office, District Development Committee Office, District Administration Office, District Education Office and District Agriculture Development Office, local NGOs working in the area, shall be invited for the meeting. The Consultant shall make a brief presentation of the findings of the Scoping, key environmental and social issues of the Project and plan of the ESIA and other environmental and

social planning studies. The comments and suggestions received from the participants shall be collected and incorporated in Scoping and ToR documents.

c. Conduct Central Level workshop to present the findings of the Scoping to the key stakeholder who directly or indirectly influence the Project development. The participants of the central workshop will be almost same as proposed for upcoming workshop.

d. Develop a stakeholder consultation strategy and action plan to be adopted for the planning phase. This strategy will be further developed later into a full project consultation strategy, as part of the Public Participation and Consultation Plan outlined under Task 3 below.

e. Carry out and document a round of scoping-stage stakeholder consultations on the contents of the ScopingReport, in particular the initial Project description and proposed Area of Influence, findings of environmental and social screening, and the draft TORs / outlines for the proposed studies. Scoping stage consultations shall be advertised by public notice in both English and Nepali.

26. **Finalization of Scoping report and ToR document and development of work plan.** Based on feedback received during the consultations, the Consultant shall revise and finalize the contents of the Scoping Report, and ToR document and develop a detailed work plan for carrying out the assessments and studies as outlined. The revised Scoping Report and ToR document shall be submitted to NEA along with documentation of the consultations carried out (including copies of public notices and documentation on where they were advertised), including information on who attended (and their titles / relationship to the proposed project), a summary of issues raised, and how they have been considered. NEA and World Bank will review the documents and provide their comments and suggestions. The Consultant shall incorporate the comments and submit the documents to NEA for the approval of Ministry of Environment. The Consultant will make presentation on the Scoping and Terms of Reference document to Ministry of Environment and submit revised documents to NEA incorporating the comments of ministry. NEA will forward the revised document to Ministry of Environment for the approval.

27. ***Key expected outputs of Task 1:****(a) ESIA Scoping document covering the project description, definition of Project Area of Influence, and description of Environmental and Social Impact Zones, and environmental and social issues. (b) ESIA TOR / outlines for each environmental and social assessment and planning study to be carried out under subsequent tasks of the consultancy, reflecting the feedback received from stakeholder consultations as well as NEA, the World Bank, and the International Panel of Experts, and submitted for approval by MoSTE and MoFSC. (c) A detailed work plan for carrying out the assessments.*

***Task 2: Environmental Assessment and Planning***

28. Once approval of the detailed assessment TORs has been received from MoSTE and MoFSC, the Consultant shall develop one or more Environmental and Social Impact Assessment (ESIA) reports, including Executive Summary (and related public consultation materials), for the Project. The final decision on how the assessment and management planning results should be presented – e.g., as one single ESIA for the Project, vs. two separate ESIAs for the two hydroelectric components of the Project and their respective associated, ancillary and linked activities – will be made at the screening and scoping stage of this assignment (e.g., Task 1). Regardless, the process should include the key elements outlined below, and also shall ensure consistency with World Bank requirements for Environmental Assessment as per World Bank OP 4.01 Annex A (see Annex 10), as well as the Government of Nepal EPR requirements for EIA. The resulting deliverables shall also include a single unified Executive Summary (to be available in both English and Nepali), as well as a single integrated Cumulative Impact Analysis, as outlined further below.

29. In addition to environmental aspects, the study or studies shall incorporate social baseline, impact assessment, and management information, the key aspects of which are described in more detail in Task 3 of this phase of the consultancy, such that the final deliverables present an integrated assessment of both environmental and social aspects of the proposed Project activities. While social and environmental components of this overall consultancy are presented separately in these TOR, the multi-disciplinary Consulting team is expected to work collaboratively to ensure holistic analysis of social and environmental project impacts (for example, in assigning significance to environmental impacts in light of the socioeconomic or cultural value of the affected resource), as well as to capture and assess potential secondary effects of proposed mitigation measures (such as environmental impacts associated with project resettlement, or socioeconomic impacts associated with proposed environmental conservation and offset programs, etc.) For specific social aspects which are expected to produce their own stand-alone planning documents as outlined in Task 3 below, the integrated ESIA(s) shall summarize relevant aspects of these more detailed studies. In addition, any other relevant social impact and management aspects identified in the final approved version of the ESIA ToR (output from Task 1 of consultancy) should be covered. The entire scope of work under this task shall be covered in the ToR and the ESIA shall be conducted based on the approved ToR.

30. **Baseline studies.** To underpin the ESIA(s) and additional studies as outlined in these terms of reference, the Consultant shall assemble, evaluate, and present baseline data on all relevant environmental and social characteristics of the full Area of Influence, including data collected from primary (field) and secondary sources, spanning physical, biological (both aquatic and terrestrial), socioeconomic, health, political, ethnic, and cultural aspects. Some information may already be available from the feasibility studies and previous environmental studies, but may need to be updated. The Consultant should evaluate the methodologies used as well as geographic and temporal coverage of past fieldwork and, where deemed insufficient to meet international standards, should carry out additional fieldwork to fill in gaps. Full scoping of the baseline studies will be formulated during the screening and scoping phase of the consultancy (Task 1) with a view to focusing on the most relevant and important aspects; nonetheless, key aspects are presumed likely to encompass the following(for each hydropower component, access roads and transmission lines):

    a. *Physical context, including:*

        i. *Hydrology*: Describe the extent and characteristics of the catchment area of the Project in relation to the larger watershed. Map the surface hydrology and the current flow regimes of the Arun River, its tributaries and other water bodies as applicable in the Area of Influence, showing its context within the full watershed, and transboundary aspects. Describe location and characteristics of glacial lakes and snowpack distribution in relation to surface hydrology. Include characterization of groundwater in the region. The baseline should provide information on discharge (mean monthly, maximum, minimum) at the proposed dam sites along with locations upstream and downstream, and capture seasonal variations in flow, based on at minimum one full year's worth of field monitoring results (and more if available). Include estimated flood stream-flows for annual average and highest historic flows at the proposed dam sites and at townships and other populated areas along the river. Also include probable maximum flood (PMF) flows, clearly describing assumptions made in the estimation, at the proposed dam sites and the powerhouse sites. The flow parameters (discharge/velocity/water depth) in reduced flow section associated with minimum monthly average flow and proposed downstream release shall be provided.

        ii. *Soils, sediment movement, sedimentation, and erosion*: Include a characterization of soil types, locations and qualities. Characterize erosion rates in the project area, noting the corresponding geological conditions, slope steepness, vegetation type, and present land-use conditions. Describe the dynamics of sediment movement in the watershed,

along with seasonal variations in the estimated amounts of suspended sediments and bedload presently transported past the dam sites. Also include a baseline for any potential "pollutant" in sediments during construction and operational phases of the Project.

iii. *Water quality*: Describe the baseline water quality of the Arun River, its tributaries, and other water bodies in the Project Area of Influence in terms of parameters relevant to public health and aquatic resources (e.g. biota, biodiversity, and habitat). Include seasonal variations in water quality and relationships to flow and other controlling factors. Water quality parameters of Arun River shall be measured at least for headworks, reduced flow zone and powerhouse tailrace area.

iv. *Geology, geomorphology, and seismology*: Cover, in particular, the presence or absence of sulfides or heavy metals in subsurface and surface rock in the areas where blasting and tunnel drilling will occur (which could result in acid rock drainage or other waste management issues associated with waste rock disposal); and characterize faults and overall seismic activity in the region which could affect or influence design, construction and maintenance aspects of the dams and other project infrastructure. Characteristics of discontinuities and weathering patterns of the rock mass along the tunnel alignment, continuity, roughness, attitudes, aperture, ground water condition and rock mass quality shall be provided.

v. *Landslide and other natural hazard propensity*: Describe the natural phenomena that pose potential risk to the project, including Glacial Lake Outbursts (GLOFs), Landside Dambreak Failure Floods (LDFFs), very high river flows which result from sustained rainfall in the watershed upstream of the site, incremental "mass wasting," as well as possible extreme events. Include also a characterization of landslide risks along transmission line corridor, access roads, identification of high-risk spots, etc.

vi. *Climate change*: Characterize anticipated climate change effects to the region (based on the full range of estimates as developed from multiple sources) and their expected impacts to river hydrology and flow rates, flood profiles (including the potential for GLOFs and LDFFs, as well as changes to the probable maximum flood profile), as well as their potential ecological effects. Include discussion of climate change impacts on upstream glacial hydrology and water supply to the basin; on water demand relative to supply in the Area of Influence; on soil movement and mass wasting; on dam/power house safety; as well as on forest, pasture, and agricultural land composition and use.

vii. *Physical cultural resources*: Carry out field reconnaissance, review of literature, and interviews / questionnaires with key stakeholders (including relevant government bodies, academics, NGOs, local religious leaders and elders, etc.) to identify and characterize any sites, structures, or natural features and landscapes in the Project Area of Influence – 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. Indicate the likelihood of "chance finds" during project construction, and the presumed typologies of such finds.

b. *Biological context, including:*

i. *Aquatic ecology:* A detailed characterization of aquatic flora, fauna and natural habitats based on full seasonal field data, secondary information, as well as interviews with local residents. This would include, in particular: 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. Characterization of migratory patterns, including length and season of migrations (in both tributaries and mainstream river, as applicable), as well as spawning locations and habits should be included. The study should cover not just the Arun River, but also tributaries and other water bodies in the Area of Influence.

ii. *Terrestrial ecology:* A detailed characterization of terrestrial flora, fauna and natural habitats based on full seasonal field data, secondary information, as well as interviews with local residents. This would include, in particular: 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. The multiple bio-climatic zones along the slopes of the valley should be characterized, including the interaction of species within the various zones, and areas of importance as corridors for wildlife movement throughout the region. For avifauna, the baseline should in particular make note of any migratory flyways or Important Bird Areas (IBAs), and also characterize species which may be particularly susceptible to impacts from project activities and infrastructure (due to, for example, their propensity for perching, roosting, and/or nesting on power transmission lines, poles, or towers; physical characteristics or behaviors which could increase risk of collision, etc.).

iii. *Natural habitats*: The UAHEP dam site is located at the edge of the Makalu Barun Buffer Zone, which abuts the Makalu Barun National Park. Some of the Project's direct footprint is thus expected to fall within the Buffer Zone. The overall Area of Influence of the Project will include areas of the Buffer Zone, and may also include areas of the adjacent Makalu Barun National Park. For both aquatic and terrestrial habitat, the baseline should include a determination on the presence of critical natural habitat as defined by World Bank OP 4.04.[8] All areas of critical natural habitat identified should be fully characterized, including their legal conservation status and administration and any relevant land or resource use restrictions. For legally protected areas, the capacity of entities responsible for its management should be assessed. This would include the Makalu Barun National Park and Buffer Zone, but may also include other areas to be determined by the Consultant.

c. *Socioeconomic, cultural and health context, including:*

i. *Water use and users:* Identify all existing water uses, including both permitted and non-permitted, for the Arun river, its tributaries, and other water bodies in the Project Area of Influence, such as for irrigation, domestic consumption, industry (if any), recreation, etc. Identify the user groups for each.

ii. *Land use:* Characterize current land uses in the project area and indicate major trends in land use change which are taking place irrespective of the proposed project. This process should include remote sensing through current satellite imagery and ground verification for preparation of thematic forest-cover and land-use maps. Land-use

