

Promoting Sustainable Hydropower Development in Nepal

Final Report

**Submitted to
World Wide Fund for Nature**

**By
Nepal Hydropower Association**

January, 2016

ABBREVIATIONS

DDS	Due Diligence Study
DHM	Department of Hydrology and Meteorology
DPR	Detail Project Report
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
FS	Feasibility Study
FSR	Feasibility Study Report
GoN	Government of Nepal
HSAP	Hydropower Sustainability Assessment Protocol
IEE	Initial Environmental Examination
IHA	International Hydropower Association
IPP	Independent Power Producers
IPVCDP	Indigenous People and Vulnerable Community Development Plan
IPPAN	Independent Power Producers' Association of Nepal
IUCN	International Union for Conservation of Nature
MoE	Ministry of Energy
NGOs	Non-Governmental Organization
NHA	Nepal Hydropower Association
PDA	Project Development Agreement
PFS	Pre-feasibility Study
PPA	Power Purchase Agreement
PQ	Pre-qualification
RAP	Resettlement Action Plan
SA	Social Assessment
SIA	Social Impact Assessment
TL	Transmission line
WB	World Bank

TABLE OF CONTENTS

CHAPTER I: INTRODUCTION	1
1.1 BACKGROUND	1
1.2 SIGNIFICANCE OF THE STUDY	2
1.3 OBJECTIVES	2
1.4 SCOPE OF WORKS	3
CHAPTER II: STUDY METHODS	4
2.1 STUDY TEAM	4
2.2 STUDY METHODOLOGY.....	4
CHAPTER III: STUDY REVIEWS AND DISCUSSIONS	6
3.1 REVIEW OF THE HYDROPOWER SUSTAINABILITY ASSESSMENT PROTOCOL.....	6
3.2 REVIEW OF THE PROTOCOL TOPICS AGAINST EXISTING PRACTICES IN NEPAL	7
3.3 STAKEHOLDER CONSULTATIONS AND WORKSHOP	7
CHAPTER IV: FINDINGS AND CONCLUSIONS.....	15
ANNEX-I: HSAP	17
ANNEX-II: EXISTING LEGISLATION RELATED TO HYDROPOWER DEVELOPMENT	25
ANNEX-III: CONSULTATIVE MEETING	27
ANNEX-IV: WORKSHOP	29
ANNEX-V: LIST OF ATTENDEES FOR THE CONSULTATIVE MEETING	32
ANNEX-VI: LIST OF ATTENDEES OF THE WORKSHOP	33
ANNEX-VII: PHOTOGRAPHS FROM THE CONSULTATIVE MEETINGS	35
ANNEX VIII: PICTURES FROM THE HALF DAY WORKSHOP.....	37

CHAPTER I: INTRODUCTION

1.1 BACKGROUND

Nepal is currently facing severe energy crisis. 90 percent of Nepal's electricity comes from hydropower. The vast majority of Nepal's total energy supply comes from traditional, non-electric sources of energy such as wood, agricultural waste, and dung. Commercial energy sources such as petroleum and coal provide another eight percent. The remaining one percent is supplied by hydroelectricity (Source: SARI, 2012). Therefore, despite the country's vast hydroelectric potential and the large share of electricity met by hydropower, the overall energy portfolio hydropower represents a negligible portion of the overall energy profile of Nepal.

Since last three decades, hydropower development got much attention and become hot agenda among government, political parties, development organizations and people as a potential source to bolster Nepal's struggling economy. However, the country is suffering from more than 14 hours of power outage during winter season. Still hydropower is the only one viable alternative to meet growing demand of power. Currently Nepal is intending to develop its hydropower for both internal consumption and export and has an ambitious pipeline of projects. There is currently a significant number of hydropower projects being planned (>20 GW) and under construction to boost the generating capacity across the country.

1.1.1 Hydropower Development and Sustainability

The development of hydropower around the world is on the increase. Hydropower development has been recognized as one of the key drivers in optimally utilizing the available water resources towards achieving the objective of energy security and green growth. Further, due to the recent incidences of hydro-meteorological disasters and the concerns raised about social and environmental aspects from many quarters, the development of hydro potential has not made much of headway. Sustainability is about taking what we need to live now, without jeopardizing the potential for people in the future to meet their needs. Sustainability is a discourse intended to promote new strategies of energy, water and environmental system. Hydropower is considered as an integrated form of development so the concept of sustainability needs to be realized from the planning, implementation and operation of the Hydropower Project.

1.1.2 Hydropower Sustainability in context of Nepal

In the recent time, hydropower sector is under intense scrutiny globally. In the national context, effective utilization of hydropower can be the engine for Nepal's economic development. The key challenges hinges in making Nepal's hydropower development a sustainable endeavour from technical, environmental, social and economic standpoints. Over the recent past years there has been a resurgence of interest in hydropower as a result of increasing requirements for a low carbon economy, energy security and improved water management. This growing interest has been alongside disparate approaches to assess new and existing hydropower projects at local, national and regional levels. The hydropower plants under operation are facing a number of socio-environmental, financial and technical challenges due to the lack of all required aspects not taken into consideration during preparation and implementation.

1.1.3 Hydropower Sustainability Assessment Protocol

International Hydropower Association (IHA) has developed the Hydropower Sustainability Assessment Protocol, which is the product of the considerable effort of many parties. The Protocol is the result of intensive work from 2008 to 2010 by the Hydropower Sustainability Assessment Forum, a multi-

stakeholder body with representatives from social and environmental NGOs (Oxfam, The Nature Conservancy, Transparency International, WWF); governments (China, Germany, Iceland, Norway, Zambia); commercial and development banks (Equator Principles Financial Institutions Group, The World Bank); and the hydropower sector, represented by IHA. The Protocol is presently governed by a multi-stakeholder interim governance committee.

The Hydropower Sustainability Assessment Protocol is an enhanced sustainability assessment tool which is being used to measure and guide performance in the hydropower sector. The Protocol assesses the four main stages of hydropower development: Early Stage, Preparation, Implementation and Operation. Assessments rely on objective evidence to create a sustainability profile against some 23 topics depending on the relevant stage, and covering all aspects of sustainability.

After several meetings with World Wide Fund for Nature (WWF), Nepal regarding the Sustainable Hydropower Development in Nepal and Sustainability Assessment Protocol as an enhanced sustainability assessment tool to measure and guide performance in the hydropower sector, Nepal Hydropower Association (NHA) is in high spirits to do a study on probable implication of sustainability protocol in Nepal for decision making on projects development.

1.2 SIGNIFICANCE OF THE STUDY

There is a common consensus that hydropower is the only one potential resource to bolster the struggling economy of Nepal. Hence special initiatives should be taken by the government and other stakeholders for the development of the hydropower project at the earliest. While selecting and developing the project, due consideration should be given to the sustainability of the project hence to ensure reliability and continuity of the project. In this regards, International Hydropower Association (IHA) has developed a protocol in consultation with the various government, INGOs, development organization and donor organizations that act as quick checklist looking for the sustainability of the hydropower project at various stages of development. Meanwhile, Nepal Hydropower Association in collaboration with World Wide Fund for Nature is working for exploring the key consensus on incorporating the Hydropower Sustainability Assessment Protocol into hydropower development in Nepal. This study is a product of rigorous study by the multidisciplinary groups upon the sustainability issues of hydropower sector. Hence, this study could be instrumental towards identification of regional implications for incorporating the Protocol into hydropower development across the region. Moreover, it also heralds a new initiative for the sustainable hydropower sector in Nepal and in turn in the regional context.

1.3 OBJECTIVES

The general objective of this study will be to make a rapid assessment on understanding of the Hydropower Sustainability Assessment Protocol and its sustainability criteria and their possible role in driving policy investment decisions at various level and across various stakeholders in Nepal such that Nepal's hydropower development dream is realized with enhanced sustainability over the coming years and decades.

The specific objectives of this study are to:

Rapid review of the Hydropower Sustainability Assessment Protocol (the Protocol) in light of exploring the use and benefits of the Protocol to improve the sustainability of hydropower in Nepal.

- Identify and categorize of key issues for discussion in the consultation and moderate discussion across the key stakeholders.
- Conduct consultations with the selected stakeholders and organize a half-day workshop in Kathmandu to discuss the findings of the stakeholder’s meetings on the key issues surrounding the sustainability of hydropower sector in Nepal.
- Prepare and submit reports

1.4 SCOPE OF WORKS

The following scope of works shall be carried out.