[8] Critical natural habitats are defined by World Bank Operational Policy 4.04, Annex A to include existing protected areas and areas officially proposed by governments as protected areas (e.g., reserves that meet the criteria of the IUCN classifications); areas initially recognized as protected by traditional local communities (e.g., sacred groves); sites that maintain conditions vital for the viability of these protected areas; areas with known high suitability for biodiversity conservation; and sites that are critical for rare, vulnerable, migratory or endangered species. Refer to the operational policy for additional guidance.

change trends should also be considered to understand the dynamics of land-use and recent forest-cover change trends.

iii. *Land tenure:* Characterize types of land tenure (e.g., titles, customary), formal and informal institutions related to land tenureship, and modes of land transactions in the project area (a full land and asset registry for individuals and households to be displaced will be prepared separately as part of the Resettlement Action Plan).

iv. *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.

v. *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 Project Area of Influence. Discuss in particular those activities related to fisheries, forestry or forest products, or other natural resources, as well as agriculture and industry (if any). Discuss gender related work load sharing and family economy; dependency and use of local and external resources; and production and marketing systems and patterns.

vi. *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. Include a baseline poverty mapping, along with discussion of causes thereof. Develop a socioeconomic baseline for affected communities covering indicators specific to living standard and well-being.

vii. *Community health:* Provide an overview of key health issues, focusing on the presence of any disease vectors which may become more prevalent in the area due to the project (for example, waterborne vectors who inhabit slow-moving or standing water; HIV/AIDS or other sexually transmitted diseases which may become more prevalent due to worker influx, etc.), as well as the coverage and quality of health services available in the project area.

viii. *Indigenous and vulnerable peoples:* Identify the presence of vulnerable and indigenous[9] peoples residing in the project idea 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. Discuss social cohesion and leadership institutions. Provide gender-specific information as possible. 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 with regard to Indigenous Peoples.

ix. *Religion and culture:* Provide relevant information on community festivals and rituals, in particular those involving the Arun River or its tributaries, or other key resources to be affected by the project.

[9] Refer to World Bank OP 4.10 (*Indigenous Peoples*), para. 4, for the criteria to be used in identifying indigenous peoples and determining the scope of applicability of the World Bank policy.

31. ***Environmental and Social Input into Analysis of Project Alternatives.*** A feasibility study has been completed for the UAHEP, including initial recommendations for detailed engineering design, based on a preliminary alternatives analysis. A similar feasibility study for the IKHP is scheduled to be completed by DOED this Nepalese fiscal year. These studies will be reviewed under the separately contracted Engineering Design assignment, and analyzed in depth against alternative design options– including, for example, alternative siting and/or alignments for the dam (with implications for the total flooded area), tunnels, powerhouse, access roads, etc. – before a final selection is made and detailed engineering design starts. As part of the Environmental and Social Impact Assessment process, the Consultant shall carry out a parallel assessment of the environmental and social considerations relevant to the facility siting, alignment and other design alternatives of the UAHEP, IKHP, associated access roads and transmission line components (and their ancillaries) under study, as input into final decisions on the detailed engineering designs for each. Furthermore, the consultant shall review, document and identify any analytical gaps in previous social and environmental considerations that factored into the Government of Nepal's strategic decision making process about energy generation options and priorities and basic site selection for the two hydroelectric components.

32. The following tasks will be performed by the Consultant in this regard[10]:

    a. Review the feasibility studies of the UAHEP, IKHP, associated access roads and transmission lines, and summarize the extent of consideration of environmental and social issues in forming the technical recommendations on aspects such as siting, alignment, design (including peaking power generation type), phasing, and construction techniques for key Project facilities.In tandem with the more in-depth review of feasible engineering design alternatives (including siting, alignment, phasing and construction techniques for key Project facilities and their associated or ancillary works), to be carried out in parallel to this consultancy by the Engineering Design Consultant, assess the environmental and social impacts (positive and negative) for each design alternative under analysis. NEA will ensure that the Engineering Design Consultant provides relevant information on the design alternatives under consideration to the Environmental and Social Consultant.
    b. Share and discuss the assessment findings and conclusions with the Engineering Design Consultant, and provide input to the finalization of the design alternatives analysis, including recommendations on the design alternative(s) that best minimize negative environmental and social impacts and maximize positive impacts.

33. The above tasks will be conducted through desk reviews, field verification and consultations with stakeholders, particularly local communities. This will require the Environmental and Social Consultant to work closely with the Engineering Design Consultant. All consultations shall be documented.

34. In addition, the Consultant shall review the 1985 Master Plan Study of Koshi River Water Resources Development and other energy sector planning documents, as well as interview key government officials, in order to document the social and environmental considerations taken in the government's analysis of alternative energy sector investments which led to the UAHEP and IKHP project concepts. The report to be produced should encompass all available information on the comparative

[10]It should be noted that access roads in particular have the potential to cause even greater environmental and social impacts than hydropower facilities themselves, particularly for projects in remote areas such as the proposed Project, where new roads may lead to indirect and induced land use changes. The review and analysis should therefore include particular attention to site access options as well as the environmental, social, financial, and physical alternatives considered or under consideration.

positive and negative environmental and social impacts of feasible alternatives to the Project, in terms of: (a) the "without project" alternative, (b) other potential energy supply sources; and (c) the alternative of energy efficiency improvements, in addition to (d) facility siting, alignment, design, phasing and construction technique alternatives. The report should also describe and include documentation, to the extent available, of public engagement in the government's process of analyzing these alternatives. Based on the Consultant's findings, if evidence of meaningful consultations to date on project alternatives is not apparent, the Consultant shall outline an approach and specific plan for further engagement and consultation to be carried out during the course of completion of the environmental and social assessments, and modify the Work Plan accordingly.

35. **Impact Analysis**. Assess all direct, indirect, and induced impacts and risks in both the short-term and the long-term resulting from both construction and operation stage activities of the Project, and propose mitigation measures for each. (Cumulative impacts are discussed separately below.) The analysis should follow an internationally recognized methodology to assign significance levels to each identified impact, both before applying recommended mitigation measures and afterwards (e.g. residual impact). The analysis should also include an inventory of communities that are likely to be affected and differentiate the types and levels of impacts upon different communities. While the full scope of coverage of the impact analysis will be verified during the screening and scoping stage in order to reflect the highest priority issues, the following issues are considered likely to be relevant:

    a. Changes to flow rates and patterns, velocities, water depth and water quality of the Arun River and tributaries and to groundwater characteristics in the region;

    b. Loss of river connectivity and impacts to migratory fish and other aquatic biodiversity;

    c. Environmental flow analysis, to determine the required minimum flow to be released from each dam at all times in order to sustain the valued river functions identified in the baseline assessment. Relevant valued river functions to consider span both ecological (including downstream aquatic biodiversity and habitats, fish migration pathways, etc.) as well as socioeconomic (to sustain fisheries, irrigation needs, domestic use, or other river-dependent livelihood activities), recreational, religious and cultural functions. The flexibility in varied seasonal environmental flows should also be considered. Any potential effects of the environmental flow requirements on power generation should also be explicitly identified and flagged to the design consultant team;

    d. Forest loss in terms of area, type of forest and species with details of the loss of listed species .The forest loss shall be calculated for each project component and facilities;

    e. Impact due to quarry site selection, site management, and spoil disposal;

    f. Landslide and soil erosion impacts and slope stability ;

    g. Quantification of the degree of degradation or loss of natural habitat and critical natural habitat (both aquatic and terrestrial) from direct construction and operation as well as induced from increased use or demand on forests and associated wildlife (timber and non-timber). This should include, in particular, a discussion of impacts to Makalu Barun National Park and Buffer Zone, and any other designated conservation area (which should also be presented in a specific/separate chapter of the final assessment, along with any corresponding mitigation measures). Assessment of any loss of terrestrial biological connectivity.

    h. Impacts from blasting activities on both natural and human receptors;

    i. Impacts related to upstream and downstream changes to sediment movement, sediment deposition, sediment composition, and erosion;

j. Downstream impacts related to peaking pond flushing;

k. Impacts of water impoundment on river bed levels and reservoir bank stability;

l. Impacts of permanent and temporary land acquisition on land use patterns, topography, geology, and slope stability;

m. Impacts of underground excavation and construction works on ground water recharge dynamics, and subsequent effects on any existing spring water sources for local communities;

n. Changes in drainage patterns and resulting effects due to construction of project components and access roads;

o. Impacts to public health via potential water logging and degradation of land and water quality;

p. Impacts related to disposal of used lubricants and toxic chemicals, solid and liquid waste from camps;

q. Potential deterioration in air quality and increased noise pollution due to construction and operation activities;

r. Dam safety risks and issues, including analysis of the impacts to human life and livelihood, natural and built environment in the event of dam failure;

s. Impacts on traffic safety due to increased flow of heavy vehicles carrying construction material, workers etc.;

t. Both beneficial and adverse impacts related to access roads, including increased economic connectivity for local communities, as well as various negative impacts associated with construction and ongoing use of the roads (such as, in particular, slope stability and erosion, land acquisition and involuntary displacement of households or economic activities, impacts to surface water sources, noise and air pollution from vehicle use, dust generation, risks and impacts associated with tunneling, changes in land use induced by improved road access and influx, etc.

u. Gender-specific impacts on household activities, employment at project site, illegal trafficking etc;

v. Induced impacts from Project-related influx – including increased stress on natural resources (especially forests), pollution and waste management issues, strain on local services and infrastructure, safety issues for the local community etc.;

w. Summary of all other social impacts covered under task -3.

36. **Cumulative Impact Assessment (CIA).**[11]In conjunction with the ESIA(s) for the hydropower, access roads, and transmission line components of the Project, the Consultant shall undertake a Cumulative Impact Assessment for the overall Project, focusing on identified Valued Environmental (and Social)

[11]The Consultant is advised to refer to the following guidance documents in developing the CIA:

(i) IFC (International Finance Corporation). 2013. Good Practice Handbook, "Cumulative Impact Assessment and Management Guidance for the Private Sector in Emerging Markets."http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_handbook_cumulativeimpactassessment.

(ii) Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H.Spaling, and D. Stalker. 1999. "Cumulative Effects Assessment Practitioners Guide."Prepared for the Canadian Environmental Assessment Agency by the CumulativeEffects Assessment Working Group and AXYS Environmental Consulting Ltd. http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=43952694-1.

Components (VECs) which may be affected by the Project and other development activities planned or underway throughout the Arun River watershed, including but not limited to the Arun III and Lower Arun Projects (see discussion on 'stressors' below, as well as Annex 9), and recommending project-level as well as strategic planning level recommendations for minimizing negative impacts and maximizing positive impacts associated with hydropower development at a basin scale. The specific subtasks shall include:

a. *River basin planning and management framework.* Compile information on the legal and institutional framework of water resources management in Nepal as well as information on the main actors and current activities related to river basin management for the Arun Basin with a particular focus on other planned hydropower or irrigation investments both upstream and downstream.

b. *Identification of stressors.* Conduct a desk study to identify and describe all existing or reasonably foreseeable investments, facilities or activities ("stressors") which have impacts on the flow regime (including connectivity, if migratory fish species which depend on such connectivity are present), water demand, or water quality in the Arun River and its tributaries throughout the watershed (including any significant upstream uses and planned or ongoing investments in China). This will include a preliminary estimation, based on previous studies and aerial information, of natural and regulated flows as a result of existing or planned hydropower plants and abstraction for other purposes. It will also include a preliminary identification of possible sources of sediment or contaminants that may potentially alter water quality within the projects' direct areas of influence.

c. *Preliminary identification of VECs*. Based on thematic data and previous studies, identify the potential receptors which could be significantly adversely (or also positively) impacted by the identified stressors – i.e., the Valued Environmental (and social) Components. The prioritized VECs should consist mostly of receptors most vulnerable to hydrological or water quality changes that affect the flow regime, aquatic and riverine ecosystems and economic activities and livelihoods depending on water from the Arun River (e.g. fisheries, irrigated agriculture). Priority VECs might also include key receptors of the major expected on-land impacts associated with the cumulative effects of improved access to the project area, from both the access roads of the proposed project as well as other hydropower project access roads and road/highway projects planned for the area. The nature of the impacts will be described and their scale assessed in a qualitative manner. The VECs will also be finalized through consultation with the locals.

d. *Site visits and consultations to prioritize VECs*. Guided by the results of the desk study, visit the major existing and planned hydropower plant sites and other essential interventions in the basin that may affect water flow and quality, or other environmental aspects important to the VECs. Investigate impacts such as flow regulations, increased erosion or possible contaminant sources, and characterize impacts in terms of their effects on the VECs. During site visits, carry out consultations with local communities, government actors, developers, and other relevant stakeholders including NGOs, irrigation associations, academics, etc. Conduct standard water quality measurements (pH, conductivity, DO, susp. sediments) along the river during site visits and existing river flow gauging and water quality monitoring stations should be visited and evaluated. Based on the findings of the site visits, update and qualify the desk study results and conclusions.

e. *Assessment of cumulative impacts on VECs.* In light of prioritized VECs, identify and assess potential aggregate environmental and social impacts and risks from the combined stressors in terms of the potential change in condition of the VEC (i.e., viability, sustainability).

Additionally, identify any potential additive, countervailing, masking, and/or synergistic effects to describe if and how Project associated impacts and risks interact with one another.

f. *Determining significance of predicted cumulative impacts.* Define appropriate indicators and thresholds for acceptable VEC conditions. Describe impact and risk magnitude and significance in the context of past, present, and future actions to determine whether the above assessed impacts affect the sustainability and/or viability of the particular resource or VEC. Identify consequences and tradeoffs of implementing vs. not implementing the Project.

g. *Identification of potential mitigation measures.* Propose mitigation and management strategies to address significant cumulative impacts on VECs. Suggest informed adaptive management strategies to manage uncertainties. Identify and engage together with NEA, wherever appropriate, other parties needed for effective mitigation and management plans, in order to explore opportunities for collaboration on managing cumulative effects and to propose workable coordination mechanisms. Propose monitoring programs to determine effectiveness of proposed management measures.

37. **Environmental and Social Management Plan(s) (ESMPs).** Develop an ESMP, or four separate ESMPs for the UAHEP, IKHP, access roads and transmission line components as appropriate, encompassing the following, among other elements as determined to be necessary to meet the objectives of the consultancy, based on the findings of the assessment process:

a. Details on all recommended measures to be taken during construction and operation of the Project to eliminate, 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.

b. Specific sub-plans to manage identified issues, including but not limited to the following elements (some of which may be combined, where determined to be appropriate), to incorporate site-specific and phase-specific mitigation measures that are identified through impact assessment process, as well as generic Environmental, Health and safety Codes of Practice based on international good practices for construction management and project operation which can be annexed to construction, operation and maintenance contracts, where appropriate:

i. A specific ESMP for all contractor obligations associated with access road construction;

ii. Land clearing, wildlife relocation and peaking pond first-filling management

iii. Ecological/environmental flow specification and management

iv. Aquatic ecology management, including fish and fisheries restoration measures (potentially to include a fish ladder, fish hatchery, protection and/or restoration of spawning areas, etc.)

v. Measures to minimize and mitigate natural habitat degradation and loss, and development and implementation of conservation offsets where required to meet the objectives of World Bank OP 4.04

vi. Reforestation / afforestation programs (including management of tree nurseries and plantations, if applicable, taking into consideration the requirements of World Bank OP 4.36 on Forests and OP 4.09 on Pest Management, as well as requirements of Ministry of Forests and local forest governance entities as per national regulations)

vii. Terrestrial ecology management

viii. Erosion prevention and sediment management program, including upper watershed management and restoration activities as well as sediment flushing management measures

ix. Construction camps management

x. Quarry and course aggregates management

xi. Construction waste and trash disposal

xii. Pollution abatement

xiii. Muck/spoil management plan with spoil destination

xiv. Topsoil saving management

xv. Watershed management

xvi. Buffer zone management

xvii. Cultural heritage management

xviii. Hazardous materials and explosives management

xix. Occupational health and safety management (with specific section on sub-surface activities including tunneling)

xx. Environmental, health and safety training

xxi. Emergency preparedness and response

xxii. Dam safety plan (to be developed in detail by the Engineering Design Consultant; the ESMP should focus on summarizing the key elements of relevance to local communities and stakeholders)

xxiii. Traffic safety plans to minimize hazards to highway vehicular flow and to local inhabitants

xxiv. Mitigation measures for long-term and cumulative social and environmental impacts

xxv. A summary of the specific social plans to be produced under Task 3 of the consultancy, including: Vulnerable and Indigenous Peoples' Development Plan, Resettlement Action Plan, Public Health Action Plan, Downstream Impacts Management Plan, Gender Action Plan, Benefit Sharing Action Plan, Communication Strategy and Action Plan, and Public Participation and Consultation Plan (including Inter Agency Coordination) (each described in more detail below).

c. A Monitoring Plan that details the key parameters to be monitored, monitoring locations and frequencies, monitoring methodologies, required budgets, and responsible entities to carry out monitoring for each of the above-mentioned sub-plans as well as to follow up on monitoring outcomes, including to identify root causes and correct non-compliances (including through remedial measures if required), as well as to enable continuous evaluation of overall performance and adjustments to management measures and arrangements as needed to enhance overall project sustainability. Independent auditing arrangements, as well as incentive schemes and/or penalties to enhance compliance, should also be proposed.

d. Detailed organogram showing all actors to be involved in ESMP implementation, monitoring, reporting, independent supervision and auditing, their relationship to overall project construction and operational management teams and contractors, and points of interface with independent oversight entities. Organogram should indicate entry points for local citizen engagement and NGO participation in monitoring and reporting.

e. Outline of minimum qualifications required for each institution or actor involved in ESMP implementation to carry out their responsibilities, including with respect to project management, implementation of mitigation and management measures, execution of monitoring programs, reporting and evaluation, public engagement and grievance redress, etc. The training and capacity building needs to ensure satisfactory implementation of the ESMP and proposed measures for each actor involved in implementation should also be specified, based on an assessment of the organizational capacity of each to fulfill their proposed functions. The core content of training programs for contractors and other key actors involved in implementing the ESMP should be outlined, as well as the responsibilities, timelines, and budget for their implementation.

38. **Assembly of draft ESIA(s), CIAand Executive Summary, including local-language summary materials for public consultation**. The Consultant shall produce full draft ESIA(s) , CIA (in English), as well as a single Executive Summary covering UAHEP, IKHP, access roads and transmission line components (in both English and local language) and additional materials for use in consultations (e.g., slide deck, brochures and other visuals, factsheets, etc.), incorporating all of the above-mentioned elements, as well as other elements outlined in Annex 10 and/or identified as necessary during the screening and scoping phase of the consultancy.

39. **Disclosure and Consultations on draft studies.** The Consultant shall support NEA in carrying out and fully documenting at least one additional round of consultations (to include, at minimum, two workshops at district and central levels and one public hearing), once the draft environmental assessment and planning materials are available. The consultations should consist of public hearing(s) as and where required under national legislation (at Village Development Committee or Municipality of project site, as per GoN Environmental Protection Regulation 2054), as well as additional public meetings, focus groups, interviews and/or other consultation techniques as deemed appropriate to ensure that all project affected groups and other stakeholders have the opportunity to learn about the project and its impacts and to have their views taken into account in finalizing the study. Consultations should follow international good practices on stakeholder engagement consistent with or exceeding World Bank and GoN 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 ensuing discussion; and how those comments will be taken into account by the project. VDC consultations should be conducted in the relevant local language, which may include Lhomi in addition to Nepali. Prior to carrying out consultations, the draft versions of the studies must be made available at a public place, accessible to project-affected groups and local NGOs.

40. **Finalization of studies.** Following consultations as well as review of the draft studies by NEA, the Panel of Experts, and the World Bank, the Consultant shall make necessary revisions and finalize the studies. The Consultant shall submit the revised ESIA report to NEA for the approval of Ministry of Environment. The Consultant will make a presentation on the findings of ESIA report(s) to Ministry of Environment and submit revised documents to NEA incorporating the comments of ministry. NEA will forward the revised documents to Ministry of Environment for their approval.

41. ***Key expected outputs of Task 2*****:** *(a)Full ESIA for the Project, incorporating all the elements outlined above and in Annex 10, including the CIA (or four separate ESIAs for the two hydroelectric components, access roads and transmission lines if required under national legislation, each summarizing and annexing the integrated CIA), revised to incorporate feedback received during consultations as well as from NEA, the World Bank and the Independent Panel of Experts, and including documentation of all consultations held; and (b) single Executive Summary covering both hydroelectric components, in both English and Nepali.*

***Task3: Social Planning***

42. This task covers the social aspects of the project planning and design. The social aspects relate to land acquisition, involuntary resettlement, indigenous people, downstream impacts, gender, public health, conflicts, public consultation, participation and communication. As noted earlier under Task 2, this task is expected to be carried out in a coordinated manner with the environmental assessment and planning aspects of the consultancy, to ensure holistic and integrated analysis. The outputs described below should also be integrated in summary format into the ESIA(s) and overall Executive Summary. The assignment will comply with relevant laws and policies of the Government of Nepal (GoN), international conventions ratified by the GoN, and the relevant safeguard policies of the World Bank. The Consultant will carry out necessary activities required for completion of the assignment including in-house reviews, field surveys and planning activities, stakeholder consultations and development of the necessary interventions. The field planning activities will employ sample surveys and suitable sociological/anthropological tools, including focus group discussions and key informant interviews. Given the spread of Project works and extent of planning activities, the planning approach and methodology will vary in its design for different planning tasks. These should be proposed and described in detail in the Inception Report.

43. **Social assessment**. A social assessment shall be conducted for the proposed Project. This assessment will cover the following key areas: (a) overall project impact analysis (as described under Task 2 above), (b) development of a socioeconomic baseline, (c) a stakeholder analysis, (e) identification and consultation with vulnerable and indigenous communities. Based on these analyses, the social assessment will provide specific recommendations for different planning tasks under this consultancy. Items (b) through (e) are described in more detail below.