- Review Hydropower Sustainability Assessment Protocol (HSAP) in light of Nepal in particular and Himalayan region in general. Identify key issues for consultation with the key stakeholders.
- Discuss the understanding of the Protocol criteria with stakeholders and its key role through consultation and facilitated discussion.
- Identify stakeholders (government, semi government agencies, financial organizations, power producers, multilateral organizations, bilateral organizations) willingness in incorporating the Protocol into their respective project/sector/business.

CHAPTER II: STUDY METHODS

This study utilized multi-disciplinary research approach and methods.

2.1 STUDY TEAM

This study has been conducted by an interdisciplinary core team of experts comprising of Senior Hydropower Engineers, Environmental specialists and Anthropologist as described in the following table:

S N	Name	Expertise	Designation & Organization
1	Pratik Man Singh Pradhan	Team Leader	Vice President- Business Development & Projects, Butwal Power Company
2	Pranav Acharya	Environmental Specialist	Environment Chief, Hydro-Consult Engineering Limited
3	Ganesh Prasad Khanal	Sr Hydropower Engineer	Manager-Business Development and Projects, Butwal Power Company
4	Prakash Poudel	Anthropologist	Anthropologist, Kabela Energy Limited

2.2 STUDY METHODOLOGY

Following methods were applied for this study as per its scope and objectives.

2.2.1 Desk study

Various published literatures and document relating to hydropower planning, design and development, environmental impacts and social issues in hydropower projects, financial viability, sustainability issues etc. have been collected and reviewed intensively to plan and develop the conceptual model of the study. During this process intensive library research and internet based research has been done.

2.2.2 Review of the Hydropower Sustainability Assessment Protocol

An intensive review of the Hydropower Sustainability Protocol Assessment (2010) was carried out by interdisciplinary team of experts on the related area of expertise. During the review process all the stages of the sustainability assessment protocol has been taken into consideration in line with the various indicators as per HSAP guidelines. Refer to link in ANNEX-I for details of HSAP.

2.2.3 Review of existing regulatory document

An intensive review of the existing legal and regulatory document of Nepal related to the hydropower development has been conducted. Special attention and focus was given to those acts, policy and procedures that directly trigger the hydropower development like the Hydropower Development Policy (1992 and 2001), Electricity Act (1992), Water Resources Act (1992), Environmental Protection Act (1996), Environmental Protection Regulations (1997), Land Acquisition Act (1977), Labor Act (1992), Local Self Governance Act (1998) etc.. During review particular attention was given to the applicability of document in line with the HSAP. The detail of the acts, regulations and policies reviewed is presented in ANNEX-II.

2.2.4 Analysis of the available information and identification of gaps, issues and adequacy for HSAP

Information collected during desk study, HSAP related document and the existing legal documents were thoroughly reviewed and analyzed against the requirements of the Protocol and the gaps and issues were identified and presented in a matrix for ease of communication with stakeholders. The gaps matrix in tabular form was disseminated to stakeholders for consultation meeting to collect the stakeholder's input to hydropower sustainability.

2.2.5 Consultation with the Stakeholders

After the screenings of the potential stakeholders in Nepal's hydropower development, NHA has informed of the consultative meeting by providing preliminary matrix and HSAP document in advance. . During screening of the stakeholders, their experiences in policy making and execution, projects preparations, implementation and operation of the hydropower projects were taken into consideration. A day long consultation with the potential stakeholders has been organized on 24th December, 2015. The presentations on the Protocol and identified gaps with existing legislation were made to the stakeholders before the consultation. Then participants were consulted separately in small groups by the facilitator of the related expertise. These consultations in small groups were helpful to identify the additional gaps, adequacy and legalization for making hydropower development a sustainable one. The list of the participants at stakeholder's consultation is presented in ANNEX-V. Visual and voice recordings, photographs and note taking were carried out to document the inputs and suggestions.

2.2.6 Inputs from the consultation

The study team analyzed the inputs and suggestions from the stakeholder's consultation on the technical, environmental, social, financial and integrative topics of hydropower sustainability and presented the key findings in a Workshop.

2.2.7 Workshop

A half day workshop with key stakeholders was organized on 27th December 2015 where the study team debriefed the Protocol, the preliminary gaps and findings of the existing regulations with the Protocol followed by the panel discussions. During the workshop, participants from power sector showed their keen interests and concerns and provided inputs and suggestions on the applicability of the Protocol in sustainable hydropower development in Nepal. The comments and suggestions from the workshop were documented and incorporated into the final report. The details of the participants is presented in ANNEX-VI

2.2.8 Report Finalization

The study team, in line with the suggestions provided in the consultative meeting and workshop, revised the draft report. This is the final report upon incorporation of the key inputs from the stakeholders.

CHAPTER III: STUDY REVIEWS AND DISCUSSIONS

3.1 REVIEW OF THE HYDROPOWER SUSTAINABILITY ASSESSMENT PROTOCOL

“Hydropower Sustainability Assessment Protocol” or “the Protocol” is a methodological framework to assess the sustainability of a particular hydropower project at all the stages of its development. It helps to assess the performance of hydropower projects with a defined set of sustainability topics, encompassing environmental, social, technical and financial issues and highlight the gaps for improvements that will help in formulating the strategies for the hydropower development and management. Hence, the Protocol is a tool to overview the health of a hydropower project in short period of time. Moreover, the Protocol is a tool for positive change through identifying the gaps that need to be covered /fulfilled for the better functioning of the project. In addition, the protocol presents a cost-and time effective way to identify issues and put solutions in place.

The Protocol is valuable for i) independent review of sustainability issues, ii) management of sustainability issues, iii) comparison with international best practice, iv) communication with stakeholder, v) facilitating access to finance, vi) preparing clients to meet bank requirements vii) reducing risk of investment opportunities

There are four different stages which the Protocol looks into viz. Early Stage (ES), Preparation Phase (P), Implementation Phase (I) and Operation Phase (O). For all these four stages, the Protocol looks after altogether 25 different topics under five different categories viz. Technical, Economic/Financial, Social, Environmental and Integrative as presented in the Table 1 below:

Table 1: Categorization of the Protocol Topic into Different Aspects of Sustainability

Technical	Environmental	Social	Economic and financial	Integrative
Siting and design	Downstream flows	Project affected communities and livelihoods	Economic viability	Demonstrated need and strategic fit
Hydrological resource	Erosion and sedimentation	Resettlement	Financial viability	Communications and consultation
Reservoir planning, filling and management	Water quality	Indigenous peoples	Project benefits	Governance
Infrastructure safety	Biodiversity and invasive species	Cultural heritage	Procurement	Integrated project management
Asset reliability and efficiency	Waste, noise and air quality	Labor and Working Conditions		Environmental and social issues management
		Public health		

Each of the above mentioned topics is assessed by using 6 different criteria namely Assessment, Management, Stakeholders Engagement, Stakeholders Support, Conformance/Compliance and Outcomes.

3.2 REVIEW OF THE PROTOCOL TOPICS AGAINST EXISTING PRACTICES IN NEPAL

All the applicable Acts, Policies, Procedures, Guidelines, and other legalization and documents for the development of a hydropower project in Nepal were reviewed and compared with the requirements and evidences of The Protocol. The sustainability topics of the Protocol were compared with the existing regulatory requirements and the gaps and issues were identified from the desk study. The identified gaps and issues were tabulated and presented to the stakeholder's consultation and national workshop for additional comments and inputs from diverse stakeholders.

3.3 STAKEHOLDER CONSULTATIONS AND WORKSHOP

The consultative meeting with stakeholders was organized on December 24, 2015 in Hotel Himalaya, Pulchowk, Lalitpur. The meetings were divided into two sessions: morning session and afternoon session. In order to gather relevant issues of hydropower development in Nepal with respect to the Protocol's topics and to discuss the identified gaps, the stakeholders were identified from diverse fields like donor agencies, independent power producers, Nepal Electricity Authority, academic institutions, research agencies and relevant ministries/departments etc. The issues and gaps were discussed from developer's perspective, regulator's perspectives, lenders and other stakeholder's perspectives for which the participation from different sectors was important.