44. **Socioeconomic baseline.** The Consultant will conduct a socioeconomic survey and develop a socioeconomic profile of the Project area, bringing out its key social, ethnic, cultural, political and economic characteristics. This survey will cover at least the aspects delineated below. The socioeconomic profile will include a differentiated analysis related to gender, disadvantaged groups, and "deep poverty" dimensions of these and all other included aspects.

    a. Developing a demographic and ethnic profile of the population in the Project Area of Influence and zooming in specifically on the people and communities in the Social Impact Zones, covering their history, physical spread, social clustering, cultural and traditional characteristics, interactions and relations among various groups.
    b. Mapping out the socioeconomic development status of the Project area, including resources conditions, economic development status, employment sources and patterns, livelihood patterns, infrastructure and service provision (health, education, employment, extension services etc.), as well as local development needs, priorities and challenges, and development interventions.
    c. Developing a socioeconomic baseline for the affected communities and population, covering basic indicators particularly related to their living standard and well-being.
    d. Land tenure system (titles vs customary), mode of land transactions, access to natural resources and their significance to local communities and livelihoods, formal and informal institutions and their capacity and functioning; development needs, challenges and status.
    e. Identification of presence of vulnerable and indigenous peoples' communities residing in the Project area; and if they are identified, collection of information on their demographics, social cultural features, livelihood and employment patterns, use of natural resources, formal and informal institutions and interactions with other ethnic groups (See also section on indigenous peoples below).

45. **Stakeholder Analysis.** This analysis is important to inform the design of the Project, particularly in developing the Project consultation and communication strategy. This task is a continuation of the

stakeholder analysis started under Task 1. The stakeholder analysis will incorporate dimensions related to gender, disadvantaged groups, and "deep poverty." The following are key activities to be covered under this task:

a. Mapping of key stakeholders at national and local levels, including Project affected people, affected communities, local government bodies, NEA, NGOs/CBOs, media and key individuals, etc.
b. Carrying out consultations with various stakeholders to bring out their views, concerns and expectations associated with the Project;
c. Analysis of stakeholder consultation feedback, their roles and possible interventions in Project preparation and design;
d. Proposing recommendations for consideration in the Project's design.

46. **Resettlement Action Plan (RAP).**The proposed Project is expected to require land acquisition and involuntary resettlement for all civil works components. Although the direct works at the two dam and powerhouse sites are not expected to cause large-scale displacement, given their remote locations and low population density, the access roads and other ancillaries will likely require more significant land acquisition. Resettlement planning will identify all impacts of land acquisition and resettlement, review relevant legal and policy requirements of the GoN and the World Bank, and develop a Project entitlement policy and mitigation measures to address these impacts in a locally appropriate manner. Leading to the preparation of the RAP, the activity will generate a database of physical and livelihood impacts and affected individuals and households. A recommended RAP outline is attached (see Annex 11). Planning activities include, but not limited to, the following,

a. *Inventory survey of physical impacts*. This survey will cover the Project's Impact Zones(e.g., zones in which use of or access to land, assets, and/or sources of livelihood or subsistence (including natural resources) are to be restricted as a result of land acquisition for the Project) will be conducted according to legal procedures under relevant Nepali laws. This survey will lock in the physical quantity of impacts and lay down the basis for developing the entitlement policy and compensation package. It should be kept in mind that not all impacts can necessarily be quantified and enumerated upfront on a household basis. More suitable methods of assessment and documentation will be evaluated and employed such situations.
b. *Census survey of affected populations*. The survey will cover all affected populations, recorded by households or communal groups, and record types of potential impacts. It will establish the cut-off date for eligibility for resettlement entitlement.
c. *Review of relevant legal policies*. This review will cover relevant policies of GoN and the World Bank, identify any gaps, and propose measures to fill in these gaps under this Project.
d. *Development of a Project resettlement policy*. On the basis of the above review, a Project resettlement policy will be produced, including a resettlement entitlement matrix for the project. This will form the policy basis and chapter of the RAP, and will also be elaborated into a free-standing project Resettlement Policy Framework (RPF) for any future unanticipated resettlement impacts.
e. *Development of resettlement strategy and measures.* The proposed project is expected to have limited impacts in terms of physical relocation. Nonetheless, a relocation strategy and action plan should be developed, including identification and development of relocation sites, to be planned in consultation with the communities and relocating households.
f. *Development of livelihood restoration and development strategy and measures*. An in-depth impact analysis should be conducted for effects on livelihood patterns in the Project's Impact Zones. Such an analysis will assess the needs for livelihood restoration and provide the basis for designing appropriate interventions. In designing the livelihood development strategy and plan, the Consultant should consider support for long-term sustainable development of affected areas

as well as support for development of the project areas beyond the adversely affected households and communities.

g. Development of implementation arrangements.
h. Development of grievance redress and monitoring mechanisms. The grievance redress mechanism should be a project mechanism, open to all issues related to the project, including resettlement issues. The mechanism should build in elements of neutrality to ensure fair, transparent and independent deliberations.

47. **Vulnerable and Indigenous Peoples Development Plan.** About a third of the Nepali population belongs to indigenous communities classified and officially recognized by the GoN. Indigenous peoples feature prominently on Nepal's development agenda. The Project area is inhabited by several indigenous communities who are expected to be impacted both positively and adversely by the Project. This plan will aim to minimize negative impacts and enhance positive impacts to vulnerable and indigenous peoples in the Project area. A recommended outline for the Vulnerable and Indigenous Peoples Development Plan is attached (see Annex 12). Planning activities in this regard include, but are not limited to, the following (part of the information below will be documented in the ESIA studies outlined under Part 2 of this consultancy):

a. Identification of vulnerable and indigenous communities in the Project area;
b. Gathering of baseline information on the demographic, social, cultural and political characteristics of the vulnerable and indigenous peoples' communities in the Project area;
c. Review of the land tenure system; use of, access, and attachment (physical, spiritual and cultural) to natural resources by different indigenous communities, including their customary rights and occupation, both individual and collective;
d. Review of Nepal's legal and institutional framework regarding vulnerable and indigenous communities, including relevant laws and policies of GoN, any ratified international conventions (ILO 169 and UNDRIP), and the World Bank policy on indigenous peoples (OP 4.10);
e. Identification and mapping of indigenous organizations, including public institutions and civil society organizations;
f. Assessment of Project impacts, both positive and adverse, on vulnerable and indigenous communities, particularly impacts specific to ethnic characteristics (e.g. impacts on livelihood activities if unique from the general use of resources, both individual and common; impacts on use of cultural resources such as sacred religious or cultural historical sites); as well as security risks and impacts related to in and out migration of people in connection with the project. Critical to this assessment is an analysis of the relative vulnerability of, and risks to, the affected indigenous peoples' communities given their distinct circumstances and close ties to land and natural resources, as well as their lack of access to opportunities relative to other social groups in the communities, regions, or national societies in which they live;
g. Consultations with indigenous communities, following a free, prior, and informed consultation process at each stage of the Project, particularly during Project preparation, to fully identify their views, concerns, requests and recommendations for the Project and confirm their consent to the implementation of the Project;
h. Providing Project information in a fashion, method and language that are appropriate to the indigenous communities;
i. Development of a policy framework on vulnerable and indigenous communities for the proposed Project;
j. Development of a process framework in the case that Project environmental mitigation measures result in restrictive impacts on access to natural resources resulting in livelihood impacts of the associated population;
k. Proposing, based on free, prior, and informed consultation with the affected indigenous peoples' communities, necessary measures to avoid, minimize, mitigate, or compensate for such effects, and to ensure that the indigenous peoples receive culturally appropriate benefits under the Project.

A vulnerable and indigenous peoples plan shall be developed incorporating the above.

48. **Downstream Impacts Management Plan**. The Project will have impacts on downstream social, economic and cultural activities with the damming of the river and altered water flow patterns. Impacted activities could include fishery activities and possible other uses of the river, such as domestic water use and irrigation as well as local/ national tourism activities. The Consultant will carry out the following activities to plan for mitigating downstream impacts and enhancing benefits for downstream communities, in a closely coordinated / integrated fashion with the environmental assessment and planning process described under Task 2 above:

    a. Identification and assessment of possible impacts downstream of the proposed dams;
    b. Identification and inventory of communities that are likely to be affected;
    c. A detailed analysis of the type and levels of impacts upon different populations;
    d. Development of a socioeconomic profile of the potentially affected communities;
    e. Development of necessary mitigation strategy and intervention measures based on the above impact analysis.

49. **Gender Assessment and Action Plan.** Women are important stakeholders in hydropower development, falling among both the affected and the beneficiaries. It is important to understand the gender dimensions of the project and the differential impacts on women so as to maximize project benefits. The gender assessment and action plan will cover, but not be limited to, the following:

    a. Review of the legal and policy framework in Nepal relevant to gender;
    b. Review of formal and informal institutional structures and processes that affect gender outcomes in the project and under the project setup;
    c. Review of setup, capacity and constraints within relevant institutions to address gender concerns and considerations;
    d. Analysis of local culture, particularly among different indigenous groups, regarding gender and women, focusing particularly on the informal institutions, cultural norms, behavior, and customs;
    e. 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;
    f. Analysis of potential project impacts, both positive and negative, on women;
    g. Analysis of barriers, challenges, constraints to women's participation, including an assessment of women's capacity to participate;
    h. Identification of potential entry points and interventions to enhance gender sensitivity, mitigate adverse impacts, promote women participation, maximize project benefits for women;
    i. Advice to the project planning and implementation teams on approaching and addressing gender issues under the project;
    j. Recommendations for approach and interventions to promote project benefits to women and their participation in the project.

50. **Benefit-sharing Action Plan.** Benefit-sharing is an increasingly used mechanism in hydropower investment operations to build local support and promote local area development. This mechanism has been used in Nepal as well as elsewhere around the world. The Ministry of Energy of Nepal has completed a review on benefit-sharing. The Consultant will work with NEA and the Engineering Design Consultant and to carry out the following in this regard:

a. Review and summary of Nepali laws, policies, and international conventions endorsed by the GoN relevant to benefit-sharing, particularly those on use of natural resources and indigenous communities;
b. Review of benefit-sharing experiences in hydropower sector in Nepal;
c. Carrying consultations with local stakeholders, in particular with local indigenous communities, over their expectations from this project;
d. Review of benefit-sharing proposal from project feasibility studies for UAHEP and IKHP;
e. Define "benefit-sharing," design, and propose a benefit-sharing scheme for the project;
f. Include differential benefit analysis for those whose livelihoods and land values will be disproportionately enhanced by road provisioning/improvements.

51. **Public Health Assessment and Action Plan.** The construction of the full project will have adverse public health impacts due to dust, noise, pollution, and migration of construction workers into the project. The transportation of heavy machine and equipment to the project area by road may cause additional hazards, accidents and human injuries. It is therefore necessary to generate awareness of potential impacts, and initiate both preventive and mitigation measures to minimize risks and possible harmful effects on public health. Planning activities will include, but not be limited to, the following:

a. Undertaking an assessment of potential public health impacts of the proposed project during pre-construction, construction, and post-construction stages; and evaluating the need for appropriate interventions;
b. Undertaking an assessment of the existing public health service conditions in the project areas including infrastructure and facilities, services provided by public health care systems, provision of health care information and education, and disease prevention and promotion campaigns, specifically related to sexually transmitted infections and HIV;
c. Engaging with local communities, including existing health specialists (both modern physicians and traditional medicine men or healers), to understand existing health beliefs, practices, and health care systems;
d. Determining public health needs and level of support required by resettlers, construction workers, migrant workforce, and host communities within the context, conditions, and parameters prevailing in the project area;
e. Designing a project public health action plan to mitigate adverse impacts, reduce occupational hazards and health risks, and support the health and well-being of local communities.