Invitees for the morning session consultation included power sector experts from Kathmandu University (KU), Institute of Engineering (IOE), Butwal Power Company (BPC), Individual Power Producers' Association Nepal (IPPAN), Hydroelectricity Investment and Development Company Limited (HIDCL), Asian Development Bank (ADB), The World Bank, International Finance Corporation (IFC), United States Agency for International Development (USAID) Nepal, Nepal Telecommunications Authority (NTA), International Center for Integrated Mountain Development (ICIMOD) and Nepal Banker's Association.



Invitees for the afternoon session consultation included delegates from Ministry of Energy, Water and Energy Commission Secretariat (WECS), Nepal Electricity Authority (NEA), Ministry of Science, Technology and Environment, Ministry of Forest and Soil Conservation, Department of Electricity Development (DOED), DOED Electricity Tariff Fixation Commission, Upper Tamakoshi Hydropower

Project Limited (UTHPL), Chilime Hydropower Company Limited, Tanahu Hydropower Limited, Rahughat Hydroelectricity Project and Budi Gandaki Hydroelectric Project.

The consultation meeting in each session started with an introduction of Hydropower Sustainability Assessment Protocol (HSAP) by a team leader. Different aspects of HSAP protocol were presented and depicted how the HSAP could be an ideal sustainability assessment tool for hydropower projects in Nepal. The findings of the gaps, issues and adequacy between the existing government regulations and the Protocol topics were presented to the participants and discussed.

The Protocol topics were divided into three key categories viz. Environmental, Social and Technical/Financial for the purpose of facilitating the consultations. The participants were then divided into three groups and each group is provided with a facilitator on rotation basis for discussion and gathering practical inputs from the participants. All the participants actively involved and participated in trying to put the protocol topics in the context of making Nepal's hydropower development a sustainable one. After each consultation, key findings from the meeting were documented to be presented to the main workshop.

The input on the gaps, issues and adequacy identified from the review of Protocol and Nepal's regulatory provisions in hydropower development, that were discussed in consultative meetings, were presented and discussed in a workshop conducted on December 27, 2015 in Hotel Radisson, Lazimpat, Kathmandu. Senior officials from the related Government ministries, departments, NEA, NGO/INGOs were presented in the workshop.



The notes of discussions during consultative meeting and workshop are presented in ANNEX-III and ANNEX IV respectively. The identified gaps with the existing regulations against desirable evidences of the Protocol from desk review, consultative meetings and the workshop are presented in Table 2.

TABLE 2: IDENTIFIED GAPS AGAINST DESIRABLE EVIDENCES OF HSAP

Topic	Objectives/Intent	Desirable Evidences	Available Documentation/Existing Legalizations'	Gaps/ Remarks
Communication & Consultation (P-1, I-1, O-1)	<i>Stakeholders are identified and engaged in the issues of interest to them, and communication and consultation processes establish a foundation for good stakeholder relations throughout the project life.</i>	Project stakeholders mapping document; project communication and consultation plans; communication protocols; grievance mechanism	<ul style="list-style-type: none"> EIA,RAP (if available) Disclosure documents Project Schedule Periodic Reporting Reports 	<ul style="list-style-type: none"> Inclusive participation is sought but in practice participation of the all section of the stakeholders is lacking. The provision for the incorporation of the concerns issue and feedbacks and formal records of management of grievances are not clear though some section is included in EIA/SIA. Stakeholders Continuous engagements at all phases.
Governance (P-2, I-2, O-2)	<i>Developer has sound corporate business structures, policies and practices; addresses transparency, integrity and accountability issues; can manage external governance issues (e.g. institutional capacity shortfalls, political risks including transboundary issues, public sector corruption risks); and can ensure compliance.</i>	Business internal website and external website for vision, values, policies structure, procedure, annual reports; assessment of public sector governance issues; internal audit reports; project compliance plan; reports on board on ethical business practices and compliance log of ethical business practices grievance; third party review reports; relevant documentation on public sector governance issues such as transparency international on national integrity system (NIS)the Corruption Perception index reports relevant documentation on public sectors	<ul style="list-style-type: none"> Annual Report ISO Certifications FS, DPR, EIA Grievances Documents Internal Audit Reports Project Compliance Plan CSR/Benefit Sharing Plan Independent Review Reports Social and Environmental Audits 	<ul style="list-style-type: none"> CSR related cost should be fixed as a percentage of project cost during construction and revenue during operation stage and disclosed to stakeholders. Dissemination of project information like progress status, cost, financial status and schedule to all concern stakeholders periodically (at least semiannually).
Demonstrated Need (P-3)	<i>Project can demonstrate its strategic fit with development objectives and relevant policies and plans can be demonstrated, and that the project is a priority option to meet identified needs for water and energy services.</i>	Energy Master Plan, Water Development Plan; Country or regional development reports; analysis of project fit with demonstrated needs regional land use and infrastructure development plans	<ul style="list-style-type: none"> EIA, FS,DPR 	<ul style="list-style-type: none"> No timely updates of Basin wise Master Plans. Lack of Reliable Load Forecast. Lack of regional land use and infrastructure development plans. Need of integrated water resource act. National Energy Strategy is being prepared but not approved yet, needs to address current situation. Requires electricity generation and transmission line master plan.
P - 4 Sitting and Design (P-4)	<i>Sitting and design are optimized as a result of an iterative and consultative process that has taken into account technical, economic, financial, environmental and social considerations.</i>	pre-feasibility studies; feasibility studies; reports on option assessment e.g. multi criteria analysis; records of design change to avoided or minimize disturbances and /or minimize opportunities; reports on stakeholder input and responses; minutes	<ul style="list-style-type: none"> PFS,DPR,EIA, DDS Project Layout Project schedule 	<ul style="list-style-type: none"> Limited license area is available for multi criteria analysis and option assessment for optimization. Safety instrumentation must be included in design.

Topic	Objectives/Intent	Desirable Evidences	Available Documentation/Existing Legalizations'	Gaps/ Remarks
		from public meetings		
Environmental & Social Impact Assessment/Management (P-5, I-3,O-3)	<i>Environmental and social impacts are identified and assessed, and avoidance, minimization, mitigation, compensation and enhancement measures designed and implemented.</i>	Regulatory requirements for EIA / SIA; EIA / SIA and associated reports; environmental and social management plans; records of consultation and stakeholder involvement; records of response to stakeholder issues; third party review report; qualifications of experts utilized; evidence of appropriate separate expertise used for environmental and social issues recognizing that in many cases single experts may not have sufficient breadth of expertise to cover both aspects	<ul style="list-style-type: none"> EIA/IEE and associated reports; 	<ul style="list-style-type: none"> Social Assessment (SA) and Resettlement Action Plan (RAP) are included in the EIA package. However, the assessment might ask for separate SA and RAP. Rapid Cumulative Impact Assessment is packaged in the EIA study. This might not fulfill the assessment requirements. Adequacy of the EIA study: scope and time for the EIA study might not be adequate. Inadequate compliance/conformance during operation Absence of effective monitoring mechanism for implementation of committed environmental and social mitigations during construction and operation
Integrated Project Management (P-6, I-4)	<i>Developer's capacity to coordinate and manage all project components, taking into account project construction and future operation activities</i>	organizational structure; management team qualifications; integrated program management plans, analyses and reports; construction management plan; construction contracts	<ul style="list-style-type: none"> FS/DPR/contract document 	<ul style="list-style-type: none"> Requires single window policy for timely permits and approvals. Needs capacity building of developer's management team to coordinate and manage all project components, taking into account project construction and future operation activities. Quality of reports, construction contracts, construction management plans and qualifications of team need to be monitored by the regulator-update of inspection guidelines ongoing. Proper monitoring mechanism should be established.
Hydrological Resources (P-7, O-4)	<i>Project's planned power generation takes into account a good understanding of the hydrological resource availability and reliability in the short- and long-term, taking into account other needs, issues or requirements for the inflows and outflows as well as likely future trends</i>	hydrological analyses; analyses of water resource demands affecting the project; analyses of power system and market opportunities; simulation and optimization model scenarios and outputs; systems operations plan for the project.	<ul style="list-style-type: none"> FS, DPR, PPA DHM Data Hydrology Monitoring Data 	<ul style="list-style-type: none"> No DHM data available for all the rivers. Limited license area for multi criteria analysis and option assessment for optimization. Consideration of climate change impacts in hydrological analysis. Consideration of land use pattern and future settlements in catchments for hydrology estimates. No clear export policy for cross border marketing of power.

Topic	Objectives/Intent	Desirable Evidences	Available Documentation/Existing Legalizations'	Gaps/ Remarks
Infrastructural Safety (P-8, I-5, O-6)	<i>Life, property and the environment are protected from the consequences of dam failure and other infrastructure safety risks</i>	Safety risk assessments; safety management plans; emergency preparedness plans; safety standards; independent review reports.	<ul style="list-style-type: none"> DPR/Contract Document 	<ul style="list-style-type: none"> Lack of safety instrumentation in design. Infrastructure safety standards and guidelines must be mandatory for bigger projects. Consideration of climate change impacts in design and operation. No Inspection Guidelines of power projects. Independent review of the design of dam and other key structures.
Financial Viability (P-9, I-6, O-7)	<i>Projects proceed with a sound financial basis that covers all project funding requirements including social and environmental measures, financing for resettlement and livelihood enhancement, delivery of project benefits, and commitments to shareholders/investors.</i>	Analysis of financing options; financial modeling reports; financial risk analysis; financial plans; financial status reports; third party review reports; annual financial reports for company, project, and principal off-taker(s)	<ul style="list-style-type: none"> FS, DPR Contract Document Financial Modeling Generation License PPA, PDA 	<ul style="list-style-type: none"> Reliability of cost estimates to be substantiated and norms for price contingency should be established. Sensitivity analysis on time, cost and energy is required for best and worst case scenario analysis.
Project Benefits (P-10, I-7, O-8)	<i>Opportunities for additional benefits and benefit-sharing are evaluated and implemented, in dialogue with affected communities, so that benefits are delivered to communities affected by the project</i>	Analysis of relevant development indicators; analysis of potential project benefits; analysis of benefit sharing options and opportunities; meeting minutes or reports demonstrating stakeholder input and involvement; benefit sharing plan	<ul style="list-style-type: none"> EIA Disclosure Document Records of Public meetings and consultations Generation License 	<ul style="list-style-type: none"> The provision for the distribution of the hydropower royalties to the project affected VDCs is not clear. Provision for the of rural electrification in project affected area is not clear though the proposed electricity bill tries to sort out these issues. Public Expectations Management is regarded as a challenge. Absence of effective monitoring mechanism for implementation of committed benefit-sharing during construction and operation.
Economic Viability (P-11)	<i>There is a net benefit from the project once all economic, social and environmental costs and benefits are factored in.</i>	Analysis of economic context; analysis, quantification and valuation of project costs and benefits; loan appraisal reports; economic analyses of natural resources and riparian linked livelihoods	<ul style="list-style-type: none"> FS, DPR Project Appraisal Document Generation License PPA, PDA 	<ul style="list-style-type: none"> It is not mandatory to carry out economic analysis for private developers. Preliminary study to be carried out by the licensing authority to check economic viability and to ensure stakeholders input and response.
Asset Reliability and Efficiency (O-5)	<i>Assets are maintained to deliver optimal performance in the short- and long-term in accordance with the overall electricity generation and supply strategy of the owner/ Operator.</i>	Maintenance programs; record of asset performance; power station asset management strategies and program; asset performance guarantees; asset reliability assessment and monitoring program; program of asset upgrades; information on asset efficiency; information comparative equipment and system performance;	<ul style="list-style-type: none"> Operation plan 	

Topic	Objectives/Intent	Desirable Evidences	Available Documentation/Existing Legalizations'	Gaps/ Remarks
		information on practicability of constraint removal; Information on the operational efficiency of the individual power station or groups of power stations in the context of the broader system and relevant market arrangements; power station revenues for generation and for availability;operational efficiency identification, measurementand assessment process; machine specifications; Monitoring data.		
Procurement (P-12, I-8)	<i>Procurement processes are equitable, transparent and accountable; support achievement of project timeline, quality and budgetary milestones; support developer and contractor environmental, social and ethical performance; and promote opportunities for local industries.</i>	Relevant purchasing policy and procedures; project procurement plan; analysis of local supply sources and capacities; tender requirements / specifications; bidding documents; supplier screening criteria; evaluation of supplier performance; bidder grievance log; record of compliance with relevant legislation and guidelines including those of financing agencies	<ul style="list-style-type: none"> • PQ document, Tender Document, ContractDocument , DPR 	<ul style="list-style-type: none"> • Requires transparent and competitive bidding. • Record of compliance with relevant legislation and guidelines including those of financing agencies not available.
Project Affected Communities and Livelihoods (P-13, I-9, O-9)	<i>Livelihoods and living standards impacted by the project are improved relative to pre-project conditions for project-affected communities with the aim of self-sufficiency in the long-term, and that commitments to project-affected communities are fully delivered over an appropriate period of time.</i>	Assessment report on project affected communities and livelihoods; gender analysis; human rights issues analysis; records of consultation and project affected community involvement; records of response to project affected community issues; third party review report; report on compensation measures; agreements on compensation measures; assessments and agreements on cultural sensitive areas and customs.	<ul style="list-style-type: none"> • EIA, DPR and other related documents 	<ul style="list-style-type: none"> • Absence of national Resettlement Act and Guidelines; Policy is in place. • Issues of displacement of non-titleholders. • Coordination between government and developer. • Expectation management of resettlers and host communities. • Variation between market value and government value of land.
Resettlement (P-14, I-10, O-10)	<i>The dignity and human rights of those physically displaced are respected; that these matters dealt with in a fair and equitable manner; and that livelihood and standard of livings for resettles and host communities are improved</i>	Assessment report on resettlement and land acquisition; records of consultation and affected stakeholder involvement; records of response to resettlement and land acquisition issues; third party review report; resettlement action plans; land acquisition plans; compensation agreements;	<ul style="list-style-type: none"> • EIA/IEE and associated reports 	<ul style="list-style-type: none"> • Absence of national Resettlement policies and guidelines • Issues of displacement of non-titleholders • Coordination between government and developer • Expectation management of resettles and host communities • Group interest and political Interest

Topic	Objectives/Intent	Desirable Evidences	Available Documentation/Existing Legalizations'	Gaps/ Remarks
		agreements on resettlement action plan; baseline social conditions report; livelihood analysis; impoverishment risk analysis; mitigation, resettlement and development action plans, including project benefit sharing mechanisms; NGO reports.		
Indigenous People (P-15, I-11, O-11)	<i>The project respects the dignity, human rights, aspirations, culture, lands, knowledge, practices and natural-resource-based livelihoods of indigenous peoples in an ongoing manner throughout the project life.</i>	Assessment report on indigenous peoples; records of consultation and project affected community involvement; records of response to issues that may affect indigenous peoples; third party review report; indigenous peoples management plans; agreements on measures for indigenous peoples.	<ul style="list-style-type: none"> EIA, RAP, IPVCDP (if any) 	<ul style="list-style-type: none"> The community characterization and assessment of indigenous people. Uncertainties about whether proposed mitigations can fully mitigate the impacts to their livelihood.
Labor and Working Condition (P-16, I-12, O-12)	<i>Labor and working conditions, including employee and contractor opportunity, equity, diversity, health and safety. Workers are treated fairly and protected.</i>	Policies, plans and programs relating to human resources, employees, contractors, equity, occupational health & safety, workforce planning, and grievance mechanisms; national and international standards for labour and OH&S	<ul style="list-style-type: none"> EIA(EMP)/Contract Document 	<ul style="list-style-type: none"> Absence of the reliable and consistent policies with client and contractors for the management of the labor issues. Absence of effective monitoring mechanism for implementation during construction. Confrontation between labor and management.
Cultural Heritage (P-17, I-13, O-13)	<i>Physical cultural resources are identified, their importance is understood, and measures are in place to address those identified to be of high importance.</i>	Cultural heritage impact statements; conservation plans; records of consultation and response to stakeholder issues; heritage plans and agreements; national and international standards.	<ul style="list-style-type: none"> EIA Contract Document 	<ul style="list-style-type: none"> Deviances in local cultural diversity and harmony? Ethnocentric generalization of the local cultural values and norms during assessment. Oral cultural histories lack artifacts and proven document.
Public Health (P-18, I-14, O-14)	<i>Project does not create or exacerbate any public-health issues, and that improvements in public health can be achieved through the project in project-affected areas where there are significant pre-existing public-health issues.</i>	Public health issues and opportunities assessment; public health management plans; national and international standards	<ul style="list-style-type: none"> EIA(EMP), Contract Document 	<ul style="list-style-type: none"> Baseline information on public health Absence of periodic monitoring of the public health parameters during implementation and operation as stated in EMP
Biodiversity and Invasive Species (P-19, I-15, O-15)	<i>Healthy, functional and viable aquatic and terrestrial ecosystems in the project-affected area that are sustainable over the long-term, and that biodiversity impacts arising from project activities are managed</i>	Assessment of terrestrial biodiversity; assessment of aquatic biodiversity; fish studies; fish passage technical feasibility assessments; third party review reports; biodiversity management plans; invasive species management plans; commitments and	<ul style="list-style-type: none"> EIA(EMP) Contract Document 	<ul style="list-style-type: none"> Evidence for sufficiency of environmental flow for sustainability of the aquatic life in the reduced flow zone. Mitigation provisions for protected flora and fauna. Absence of effective monitoring mechanism for implementation of committed mitigations during construction and operation.