52. **Public Participation and Consultation Plan (including Inter Agency Coordination)**. Drawing from the stakeholder consultation strategy developed during the screening and scoping phase, develop a full plan covering the following objectives: (a) to outline the specific activities, logistics and schedule for the consultation and inter-agency coordination processes to take place throughout the environmental and social assessment and planning stage, ensuring that consultations are coordinated and executed together with different entities and at different levels (government, municipality, NGOs, local communities etc.) in order to capture a range of participants, and also to ensure the stakeholder consultation is continuous throughout the project; (b) to identify possible avenues of public interaction, in addition to interviews and public meetings, especially through proactive use of social media and newer communication technology; (c) to identify points of entry for ensuring local people as more active participants (rather than simply respondents) in consultations, and (d) to map out a strategy and required actions, including implementation arrangements, responsibilities and budget, for ongoing engagement, consultations, and grievance / dispute resolution activities throughout the life of the Project.

53. **Communications Strategy and Action Plan.** Given the remote location of the project, the high profile of hydropower development, and the history of hydropower development in the Arun Valley

in particular, it is important to develop a communication strategy for continuous communication between the project implementation authorities and all other stakeholders throughout the life of the projects. The objectives are to (i) help strengthen public understanding and support for the projects and create an enabling environment for their implementation; (ii) enable public communication and continuous flow of information on project activities, impacts, and benefits; (iii) manage relationships with key external stakeholder constituencies; and (iv) facilitate dispute resolution and public monitoring of project implementation. The communication strategy must suit existing social, economic, and cultural conditions, as well as the complex and sensitive issues related to large hydropower projects. This assignment will include detailed review of secondary information, but will primarily depend upon field visits and direct consultations/interactions with stakeholders at the local and national levels.

54. The following tasks will be carried out:

a. A desk review of past history and experiences in hydropower development in Nepal and the Arun Valley, particularly its social, environment and political aspects.
b. Identification of key stakeholders (individuals, groups, and institutions) and detail their interests, concerns and expectations, roles and relationships vis-a-vis the proposed program, with particular focus on the benefits of hydropower projects and management of adverse impacts;
c. Assessment of communication needs to map stakeholder perception and attitudes to the project, including modes and media of communications to be adopted during project implementation;
d. Assessment of existing communication and engagement initiatives, and capacities of the NEA to conduct public communications and to engage stakeholders; identify gaps in NEA's institutional set-up (in terms of staffing, procedures, budgets etc.);
e. A media-mapping at the national and local levels, including a detailed mapping exercise of key relevant NGOs, civil society organizations and individuals;
f. Identification of opportunities and platforms for effective dissemination of key messages over the course of project implementation;
g. Preparation of a draft communication and engagement strategy for the overall project, taking into consideration current practices and experience of NEA and GoN.

55. **Institutional Capacity Assessment and Strengthening.** The consultant will carry out an assessment of the current institutional capacity in place in view of implementing the environmental and social interventions, management measures and programs related tothe Project. This assessment should cover all key institutions involved, including the Ministry of Energy, NEA and local administrations. The consultant will propose a set of interventions, including institutions, staffing, and budget requirements, to build up the capacity of these institutions to implement the designed programs.

56. ***Key Expected Outputs of Task 3*****:** *(a) Social Assessment Report ; (b) Resettlement Action Plan; (c) Resettlement Policy Framework; (d) Vulnerable and Indigenous Peoples' Development Plan; (e) Public Health Action Plan;(f) Gender Action Plan, (g) Downstream Impacts Management Plan, (h) Benefit Sharing Plan; (i)Public Participation and Consultation Plan (including Inter Agency Coordination); (j) Communication Strategy and Action Plan and (h) institutional assessment and strengthening plan..*

**Deliverables and Reporting Schedule**

57. The following anticipated deliverables are expected at the time indicated below. The timeline indicated is an estimate only, and may be adjusted upon negotiation of the contract, and updated again as needed at the time of work plan development. The screening and scoping phase of the consultancy will confirm the full list of deliverables required, and could result in a reorganization of some of the

items below, and/or may result in identification of additional specific assessments or plans not listed below which are needed in order to meet World Bank or national requirements. The content for each proposed study will be agreed with NEA during the process of finalizing the Inception Report, and the timeline for their delivery would be agreed between the Consultant and NEA at the time of work plan development.

58. Considering the access road construction and resettlement process need to be completed before construction of the rest of the project components can start, the ESIA, ESMP and RAP componentsspecific for access roads will need to be completed first, with approximate expected timeline indicated below. All access road related assessments and action plans will be subsequently merged in to the final consolidated ESIA and RAP report(s).

| **Deliverable / Activityfor ESIA including corresponding ESMPs, CIA, and Social Planning Studies of UAHEP, IKHP, project access roads and Transmission Lines** | **Estimated timeline (tentative)** |
|---|---|
| Draft Scoping Report and ToR document | November 2015 |
| Final Scoping Report, including documentation of stakeholder consultations, and ESIA Terms of Reference with detailed work plan for carrying out environmental and social assessment and planning studies | December 2015 |
| Drafts of all deliverables under Tasks 2 and 3 as outlined above, including:<br>• EA Executive Summary, in both English and local languages<br>• ESIA(s), including ESMP(s), covering both UAHEP and IKHP and associated facilities and infrastructure<br>• Cumulative Impact Assessment (to be presented as a chapter or volume of the ESIA report(s))<br>• Social assessment report<br>• Resettlement action plan(s)for the project<br>• Gender assessment and action plan<br>• Vulnerable and indigenous community development plan(s)<br>• Public health action plan<br>• Downstream impact mitigation plan<br>• Resettlement policy framework<br>• Benefit-sharing action plan<br>• Public participation and consultation plan<br>• Communication strategy and action plan | August 2016 |
| Final versions of Task 2 and 3 deliverables as outlined above, reflecting feedback provided by NEA, World Bank, International Panel of Experts, and stakeholders during public consultations | October 2016 |
| Final ESIA report(s) incorporating comments of Ministry of Environment | November 2016 |
| Training/capacity building program for NEA | Consultant to propose detailed |

| | |
|---|---|
| | timeline for program components, in discussion with NEA |

**Consultant Staffing and Key Qualifications**

59. The Consultant must be a corporate firm or a consortium of firms that satisfies the following criteria:

    a. Possession of adequate and proven experience in ESIA, CIA, and social planning, including in particular indigenous peoples, involuntary resettlement and livelihood restoration planning;
    b. Possession of adequate, qualified and experienced key personnel and logistic resources to carry out the assignment;
    c. Possession of appropriate office facilities and support staff;
    d. Knowledge of Nepal, and an appropriate language skill mix within the team to carry out field work, interact with project stakeholders (including in Nepali and Lhomi), and produce written materials in both English and Nepali;
    e. Knowledge of, and previous experience carrying out environmental and social studies in accordance with, World Bank safeguard policies.

60. The Consultant shall propose and justify the range of disciplines to be included in the core project team and the complementary skills of the short-term specialists. The inputs by all specialists should be clearly indicated as it is anticipated that a substantial part of the work program is carried out by the firms or individuals subcontracted locally. It is expected that the core project team will include, but not necessarily confined to, the following key specialists:

    a. *Team leader*, an environmental impact assessment specialist with 10 years of experience including experience in hydropower projects. Knowledge and experience with World Bank safeguard policies will be required. Experience with Nepal legal requirements, and experience with other multinational requirements, also desired. Demonstrated ability to integrate social and environmental elements with infrastructural details of the Project.
    a. *Indigenous peoples' specialist*, who has knowledge about World Bank and GoN policies on indigenous people and who has demonstrated experiences working on indigenous peoples issues in Nepal and applying World Bank indigenous people's policy.
    b. *Resettlement specialist,* who has knowledge of World Bank and GoN resettlement policies and who has carried out resettlement and livelihood development planning in hydropower projects.
    c. *Gender specialist,* who has knowledge of World Bank and GoN policies on gender and who has demonstrated working experiences carrying out similar assignments in internationally-financed operations.
    d. *Senior aquatic ecologist,* with 10+ years of international experience in aquatic ecology impact assessment and management in Himalayan contexts. Should have knowledge of Himalayan fish species, fieldwork experience, and experience developing and/or implementing fisheries and aquatic biodiversity mitigation programs related to hydropower projects (for example, fish hatcheries, fish ladders, etc.). Demonstrated ability to work as part of a multi-disciplinary team. Would be supported as needed by suitable national experts.
    e. *Senior terrestrial ecologist,* with 10+ years of international experience in terrestrial ecology impact assessment and management issues related to infrastructure projects, including in the hydropower sector. Should have knowledge of the ecological dynamics of Himalayan and hilly ecosystems in Eastern Nepal, fieldwork experience, and experience developing and/or

implementing programs on natural habitats conservation, compensatory offset, and watershed management. Demonstrated ability to work as part of a multi-disciplinary team. Would be supported as needed by suitable national experts in sub-disciplines such as ornithology, herpetology, butterfly expert / entomology, etc. as required for the studies.

f. *Senior Ornithologist* – with 10+ years of international experience assessing the impact of hydropower projects on migratory and other species. Should have knowledge of Himalayan species, field work experience developing mitigation programs related to hydropower projects and particularly transmission lines for migratory and other species of birds.
g. *Senior Environmental Civil Engineer* – with 10+ years of international experience in construction related impacts associated with construction of large/complex hydropower projects in sensitive ecosystems, especially including construction and operation of access roads, tunnels, large dams, large construction camps, quarry sites, spoil disposal sites etc.
h. *Hydrogeological engineer*, with suitable experience conducting technical field surveys on soil sediments, water quality etc., and with experience in sediment management and erosion control programs for hydropower operations.
i. *Communications and stakeholder engagement specialist* with knowledge of Nepal and prior experience managing engagement and communications programs with local communities and stakeholders on internationally-financed projects. Specific knowledge and prior experience in the hydropower sector, and with World Bank financed projects, is strongly desirable.
j. *Additional technical specialists* with appropriate qualifications and experience at the national level (supplemented by additional international experience as required) in hydrology, geology, environmental engineering, forestry and watershed management, climate change, archaeology, anthropology or other social sciences, and public health, among others as required to complete the tasks described in these Terms of Reference.

61. The Consultant shall name individuals to participate in specified roles within the project team and provide full curricula vitae (in accordance with the suggested format shown in the Letter of Invitation) and any other information considered relevant by the Consultant. The Consultant shall name the project leader, the deputy team leader, the other core team members and key short-term specialists, and provide an assurance that all members of the proposed team will be made available as specified in the proposal, if the Consultant is named.

**Support to be Provided by NEA and World Bank**

62. NEA will provide all necessary assistance to help the Consultant obtain access to information and key individuals as required to complete the assignment. Various available supporting documents will be provided to the Consultant before the initiation of the assessment (see Annex 8). NEA will also provide support to field work logistics where deemed necessary, participate in public consultation events, provide technical feedback on draft deliverables, and facilitate coordination and information sharing with the Engineering Design Consultant and the Independent Panel of Experts.

63. The World Bank will support NEA in providing technical oversight to the Consultant, including reviewing and providing feedback on draft deliverables.