Topic	Objectives/Intent	Desirable Evidences	Available Documentation/Existing Legalizations'	Gaps/ Remarks
	<i>responsibly.</i>	agreements; economic and livelihood valuation from fish catch and non-timber forest products baselines from local communities		
Waste, Noise and Air Quality (I-18)	<i>noise and air quality in the vicinity of the project are of a high quality and not adversely impacted by project activities, and that project wastes are responsibly managed.</i>	Waste, noise and air quality monitoring reports; waste, noise and air quality management plans for construction and operation	EIA (EMP), Contract Document	<ul style="list-style-type: none"> • Baseline data might not be adequate for the assessment requirements • Implementation of the committed periodic monitoring during operation
Erosion & Sedimentation (P-20, I-16, O-16)	<i>erosion and sedimentation caused by the project is managed responsibly and does not present problems with respect to other social, environmental and economic objectives, and that external erosion or sedimentation occurrences which may have impacts on the project are recognized and managed.</i>	Erosion and sedimentation assessment reports; erosion and sedimentation management plans for construction and operation.	<ul style="list-style-type: none"> • FS, DPR, EIA 	<ul style="list-style-type: none"> • The project will plan and implement the mitigation measures for the project induced erosion and sedimentation. However, other development activities in the basin will have erosion and sedimentation impacts on the river basin. This will raise questions on project induced erosion and sedimentation. • Absence of effective monitoring mechanism for implementation of committed mitigations during construction and operation.
Water Quality (P-21, I-17, O-17)	<i>Water quality in the vicinity of the project is not adversely impacted by project activities.</i>	Water quality monitoring reports; water quality management plans for construction and operation	<ul style="list-style-type: none"> • EIA (EMP) 	<ul style="list-style-type: none"> • Baseline data might not be adequate for the assessment requirements. • Implementation of the committed periodic monitoring during construction and operation.
Reservoir Planning P-22, I-19, O-18)	<i>the reservoir will be well managed taking into account power generation operations, environmental and social management requirements, and multi-purpose uses where relevant.</i>	Integrated project management plans; construction management plans; reservoir design documents; model output for reservoir operations; relevant excerpts of environmental and social impact assessments and management plans	<ul style="list-style-type: none"> • FS, DPR, EIA • Dam Safety Report 	<ul style="list-style-type: none"> • Consideration of climate change impacts in all stages of large reservoir project development. • No clarity in multi-purpose aspects of a reservoir project and its proper operation planning.
P-23 Downstream Flow Regimes (P-23, I-20, O-19)	<i>Flow regimes downstream of hydropower project infrastructure are planned and delivered with an awareness of and measures incorporated to address environmental, social and economic objectives affected by those flows.</i>	assessment of downstream flows in relation to flow-related objectives; downstream flow regime plans specifying range, variability and verification location; system operations plans; design documents in relation to release mechanisms; records of consultation and stakeholder involvement; records of response to stakeholder issues; third party review report; commitments and agreements	<ul style="list-style-type: none"> • FS, DPR, EIA (EMP) 	<ul style="list-style-type: none"> • Adequacy of assessment of the downstream release- How the percentage is arrived at? • Compliance of the committed environmental release during operation. • Absence of effective monitoring mechanism for implementation of committed mitigations during operation.

CHAPTER IV: FINDINGS AND CONCLUSIONS

Based on the rapid review of HSAP documents, assessment of their compatibility in existing Nepalese practices and legal regimes, consultation with concerned stakeholders and workshop, the study team has concluded the concerns in the wake of implementing protocol in respect of hydro power development in Nepal. There has been a general consensus that HSAP is a helpful tool in appraising the adequacy of the project preparation and its implementation. If the project preparations are adequately done, most of the HSAP requirements are fulfilled. However, the stakeholders were apprehensive that the Protocol, if made mandatory, will further retard the project progress owing to existing bureaucratic hassles. And also, there is room for amendment and addition of certain legal requirements to effectively implement the Protocol and promote the sustainable hydropower development in Nepal.

Following are the findings of this study:

- Hydropower Sustainability Assessment Protocol (HSAP) is a useful tool. However, HSAP should remain voluntarily requirements for the developers.
- At present context, it is practical to use it as an internal tool by the developers to gauge the adequacy of their preparation of the project. Agreeing to implement it through IHA Assessors will have cost constraints to the individual developer.
- Some topics of HSAP are not covered adequately by present national regulatory requirements which will cause the developer to bear extra burden in terms of cost; and effort should limit to accommodate the HSAP to the extent of prevailing technical, environmental, social and legal requirements. For example, there will be a need of electricity generation and transmission line master plan to justify the demonstrated need and strategic fit of a particular project.
- Clear legal provision is required for the resettlement, rehabilitation, compensation, royalties distribution and public share to avoid local resistance in the hydropower that will increase the stakeholders supports and auger well for HSAP implementation in Nepal. For example, provision of hydropower royalties to spend on the local development needs will help HSAP implementation.
- Manipulation of the existing legal requirements by some developers might be a concern in the effective implementation of the HSAP in Nepal. For example, Hydropower Development Policy (2001) clearly states that the downstream release should be 10 % of mean monthly flow or as per the recommendation of EIA; whichever is higher. However, in practice; flat 10 % driest months mean flow is recommend in most IEEs and EIAs without any assessment of the downstream aquatic and water use requirements. Absence of evidence of assessment for the downstream release will lead to low assessment scores.
- Serious rethinking of the socio-environmental issues: Taking environmental and social issues for granted during preparation phase causes problem in implementation of hydropower project. It is obvious that, in Nepal, hydropower project is dominated by technical sphere and socio-environmental sphere gets low attention. It is the time to change our views towards development in general and hydropower sector in particular.

- There are inadequate monitoring mechanisms related to compliance with the committed mitigation measures. Absence of effective monitoring will lead to low compliance and subsequently to low assessment scores.
- Capacity building of GoN, developer and lenders in hydropower development is needed for effective implementation of the HSAP in Nepal.
- Consensus building programmes are required to make aware of basic hydropower elements and units which may contribute to sustainability of a hydropower project. The developers are facing difficulties in implementation of any agreements with the local stakeholders.

ANNEX-I: HSAP

Please refer to the link below for details of Hydropower Sustainability Assessment Protocol:

<http://www.hydrosustainability.org/>

Brief HSAP related document is given below:



What is a Sustainable Hydropower Project?

The principles underlying this Hydropower Sustainability Assessment Protocol, combined with results of a Protocol assessment, provide an important framework for considering questions about the sustainability of any particular hydropower project.

There is a common view across a diversity of sectors (e.g. governments, NGOs, civil society, industry, banks) on the important sustainability considerations that need to be taken into account to form a view on hydropower project sustainability. The Protocol captures these considerations in a structured framework, and provides a platform from which to produce a sustainability profile for a project.

The Protocol is designed for the Level 3 scores, describing basic good practice, to be broadly consistent with the IHA Sustainability Guidelines 2004, and where there are gaps or inconsistencies that any future review of these IHA guidelines would consider these.

Organisations may hold different views on what levels of performance are linked to a sustainable project, and the Protocol makes no specification on requirements for acceptable performance. All countries and organisations adopting and supporting this Protocol respect the need for institutions to have their own policies and positions on acceptable performance for a hydropower project. All organisations expressing support for the Protocol recognise that a Protocol assessment can make a substantial contribution towards understanding and achieving sustainable projects. In producing a sustainability profile, the Protocol can help inform decisions on what is a sustainable project; decision-making on projects is left to individual countries, institutions and organisations.

Protocol Structure

The Protocol comprises five documents – this Background document and four assessment tools for the different stages of the project life cycle, as shown in Figure 1.

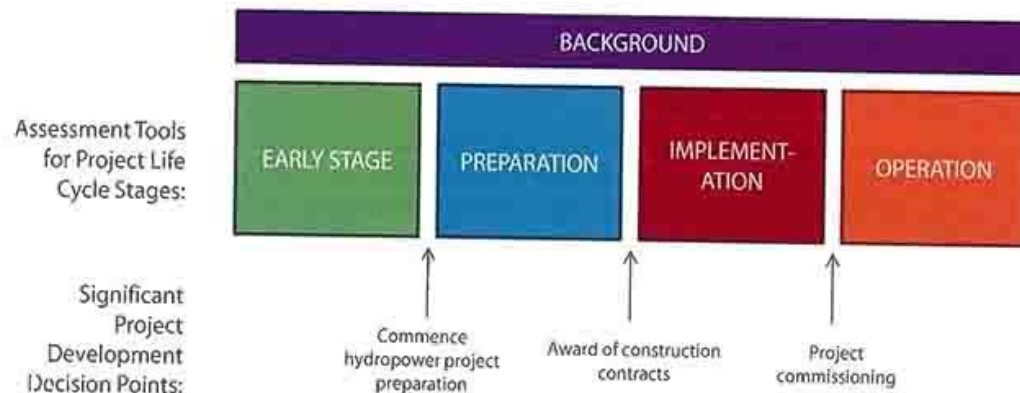


Figure 1 - Protocol Assessment Tools and Major Decision Points

Protocol Assessment Tools

The four Protocol assessment tools – Early Stage, Preparation, Implementation, and Operation – are designed to be stand-alone assessments applied at particular stages of the project life cycle. An assessment with one tool does not depend on earlier stage assessments to have been undertaken. The assessment tools are designed to be applicable up to major decision points in the project life cycle (shown in Figure 1), and are most effective where there are repeat applications to help guide continuous improvement measures. Results of assessments undertaken during a project stage have the potential to assist in defining further measures to be undertaken during that project stage, or to inform the key decisions that would be made at the end of that project stage.

The **Early Stage** assessment tool is a preliminary screening tool to assess the strategic environment from which proposals for hydropower projects emerge. It identifies project risks and opportunities at an early stage, in order to identify the challenges and management responses to proceed with a more detailed project investigation. The Early Stage assessment tool may also be usable for other broader purposes, such as the identification of opportunities to improve the sustainability context of hydropower investments. The Early Stage assessment tool differs from the other three assessment tools in that it is an assessment guide but not a scoring protocol. This is because there is not a clearly formulated project at this stage, nor a strong basis of information from which to derive sustainability scores. A further difference is that early investigations about potential project possibilities are often of a confidential nature, especially in the case in which developers have not yet decided whether to invest in more detailed studies, or where there is a highly competitive context of a liberalised energy market. As long as no public announcement about project intentions has been made, this Early Stage assessment tool offers a means to encourage better early stage analysis and identification of knowledge gaps. As soon as detailed technical, environmental, social and financial feasibility studies are undertaken, often under a strict governmental process, the use of the Preparation assessment tool will be appropriate.

The **Preparation** assessment tool assesses the preparation stage of a hydropower project, during which investigations, planning and design are undertaken for all aspects of the project. This project stage is normally subject to national regulatory processes regarding project-specific Environmental and Social Impact Assessment (ESIA) requirements as well as project management processes. Following project preparation, there is a critical decision point in the decision to award the construction contracts. An assessment conducted at this point in time would assess whether all preparatory requirements have been met, management plans are in place, and commitments are appropriate and binding. This Protocol assessment tool can be used prior to, and to inform, the decision to move forward with project implementation. This decision is governed by national regulatory processes to obtaining a construction permit and an operating license based on the ESIA and project specific governmental requirements. Following this point, construction commences along with relevant elements of environmental and social management plans.

The **Implementation** assessment tool assesses the implementation stage of a hydropower project, during which construction, resettlement, environmental and other management plans and commitments are implemented. Commissioning of the power station enables the project to start to earn money, and in fact often some units (i.e. turbines) of a multiple unit power station are commissioned while others are still being installed to assist in meeting the financial commitments of the project. An assessment made prior to the decision to commission any units would assess whether all commitments have been met, and can inform the timing and conditions of project commissioning.

The **Operation** assessment tool assesses the operation of a hydropower facility. This Protocol assessment

tool can be used to inform the view that the facility is operating on a sustainable basis with active measures in place towards monitoring, compliance and continuous improvement. This project phase is framed by the operating conditions put forth in a national governmental authorisation often called operating license.

A project may be at an early or late point in the project stage when an assessment is undertaken. Assessments may be forward looking (i.e. what activities should be undertaken) or backward looking (reflecting on how well activities were undertaken). The Protocol is designed for repeat application, and an assessment undertaken early in a life cycle stage may guide activities that would result in stronger performance in a later stage assessment. There may be overlap between stages of the project life cycle (e.g. implementation activities during project preparation, or turbines commissioned while implementation activities are still progressing). If a project is in transition between stages, the choice of which assessment tool to use depends on the purpose of the assessment.

Hydropower projects tend to have an extensive lifetime, with many operating facilities having been in service for more than a century. The Early Stage assessment tool can provide guidance on some of the important considerations to take into account for decisions relating to facility or transmission network re-optimisation, facility life extension or decommissioning. Project decisions relating to major refurbishment would utilise the Preparation assessment tool. In the case of re-licensing or minor refurbishment, the Operations assessment tool would be appropriate for the assessment.

Protocol Topics

Within each Protocol assessment tool is a set of topics important to forming a view on the overall sustainability of that project at that point in its life cycle. Topics, when taken together, provide the list of issues that must be considered to confidently form a view on the overall sustainability of a hydropower project at a particular point in its life cycle.

Figure 2 shows the perspectives which are captured by the Protocol topics. It is recognised that an individual topic is not always neatly labelled as a particular perspective. For example, water quality may be typically seen as an environmental perspective, but poor water quality may have strongly negative social consequences. Some of the topics provide an integrative function across the other perspectives, for example Integrated Project Management.

Integrative Perspective			
Environmental Perspective	Social Perspective	Technical Perspective	Economic/Financial Perspective

Figure 2 – Perspectives Represented by Protocol Topics

Table 1 provides a list of topics for each assessment tool. As can be seen, there are topics which address each perspective shown in Figure 2, including topics which are integrative in nature such as Governance, or Siting & Design. Not every topic will be relevant to every project, and so at the front of the Preparation, Implementation and Operation documents is a Topic Relevance Guide to assist in determining relevant topics. For example, if there is no Resettlement the Resettlement topic does not need to be assessed.

Structure of Each Topic Page

Each topic has the following information provided on the topic page:

- **Statements of description** and intent for that topic. The statement of description defines the scope of the topic. The intent statement provides information to help orient the reader and users on why that topic is important to the overall sustainability of the project and what should generally be achieved; it is not tied to any particular scoring level.
- **Scoring statements** at levels 1, 2, 3, 4 and 5 to guide how to allocate scores. These statements are structured around criteria that are considered to be the most pertinent to that topic at that particular stage of the project life cycle. Scoring statements are not found in the Early Stage assessment tool, which is guidance only.
- **Assessment guidance** – this provides definitions, explanations or examples of words, themes or concepts referred to in the topic description, intent or scoring statements. These are provided to assist the assessor in the assignment of scores. Also provided are examples of potential interviewees and examples of evidence which can guide the design, preparation for and undertaking of the assessment process. Where examples are cited, these are examples only and are provided to assist in understanding; these should not be interpreted as absolute requirements or assumed that all components must be met.