**Training/Capacity Building**

64. One of the basic objectives of the consulting services is transfer of technology in the field of ESIA and CIA study to the NEA's engineers, and environmental and social personnel. This will be achieved by involving NEA's engineers, and environmental and social personnel in various activities of the project implementation during the execution of ESIA & CIA study, as well as through targeted training events and activities.

a. During the inception phase of the contract, the Consultant shall perform a skills assessment and develop a training program for NEA counterpart staff. All international experts are expected to work closely with the NEA counterpart and shall ensure that the NEA counterpart will achieve higher skill levels as a result of their involvement in the project.

b. The training program shall also include, among other aspects to be suggested by the consultant, a series of workshops, and observation visits, covering the following disciplines. The program should have a duration of approximately 20 days in total and shall be held.

- Environmental and Social Screening and Scoping
- Environmental and Social Alternatives Analysis
- Environmental and Social Impact Assessment
- Cumulative Impact Assessment
- Environmental and Social Management Plans
- Downstream Impact Management, including environmental flows
- Social Planning
- Resettlement Action Plan

**Payment Schedule**

65. For the performance of the duties enumerated under the Terms of Reference, the Consultant will be paid a lump sum fee. The proposed payment schedule of the lump sum fee is as follows. Bidders may also propose an alternative payment schedule with justification, for NEA's consideration.

- Draft Scoping Report and ToR (Task 1 draft deliverable) – 20% of contract value
- Final Scoping Report and ToR and Workplan(Task 1 final deliverables) – 10% of contract value
- Draft environmental and social assessment and planning studies (Tasks 2 and 3 draft deliverables) – 30% of contract value
- Final environmental and social assessment and planning studies (Tasks 2 and 3 final deliverables, incorporating also Phase I final deliverable) – 30% of contract value
- Completion of training/capacity building program for NEA engineers and staff – 10% of contract value

# Annex 1. List of NEA's Current and Planned Hydropower and Transmission Line Projects

## Major Hydro Projects Planned For Construction

(Total Capacity 932 MW)

| Project | Capacity (MW) | Estimated Completion Year |
|---|---|---|
| Likhu – IV | 52 | 2016/17 |
| Balephi | 24 | 2016/17 |
| Kabeli - A (WB Financing) | 37 | 2016/17 |
| Upper Trishuli - 3B | 40 | 2016/17 |
| Upper Modi 'A' | 42 | 2018/19 |
| Tamakoshi - V | 87 | 2019/20 |
| Other IPP Projects | 650 | 2015/16 – 2017/18 |

## Major Hydro Projects Under Construction

| Project | Capacity (MW) | Completion Year | Financing |
|---|---|---|---|
| NEA (Total Capacity 136 MW) | | | |
| Chameliya | 30 | 2014/15 | South Korea, NG, NEA |
| Kulekhani-III | 14 | 2014/15 | NG, NEA |
| Upper Trishuli-A | 60 | 2016/17 | China, NG, NEA |
| Rahughat | 32 | 2017/18 | India, NG, NEA |
| NEA's Subsidiary & Associate Companies ( Total Capacity 866.3 MW) | | | |
| Upper Tamakoshi | 456 | 2016/17 | Local Financial Institutions |
| Sanjen | 42.5 | 2016/17 | -----do----- |
| Rasuwagadhi | 111 | 2018/19 | -----do----- |
| Middle Bhotekoshi | 102 | 2018/19 | -----do----- |
| Upper Sanjen | 14.8 | 2015/16 | -----do----- |
| Tanau Hydro | 140 | 2019/20 | ADB, Japan, NG |

## Major 132 kV Transmission Line Projects Under Construction

| Project | Circuit km | Completion Year | Financing |
|---|---|---|---|
| Thankot – Chapagaun | 57 | 2015/16 | ADB |
| Chameliya – Attaria | 131 | 2014/15 | K-Exim |
| Mid. Marsyangdi – Damauli – Marsyangdi | 76 | 2015/16 | ADB |
| Kabeli – Damak | 180 | 2015/16 | WB |
| Singati – Lamosangu | 76 | 2014/15 | GoN |
| Kusum – Hapure | 22 | 2014/15 | GoN |
| Butwal – Kohalpur – Mahendranagar 2nd Circuit | 208 | 2015/16 | ADB |
| Hetauda – KL II – Siuchatar 2nd Circuit | 45 | 2014/15 | GoN |
| Total | 795 | | |

## Major 220 / 400 kV Transmission Line Projects Under Construction

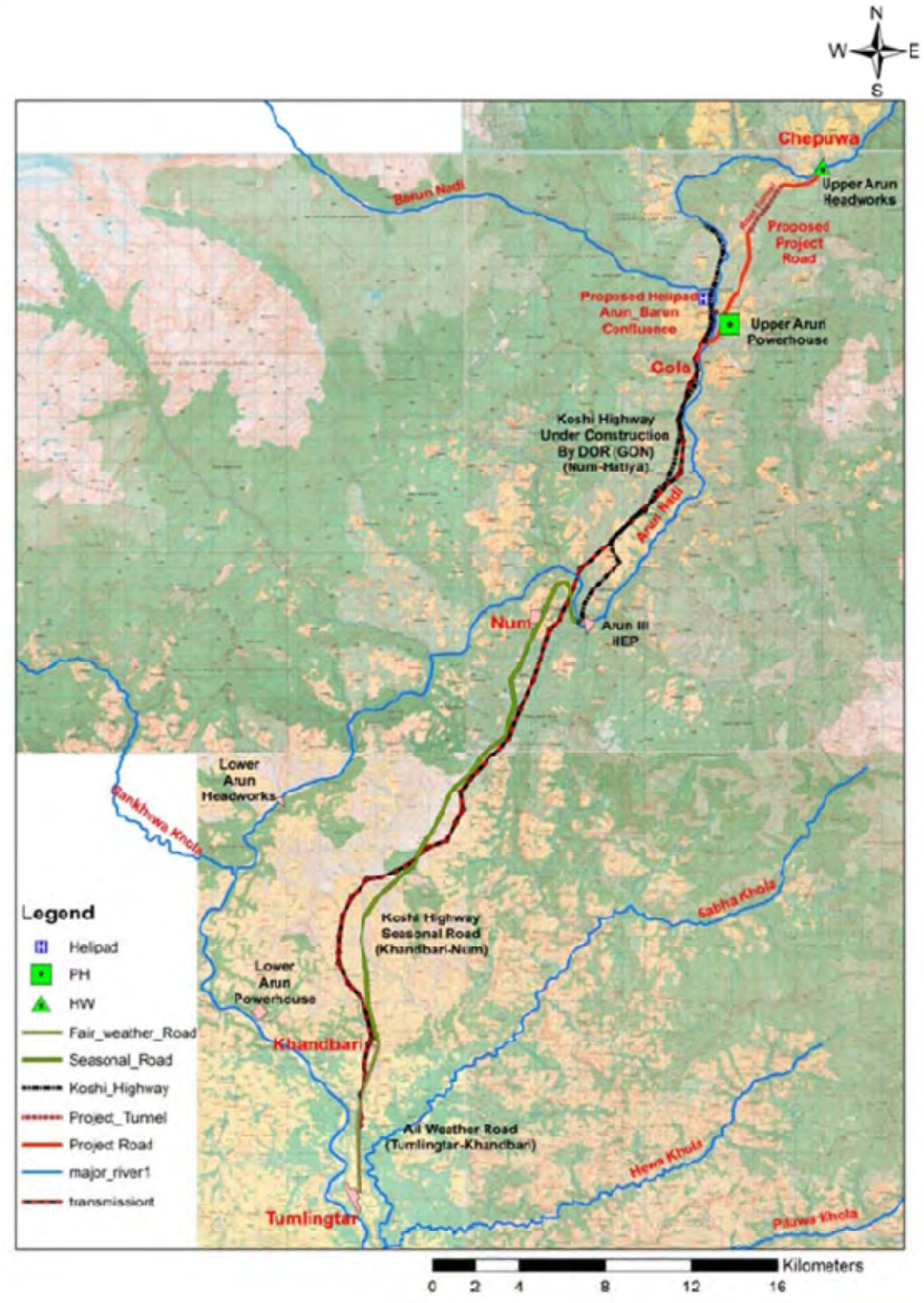
| Project | Circuit km | Completion Year | Financing |
|---|---|---|---|
| 220 kV | | | |
| Khimti – Dhalkebar | 150 | 2013/14 | WB |
| Hetauda – Bharatpur | 146 | 2013/14 | WB |
| Bharatpur – Bardghat | 150 | 2013/14 | WB |
| Total | 446 | | |
| 400 kV | | | |
| Hetauda – Dhalkebar – Inarwa | 570 | 2015/16 | WB |
| Dhalkebar – Muzzaffarpur (Nepal Portion) | 78 | 2014/15 | I-Exim |
| Total | 648 | | |

# Planned Transmission Line Projects

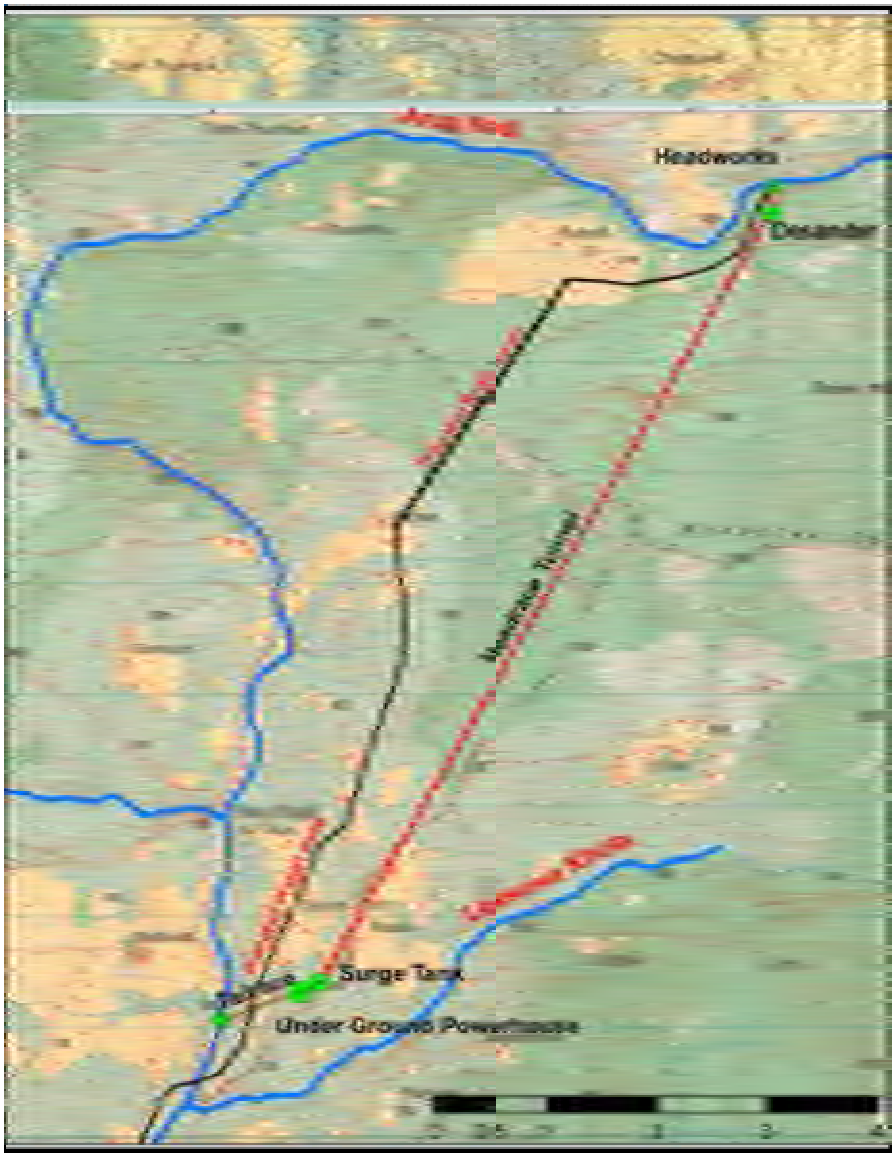
| Project | Circuit km | Completion Year | Financing |
|---|---|---|---|
| Solu Corridor 132 kV | 180 | 2016/17 | I-Exim |
| Koshi Transmission Corridor 220 kV | 350 | 2018/19 | I-Exim |
| Marsyangdi – Kathmandu 220 kV | 170 | 2016/17 | ADB |
| Kali Gandaki Transmission Corridor 220 kV | 220 | 2015/16 | ADB |
| Lekhnath – Damauli 220 kV | 80 | 2015/16 | ADB |
| Marsyangdi Transmission Corridor 220 kV | 240 | 2015/16 | ADB |
| Chilime – Trishuli 220 kV | 80 | 2015/16 | EIB / KfW |
| Tama Koshi – Kathmandu 400 kV | 170 | 2016/17 | ADB / Norway |