Table 1 - Hydropower Sustainability Assessment Protocol Topics by Section

ES - Early Stage	P - Preparation	I - Implementation	O - Operation
ES-1 Demonstrated Need	P-1 Communications & Consultation	I-1 Communications & Consultation	O-1 Communications & Consultation
ES-2 Options Assessment	P-2 Governance	I-2 Governance	O-2 Governance
ES-3 Policies & Plans	P-3 Demonstrated Need & Strategic Fit		
ES-4 Political Risks	P-4 Siting & Design		
ES-5 Institutional Capacity	P-5 Environmental & Social Impact Assessment & Mgmt	I-3 Environmental & Social Issues Mgmt	O-3 Environmental & Social Issues Mgmt
ES-6 Technical Issues & Risks	P-6 Integrated Project Management	I-4 Integrated Project Management	
ES-7 Social Issues & Risks	P-7 Hydrological Resource		O-4 Hydrological Resource
ES-8 Environmental Issues & Risks			O-5 Asset Reliability & Efficiency
ES-9 Economic & Financial Issues & Risks	P-8 Infrastructure Safety	I-5 Infrastructure Safety	O-6 Infrastructure Safety
	P-9 Financial Viability	I-6 Financial Viability	O-7 Financial Viability
	P-10 Project Benefits	I-7 Project Benefits	O-8 Project Benefits
	P-11 Economic Viability		
	P-12 Procurement	I-8 Procurement	
	P-13 Project Affected Communities & Livelihoods	I-9 Project Affected Communities & Livelihoods	O-9 Project Affected Communities & Livelihoods
	P-14 Resettlement	I-10 Resettlement	O-10 Resettlement
	P-15 Indigenous Peoples	I-11 Indigenous Peoples	O-11 Indigenous Peoples
	P-16 Labour & Working Conditions	I-12 Labour & Working Conditions	O-12 Labour & Working Conditions
	P-17 Cultural Heritage	I-13 Cultural Heritage	O-13 Cultural Heritage
	P-18 Public Health	I-14 Public Health	O-14 Public Health
	P-19 Biodiversity & Invasive Species	I-15 Biodiversity & Invasive Species	O-15 Biodiversity & Invasive Species
	P-20 Erosion & Sedimentation	I-16 Erosion & Sedimentation	O-16 Erosion & Sedimentation
	P-21 Water Quality	I-17 Water Quality	O-17 Water Quality
		I-18 Waste, Noise & Air Quality	
	P-22 Reservoir Planning	I-19 Reservoir Preparation & Filling	O-18 Reservoir Management
	P-23 Downstream Flow Regimes	I-20 Downstream Flow Regimes	O-19 Downstream Flow Regime

Assessment Criteria

There are six criteria that may be utilised for the scoring statements on each topic – Assessment, Management, Stakeholder Engagement, Stakeholder Support, Conformance/Compliance, and Outcomes. These provide an ability to assess both the processes in place to ensure sustainability of the project or operation, and the performance of that project or operation on that particular sustainability topic.

Understanding the Protocol's Gradational Assessment Approach

The gradational approach undertaken in the Preparation, Implementation and Operation assessments tools can be understood by examination of Table 2. This table provides general guidance on characteristics that are likely to be exhibited for these different criteria at the five different scoring levels. The scoring statements found in the Preparation, Implementation and Operation assessment tools have been guided by the approach shown in Table 2. This table is not intended to be the basis for assigning of scores, as sufficient information generally should be provided on the topic pages. However, this table can be referred to during an assessment if there is insufficient information in the topic scoring statements and in the topic-specific assessment guidance to help the assessor to determine a score. If there are questions in the assessment process about whether the assessment, management and stakeholder engagement approaches are sufficient for basic good practice, Table 2 may be of assistance.

Glossary of Terms

Definitions for terms that are commonly seen throughout the Protocol are found in the Glossary of Terms, found at the back of each of the four assessment tools, and at the back of this Background document. This glossary generally provides definitions that are not provided on the topic pages, although there may be some overlap if the definition is thought to be of general interest. For example, if there is a term whose definition is critical to a particular topic then the definition will be found on the topic page (e.g. the definition of "indigenous peoples" will be found under Assessment Guidance on the Indigenous Peoples topic page), but this is also provided in the Glossary of Terms.

HSAF Knowledge Base

The Hydropower Sustainability Assessment Forum (HSAF) developed an online HSAF Knowledge Base to capture information considered by the Forum during development of the Protocol. This website can be accessed at http://www.hydropower.org/sustainable_hydropower/HSAF.html. The HSAF Knowledge Base is a resource with a depth of information on Protocol topics and cross-cutting issues that can be accessed by those who are interested. The HSAF Knowledge Base identifies a number of the standards that were important reference points for the different topics and themes addressed in the Protocol. Important reference points have included the World Commission on Dams 2000 report, the UNEP Dams & Development Project, the IFC Performance Standards, the World Bank and other multi-lateral safeguards policies, ISO standards, and numerous UN declarations and conventions. It will provide a valuable record for future development of support material to accompany the Protocol.

Assigning Scores and Presenting Results

The Preparation, Implementation and Operation assessment tools enable development of a sustainability profile for the project under assessment. For each topic, scoring statements describe what should be exhibited by the project to address that important sustainability issue. It is recognised that different organisations may have the primary responsibility for different sustainability topics. Because it is likely that these responsibilities vary amongst countries and at project life cycle stages, no specification on organisational responsibilities is made in the Protocol scoring statements. It would be expected in the assessment reports to indicate where organisational responsibilities lie.

Scoring Levels

In the Preparation, Implementation and Operation assessment tools, each topic is scored from Level 1 to 5. The Level 3 and Level 5 statements provide meaningful and recognisable levels of performance against which the other scores are calibrated.

Level 3 describes **basic good practice** on a particular sustainability topic. Level 3 statements have been designed with the idea that projects in all contexts should be working toward such practice, even in regions with minimal resources or capacities or with projects of smaller scales and complexities. Note that the Protocol does not state that Level 3 is a standard that must be achieved; expectations on performance levels are defined by organisations that make decisions or form views based on Protocol assessments.

Level 5 describes **proven best practice** on a particular sustainability issue that is demonstrable in multiple country contexts. Level 5 statements have been designed with the idea that they are goals that are not easy to reach. However, they have been proven that they can be attained in multiple country contexts, and not only by the largest projects with the most resources at their disposal. So on all topics would be very difficult to reach, because practical decisions need to be made on priorities for corporate/project objectives and availability/allocation of resources (time, money, personnel) and effort.

On the topic pages, the Level 3 statements are provided in full, and the Level 5 statements provide what is exhibited in addition to that described in the Level 3 statement. Consequently, the Level 5 statements are meant to be read in conjunction with the Level 3 statements.

The other scoring levels are represented by standard statements which use basic good and proven best practice as reference points:

Level 1 - There are significant gaps relative to basic good practice.

Level 2 - Most relevant elements of basic good practice have been undertaken, but there is a significant gap.

Level 4 - All elements of basic good practice have been undertaken and in one or more cases exceeded, but there are one or more significant gaps in the requirements for proven best practice.

ANNEX-II: EXISTING LEGISLATION RELATED TO HYDROPOWER DEVELOPMENT

- National Policy on Land Acquisition, Compensation and Resettlement, 2006
- Hydropower Development Policy, 2001
- Land Acquisition Act, 2034 (1977)
- Land Act, 1964
- Forest Act, 1993
- Electricity Act 2049 (1992)
- Electricity Development and Management Act 2062(2005)
- Electricity Rule 2050 (1993)
- Water Resources Act, 1993
- Water Resources Regulation, 1993
- Local Self Governance Regulation, 2000
- Environment Protection Rules, 2054 (1997)
- Water Resources Regulations, 2049 (1993)
- Aquatic Animals Protection Act, 2018 (1961)
- Local Self-Governance Act, 2056 (1998)
- National Parks and Wildlife Conservation Act, 2029 (1973)
- National Trust for Nature Conservation Act, 1983 (2039 and amendments)
- Conservation Area Management Rules, 1996
- Solid Waste Management Act, 2011
- Solid Waste Management Rule (FohormailaByabsthapanNeyamawali), 2013 (2070)
- Labour Act, 1992/Regulation, 1993
- Bonus Act, 1974/ Regulation, 1983
- Companies Act, 2006
- Value Added Tax Act, 1995/ Rules, 1996
- Income Tax Act, 2002