# Annex 2. Upper Arun Location

## Annex 4. Major proposed hydropower projects in Arun Basin: Upper Arun, Arun III, LowerArun



## Annex 3. UAHEP Project Components



## Annex 6. Salient features of the Upper Arun Hydropower Project, as derived from the feasibility study completed in 1991.

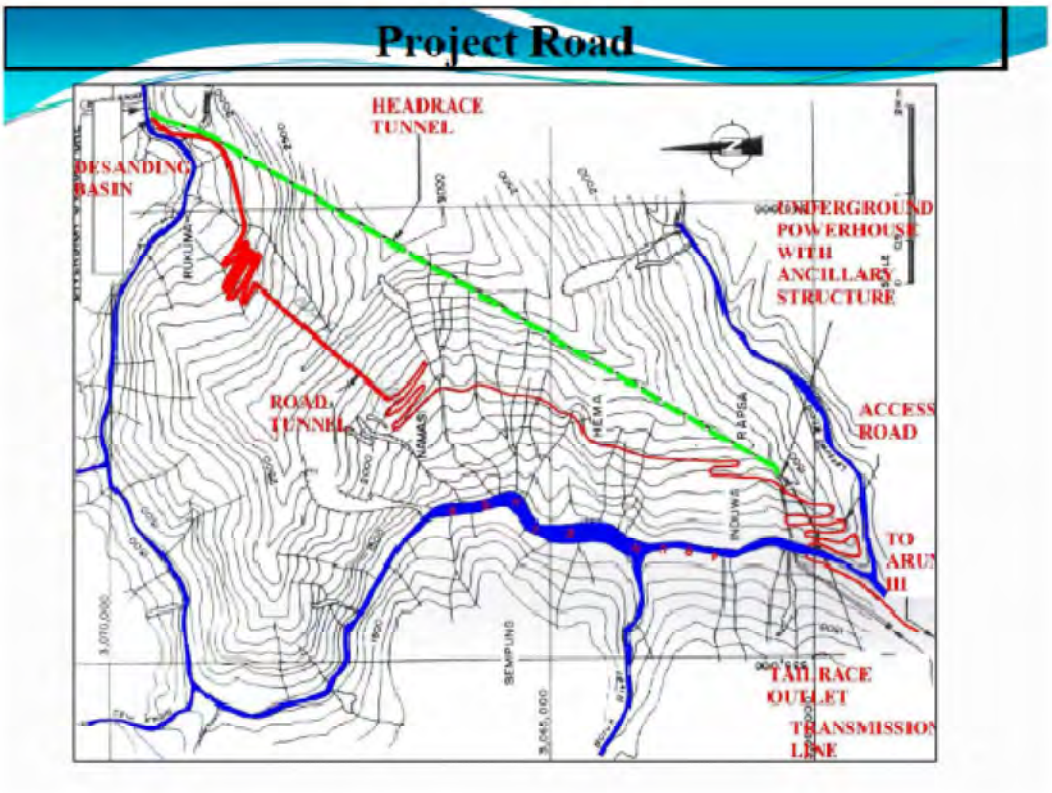
| | |
|---|---|
| Type of project | Peaking Run-of-River (PRoR) |
| River | Arun River (left bank) |
| Total catchment area | 25,700 sq km (25,300 in Tibet) |
| Average flow | 200 $m^3/s$ |
| Firm flow (95%) | 58.7 $m^3/s$ |
| Probable Maximum Flood (PMF) | 4000 $m^3/s$ |
| Glacial Lakes Outburst Flood (GLOF) | 6900 $m^3/s$ |
| Dam | 37m high; radial gated concrete weir |
| Radial gates | Three gates: each 12 m W × 22 m H |
| Gross storage volume | 760 × $10^3$ $m^3$ |
| Active storage volume | 440 × $10^3$ $m^3$ |
| Design head | 492m |
| Rated discharge | 58.7 $m^3/s$ |
| Design discharge | 78.8 $m^3/s$ |
| Full supply level | 1598 masl |
| Minimum operating level | 1588 masl |
| Normal tailwater level | 1089 masl |
| Intake sill level | 1583 masl |
| Desanding basin | Three caverns: 128 m long, 24 m wide, and approximately 32 m high, each housing two settling basins |
| Headrace tunnel | Length: 7840 m, Diameter: 5.5 m |
| Surge tank | Height: 91 m, Diameter: 18 m, simple circular |
| Pressure shaft | Height: 454 m, Diameter: 2.8 m, steel lined |
| Penstock tunnel | Length: 60m, Diameter: 2.8 m , steel lined |
| Powerhouse type | Underground powerhouse |
| Turbines | Four units of pelton turbine |
| Installed capacity | 335 MW (4 × 83.75 MW) |
| Annual firm energy | 2,050 GWh |
| Tailrace tunnel | Length: 850 m, area 50 $m^2/s$, horseshoe |
| Access road | 23.4 km between UAHEP powerhouse and dam site, including 1.7 km road tunnel |

## Annex 4. IkhuwaKhola Hydropower Project Location

# Ikhuwa Khola Hydropower Project

- Feasibility Study Conducted by DOED
- Location
  - 5 km Upstream of Arun-3 Headworks
  - 8 km Downstream of Upper Arun P/H Site
- Power and Energy
  - Installed Capacity 18 MW
  - Annual Energy of 120 GWh
- Will be developed as a component of UA HEP .
  - Share to local people in lieu of Upper Arun will be compensated by this project.

## Annex 5. UAHEP Access Road Details



# Annex 6 List of Supporting Documents

A. The following documents will be provided to the Consultant before the initiation of the assessment. The Consultant may only use these documents for the purposes of this Project. The list should be considered preliminary and may be updated prior to initiation of the contract.

1. Project Brief Notes on Upper Arun Hydroelectric Project, *Project Development Department, Engineering Services, Nepal Electricity Authority, 2013*. This briefing prepared by NEA provides a quick snapshot of the Upper Arun Hydropower Project, along with the latest details on project planning.

2. Feasibility Study Review Report, Upper Arun Hydroelectric Project, *Nepal Electricity Authority, 2011*. This study reviews the feasibility study commissioned by the NEA and completed in 1991 by the Joint Venture of Morrison Knudsen Corporation, Lahmeyer International, Tokyo Electric Power Services Co, and NEPCON. In particular, it identifies changes in the current status and project needs for infrastructure such as roads, transmission lines, telecommunication facilities etc at and around the project site; documents information relevant to technical upgrading of the detailed engineering study of the project; reassesses and updates the energy generation capacity, power evacuation mechanisms, and project costs; and documents initial data for an environmental impact assessment, which was not carried out in the 1991 feasibility study.

3. Upper Arun Hydroelectric Project, Feasibility Study Phase II – Final Report, Volume I, Chapter 11, *Morrison-Knudsen Engineers Inc et. Al., 1991*. This section of the feasibility study is an abbreviated version of the full environmental assessment study report available in the project files deposited with the Nepal Electricity Authority, Kathmandu, Nepal. This impact assessment was based upon the specificity of the engineering and design information available to the environmental team at the time of field study in December 1990. Field baseline data related to soils, water quality, vegetation, wildlife, fisheries, land-use, agriculture and people were collected; while this abbreviated report provides summary descriptions, it indicates that actual collected is available in the full version of the report, available at NEA's depository. The document seeks to: (i) examine the suitability of the Upper Arun site as a hydroelectric power plant site; (ii) identify the most cost-effective configuration and prepare preliminary engineering and siting plans that are as environmentally sound as possible, and (iii) to recommend any further studies that may help in minimizing the project's negative impacts while enhancing its benefits to region's natural and social environment. The description of proposed project impacts in this document are generic and high-level in nature, focusing on those judged to be most important in the context of project evaluation, planning, and implementation; Nepal's environmental priorities; and the significance of local resources. It is therefore an important input into the ESIA to be completed under this consultancy, but is not itself a comprehensive evaluation of potential impacts.

4. Arun III Hydroelectric Power Development Project, Environmental and Socio-economic Impact Study Report, Volume 1, *Lahmeyer International et. Al., 1990*. This document considers the environmental and socio-economic impact of the proposed Arun III project.

5. Final Report of Feasibility Study on Arun III Hydroelectric Power Development Project, Volume 1, *JICA, 1987*. This document contains a chapter on environmental impact of the identified Arun III Project.

6. Draft Report of Feasibility Study on Arun III Hydroelectric Power Development Project, Volume 1, *JICA, 1987*. This document contains a chapter on environmental impact of the identified Arun III Project.

7. Interim Report of Feasibility Study on Arun III Hydroelectric Power Development Project, Volume 1, *JICA, 1986.* This document contains a chapter on environmental impact of the identified Arun III Project.

8. Social and Institutional Component, Arun III: Management of Basinwide Environmental Impacts Update Study, Volume IV, *National Trust for Nature Conservation (NTNC), 1995.*

9. Sustainability and Economic Growth, Arun III: Management of Basinwide Environmental Impacts Update Study, Volume III, *National Trust for Nature Conservation (NTNC), 1995.*

10. Natural Resources, Arun III: Management of Basinwide Environmental Impacts Update Study, Volume II, *National Trust for Nature Conservation (NTNC), 1995.*

11. Makalu-Barun National Park and Conservation Area: 1993-1994 Plan of Operation, Draft and Working Copy, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1993.*

12. Arun III Hydroelectric Project, Environmental Assessment and Management, *Nepal Electricity Authority, Government of Nepal, 1993*.

13. Arun III Hydroelectric Project, Environmental Assessment and Management, Executive Summary, *Nepal Electricity Authority, Government of Nepal, 1992.*

14. Makalu-Barun Conservation Project: Status of Community Needs, Resources, and Development: Solukhumbu District, Report 20, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1992*.

15. Makalu-Barun Conservation Project: Report on the Survey of the Trekking and Mountaineering Agencies of the Makalu-Barun Conservation Area, Report 18, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1991*.

16. Makalu-Barun Conservation Project: Report on the Survey of the Trekking and Mountaineering Agencies of the Makalu-Barun Conservation Area, Report 17, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1991*.

17. Makalu-Barun Conservation Project: Report on the Survey of Trekking and Mountaineering Agencies of the Makalu-Barun Conservation Area, Report 16, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1991*.

18. Makalu-Barun Conservation Project: Geo-Ecological Study of the Apsuwa Watershed, Report 15, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1992*.

19. Makalu-Barun Conservation Project: Study of Geo-Hydrology, Land Use, and Population of the Makalu-Barun Conservation Area, Report 14, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1992*.

20. Makalu-Barun Conservation Project: Grassland Ecology and Preliminary Studies of Bamboos in the Apsuwa Valley, Report 13, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1991*.

21. Makalu-Barun National Park and Conservation Area: Management Plan, *Department of Parks and Wildlife Conservation, Government of Nepal, Woodlands Institute, Mount Everest Ecosytem, Conservation Program, 1990.*

22. Upper Arun Hydroelectric Project, Feasibility Study Phase II, Supplemental EIA of Fisheries, Volume 3, Appendices, *Morrison-Knudsen Engineers Incet. Al., 1991*. This document considers the impact of the proposed Upper Arun Project on fisheries.

23. Environmental Management and Sustainable Development in the Arun Basin, Summary and Synthesis, Volume 1, *National Trust for Nature Conservation (NTNC), 1991*.

24. Environmental Management and Sustainable Development in the Arun Basin, Action Program, Volume 2, *National Trust for Nature Conservation (NTNC), 1991*.

25. Environmental Management and Sustainable Development in the Arun Basin, Management of Natural Resources, Volume 3, *National Trust for Nature Conservation (NTNC), 1991*.

26. Environmental Management and Sustainable Development in the Arun Basin, Biodiversity, Volume 4, *National Trust for Nature Conservation (NTNC), 1991*.

27. Environmental Management and Sustainable Development in the Arun Basin, Sustainability and Economic Growth, Volume 5, *National Trust for Nature Conservation (NTNC), 1991*.

28. Environmental Management and Sustainable Development in the Arun Basin, Cultural Systems and Resources, Volume 6, *National Trust for Nature Conservation (NTNC), 1991*.

29. Environmental Management and Sustainable Development in the Arun Basin, Social and Institutional Factors, Volume 7, *National Trust for Nature Conservation (NTNC), 1991*.

30. Environmental Management and Sustainable Development in the Arun Basin, Trade and Traffic Survey, Volume 8, *National Trust for Nature Conservation (NTNC), 1991*.

31. Environmental Management and Sustainable Development in the Arun Basin, Settlement Guidelines, Volume 9, *National Trust for Nature Conservation (NTNC), 1991*.

32. Environmental Management and Sustainable Development in the Arun Basin, Role of Women, Volume 10, *National Trust for Nature Conservation (NTNC), 1991*.

33. Environmental Management and Sustainable Development in the Arun Basin, Alternative Energy Proposals, Volume 11, *National Trust for Nature Conservation (NTNC), 1991*.

34. Environmental Management and Sustainable Development in the Arun Basin, Tourism, Volume 12, *National Trust for Nature Conservation (NTNC), 1991*.

35. Environmental Management and Sustainable Development in the Arun Basin, Macro Management System, Volume 13, *National Trust for Nature Conservation (NTNC), 1991*.

36. Environmental Management and Sustainable Development in the Arun Basin, Draft Report, Summary Synthesis, Volume 1, *National Trust for Nature Conservation (NTNC), 1991*.

37. Preliminary Work Report on Glacier Lake Outburst Floods (GLOF) in the Nepal Himalayas, *Water and Energy Commission Secretariat, Government of Nepal, 1991*.

38. Natural Resources of the Arun Watershed (Nepal), *National Remote Sensing Center, Nepal, 1988*.

39. GLOF study from ICIMOD, and other information or data from ICIMOD

# Annex 7. Other development projects in the watershed

The ongoing, planned, and identified development projects in the Upper Arun watershed which are presently known include the following. Each of these may be potential contributors to cumulative impacts of the UAHEP and IKHP projects. The list provided is preliminary, and will need to be verified and potentially expanded pending further research to be carried out by the Consultant, and in further discussions with NEA, in the course of implementation of the study.

a. *Arun III Hydropower Project:* Arun III is a proposed 900 MW run-of-river hydropower project to be located on the Arun River about 35km south of the UAHEP dam site. It is currently proposed to consist of a 68m high concrete gravity dam across the Arun River near Num Bazaar that will create a 4 km long impoundment. Flows will be diverted into an underground desanding basin, and then through a 11.7 km long, 9.5 m diameter tunnel to Pikhuwa, where the underground powerhouse will be located. The project is proposed to include a transmission line with a ROW that is not presently known at the time of development of this TOR. Detailed engineering designs and environmental and social assessment and planning studies were carried out for an earlier 402 MW version of this project in 1994 with support from the World Bank; however, the project was not implemented. The current project is proposed to have over twice the generation capacity of the previously considered version, with a modified design. Today, the project studies are being updated by SJVN Ltd, a JV of the Government of India and the Government of Himachal Pradesh.

b. *Lower Arun Hydropower Project*: The Lower Arun Hydropower Project is a proposed 400 MW project located downstream from Arun III, with the headworks before the confluence of the Arun River and the Sankhua River. The proposed project components include a 95m×36m×9.5m settling basin; a 15.1km, 8.5m diameter headrace tunnel; a 107m, 27m diameter surge tank; a 6m diameter penstock pipe; an underground powerhouse with 4 Francis Turbines; and, a 100m, 8.5m diameter tailrace channel. A proposed 400kV transmission line would evacuate power from Lower Arun to the interconnection point at Dhalkebar. NEA undertook a preliminary socio-economic impact study for the Lower Arun Hydropower Project in 1990.

c. SabhaKhola “A” Hydropower Project, 8.3 MW

d. SabhaKhola “B” Hydropower Project, 9.86 MW

e. SabhaKhola Hydropower Project, 3.3 MW

f. Upper PiluwaKhola Hydropower Project, 11 MW

g. Lower PiluwaKhola Hydropower Project, 9.5 MW

h. Apsua Khola Hydropower Project, 8.4 MW, GoN reserved

i. SankhuaKhola Hydropower Project, 32 MW, GoN reserved

j. Upper SankhuaKhola Hydropower Project, 35.34 MW, GoN reserved

# Annex 8: ESIA key contents as per World Bank requirements

(refer also to World Bank Operational Policy 4.01 (*Environmental Assessment*), Annex A.)

a. **Executive Summary (in English and Nepali)**

b. **Introduction**

c. **Detailed Project Description**.

d. **Legal and Institutional Framework.** Include national legislation related to environmental and social management issues applicable to the project, relevant international treaties or commitments, applicable World Bank safeguard policies and EHS Guidelines, and institutional structure and capabilities. Summarize key compliance issues and processes related to each of these requirements, including licensing and permitting status.

e. **Baseline,** to include covering all relevant physical, biological, socioeconomic and cultural aspectsof the full Project Area of Influence**.**

f. **Alternatives Analysis**

g. **Impact Analysis,** covering all direct, indirect, and induced impacts in both the short-term and the long-term, and proposing mitigation measures for each of construction and operations stages of the project. The analysis should follow an internationally recognized methodology to assess the significance of each identified impact, both before and after the application of recommended mitigation measures.

h. **Cumulative Impact Assessment (CIA)**

i. **Environmental and Social Management Plan (ESMP),** covering:

   i. Details on all measures to be taken during construction and operation of the project to eliminate, minimize, mitigate, compensate and/or offset adverse environmental and social impacts, as well as the recommended specific actions,

   ii. Specific plans as determined to be necessary to mitigate and manage environmental, social and health and safety impacts and risks identified through the impact assessment process;

   iii. Indicators for monitoring and evaluation,

   iv. Institutional responsibilities,

   v. Reporting arrangements,

   vi. Budget needed to implement all measures,

   vii. Monitoring Plan that details the key parameters to be monitored, monitoring locations and frequencies, monitoring methodologies, required budgets, and responsible entities to carry out monitoring as well as to follow up on monitoring outcomes, including to correct non-compliances as well as to adjust management measures as needed to enhance overall project sustainability,

   viii. Detailed organogram showing all actors involved in ESMP implementation, monitoring, reporting, independent supervision and auditing, their relationship to overall project construction and operational management teams and contractors, and points of interface with independent oversight entities,

   ix. Detailed Environmental Codes of Practice outlining generic management and mitigation measures based on international good practices for construction

management, which would be annexed to contractor bidding documents in addition to other project-specific measures and plans identified through impact assessment process.

j. **Appendices, to include:**

- List of ESIA Report preparers
- References (for written materials used in the preparation of the ESIA Report)
- Detailed maps of the Project Area of Influence that consider:
  - Forest cover
  - Forest loss and degradation
  - Land use
  - Ecosystems
  - Protected areas, critical and natural habitat
  - Location and ranges/distribution of fauna and endangered species
  - Peaking pond / weir site
- Records of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs)
- Tables presenting the relevant data referred to or summarized in the main text
- Terms of Reference of this study
- Terms of Reference of the International Panel of Experts (to be provided to the Consultant)
- Other annexes as applicable

# Annex 9. Outline for Resettlement Action Plan (RAP) as per World Bank OP 4.12

a) Project description, including design alternatives considered

b) Socioeconomic baseline.

c) Project impacts and affected population, including the Project's Impact Zones and details from the inventory and census surveys.

d) Project resettlement policy framework, including summary of the legal framework in Nepal, ii) a comparison with World Bank OP 4.12 and proposed measures to fill in any gaps, and iii) a project entitlement policy;

e) Compensation rates and their evaluation basis and methodology, and resettlement and rehabilitation packages;

f) Compensation and resettlement approach and action plan.

g) Community consultation and participation, descriptions of consultations carried out during project preparation and plans to continue consultations during implementation

h) Institutional framework and arrangement for implementing resettlement

i) Grievance redress mechanisms

j) Costing and budget

k) Monitoring and evaluation.

# Annex 10. Outline for Vulnerable and Indigenous Peoples Development Plan as per World Bank OP 4.10

a. A summary of the social assessment, including identification and mapping of indigenous communities in the project area.

b. A summary of results of the free, prior, and informed consultation with the affected Indigenous Peoples' communities that was carried out during project preparation and that led to broad community support for the project.

c. A framework for ensuring free, prior, and informed consultation with the affected Indigenous Peoples' communities during project implementation.

d. A summary project impacts on indigenous communities, including both positive and adverse impacts.

e. An action plan of measures to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate, including, if necessary, measures to enhance the capacity of the project implementing agencies.

f. An action plan delineating measures to avoid, minimize, mitigate, or compensate for adverse impacts.

g. Cost estimates and financing plan for the IPP.

h. Accessible procedures appropriate to the project to address grievances by the affected Indigenous Peoples' communities arising from project implementation.

i. Implementation arrangements.

j. Mechanisms and benchmarks appropriate to the project for monitoring, evaluating, and reporting on the implementation of the IPP. The monitoring and evaluation mechanisms should include arrangements for the free, prior, and informed consultation with the affected Indigenous Peoples' communities.

## Annex III: Map of the Upper Arun and Ikhuwa Khola Site Locations