- Banking Crime Act, 2008
- License Management Procedures, 2010
- National Forest Policy, 2055 (1998)
- National Water Resource Strategy, 2059 (2002)
- Nepal Environmental Policy and Action Plan (NEPAP), 2050 B.S. (1993)
- National Water Plan, 2062 (2005)
- National Policy on Land Acquisition, Compensation and Resettlement, 2006
- Climate Change Policy 2011
- National Environmental Impact Assessment Guidelines, 2050 (1993)
- EIA Guideline for Forestry Sector, 2052 (1995)
- A guide to Environmental Monitoring of Hydropower Projects, 2006
- Community Forestry Inventory Guidelines, 2061 (2004)
- Working Guidelines for Acquisition of Forest Land for other Development Purposes, 2063 (2006)
- Current work plan for governance and economic reform 2012
- Working Policy on construction and operation of new infrastructures in Protected Area 2065 (2008)
- Convention on Biological Diversity, (1992)
- Convention on the International Trade in Endangered Wild Fauna and Flora (CITES), (1975)
- International Labor Organization Convention 169, (1989)
- United Nations Framework Convention on Climate Change, (1992)

ANNEX–III: CONSULTATIVE MEETING



Nepal Hydropower Association

**Consultative Meeting on
Promoting Sustainable Hydropower Development in Nepal
Hotel Himalaya, Pulchowk, Lalitpur
24th December 2015**

The consultative meeting was divided into two sessions: morning session from 11.00AM to 2.00 PM and evening session from 2.00 PM to 5.00 PM. To ensure the meeting accumulates suggestions and comments from a diverse field, the stakeholders were identified accordingly: from donor agencies, hydropower companies, academic institutions, research agencies, and various ministries.

Delegations from Kathmandu University (KU), Institute of Engineering (IOE), Butwal Power Company (BPC), Individual Power Producers' Association Nepal (IPPAN), Hydroelectricity Investment and Development Company Limited (HIDCL), Asian Development Bank (ADB), The World Bank, International Finance Corporation (IFC), United States Agency for International Development (USAID) Nepal, Nepal Telecommunications Authority (NTA), International Center for Integrated Mountain Development (ICIMOD) and Nepal Banker's Association were invited to the morning session. For the evening session, delegations from Ministry of Energy, Water and Energy Commission Secretariat (WECS), Nepal Electricity Authority (NEA), Ministry of Science, Technology and Environment, Ministry of Forest and Soil Conservation, Department of Electricity Development (DOED), DOED Tariff Fixation Commission, Upper Tamakoshi Hydropower Project Limited (UTHPL), Chilime Hydropower Company Limited, Tanahu Hydropower Limited, Rahughat Hydroelectricity Project and Budi Gandaki Hydroelectric Project were invited to the evening session. Both session followed the same agenda.

Mr Arun Rajauria, General Secretary of Nepal Hydropower Association (NHA) welcomed all the guests and thanked them for attending the meeting. He briefly gave an introduction to NHA and the Hydropower Sustainability Assessment Protocol (HSAP) before leaving the floor to Mr Pratik Man Singh Pradhan. Mr Pradhan then introduced himself and his team members Mr Ganesh Prasad Khanal, Mr Pranav Acharya and Mr Prakash Paudel. He then began his presentation on the HSAP protocol and depicted how the HSAP could be an ideal sustainability assessment tool for hydropower projects in Nepal. He discussed how his team had been working to find the existing gaps between the government regulations already in place and the HSAP protocol by categorizing the topics of the HSAP into three categories: Environmental, Social and Technical facilitated by Mr Pranav Acharya, Mr Prakash Poudel and Mr Ganesh Khanal respectively. After rapid review of the HSAP protocol, the key issues identified by his team were presented to the participants.

After the presentation by Mr Pradhan, the participants were divided into three groups and the facilitators each had a 30 minute term with a group to incorporate suggestions from the group members. All the participants had their say about the different topics of the protocol and suggested how the protocol could be strengthened to make it more relevant in the context of Nepal.

After the facilitated discussions, the three facilitators, namely, Mr Khanal, Mr Acharya and Mr Paudel, gave a comprehensive speech on their key findings from the meeting. Mr ArunRajauria made the closing remarks and thanked the participants for their time and support. Both the sessions were adjourned after thereafter.

ANNEX-IV: WORKSHOP



Nepal Hydropower Association

**Half day workshop on
Promoting Sustainable Hydropower Development in Nepal
Hotel Radisson, Lazimpat, Kathmandu
27th December 2015**

Agenda of the workshop

27th December 2015

Hotel Radisson

LaziMpat, Kathmandu, Nepal

S.No.	Activity	Duration
1.	Registration/tea/coffee	2:00 PM – 2:30 PM
2.	Welcome remarks by MrBhanuPokharel, President NHA	2:30 PM – 2:35 PM
3.	Overview of the Hydropower Sustainability Assessment Protocol (HSAP) by Mr Pratik MSPradhan	2:35 PM – 3:00 PM
4.	Presentation of the findings of the consultative meetings by MrPranavAcharya, Mr Ganesh Prasad Khanal, MrPrakashPoudel and MrPratik MS Pradhan	3:00 PM – 3.30 PM
5.	Facilitated discussion by Mr Pratik MSPradhan	3:30 PM – 4:30 PM
6.	Floor discussion	4:30 PM – 5:00 PM
7.	Closing Remarks by MrSriranjanLacoul, Vice President NHA	5:00 PM – 5:15 PM
8.	Cocktail/dinner	5:15 PM – onwards

Report:

The Workshop was opened by the President of NHA, Mr BhanuPokharel, who welcomed the participants and gave a description of NHA and this study in collaboration with World Wide Fund for Nature (WWF) Nepal, before moving on to give a short introduction on the Hydropower Sustainability Assessment Protocol (HSAP). Mr Pokharel then introduced the team leader of this study, Mr Pratik Man Singh Pradhan.

Mr Pradhan then started his team's PowerPoint presentation introducing the HSAP protocol and specifying its significance. He introduced his team members: Mr Ganesh Prasad Khanal, Mr PranavAcharya and Mr PrakashPoudel. Next, Mr Pradhan moved on to provide the participants information on the scope of this study. After rapid review of the HSAP protocol, Mr Pradhan and his

team identified the key issues and categorized the topics of the protocol into three sections – Environmental, Social and Technical headed by Mr PranavAcharya, Mr PrakashPoudel and Mr Ganesh Khanal respectively. Mr Pradhan discussed how his team members had worked to find key gaps between the national regulations already in place and the HSAP protocol. Mr Pradhan then spoke about consultative meeting 24th December 2015 to discuss the understanding and use of the HSAP protocol with key stakeholders in the context of hydropower development in Nepal. He then informed on how the summary of the key findings of the consultative meeting were being disseminated via the half day workshop held today, 27th December 2015.

Mr Pradhan then left the floor for his team members to begin their presentation on the key findings from the consultative meeting. Mr PranavAcharya spoke on Environmental Topics discussing on the key gaps and making the participants aware of the gaps in our rules and regulations which might cause a hindrance to the HSAP protocol. Mr PrakashPoudel presented on key findings in the Social Topics followed by Mr Ganesh Prasad Khanal who presented on Technical Topics. Mr Pradhan then talked about his experiences from the KabeliA Hydropower Project and the use of the HSAP protocol in that project before asking the panel members to have a say on the protocol.

Mr Sher Sing Baht, Deputy Managing Director at Nepal Electricity Authority (NEA) remarked that while the protocol indeed was a ideal tool to assess the sustainability of hydropower projects, the protocol might cause a hindrance to the developers if the protocol was made mandatory. He gave examples of the hydropower plants in HadiKhola and ThopalKhola to illustrate the necessity of a good sustainability assessment tool. Although, for now, he cannot dismiss the possibility that the local developers might get into a difficult situation if the protocol is made mandatory by the government, nevertheless, he is hopeful on how the HSAP protocol could significantly benefit long term mega projects in the future.

Mr DhanaBahadurTamang, Secretary of Water and Energy Commission Secretariat (WECS) described how he felt that the Environmental Impact Assessment (EIA) covers a lot of topics covered by the HSAP. He believes that HSAP will facilitate the hydropower projects and their development rather than making the process more complicated. He further implied that the hydropower sector should be wary of one of the major hurdle: extremely slow registration process of private hydropower projects in Nepal. He compared the same registration process in China and talked about how in China, which is witnessing a boom in hydropower sector, registration process for private hydropower companies takes no more than two hours after filing the application file.

MrKhadgaBisht, President of the Independent Power Purchasers' Association Nepal (IPPAN) remarked on the necessity of an assessment tool like the HSAP protocol. However, he is concerned that if the HSAP protocol is made a government guideline, the developers might have a lot to suffer. He gave example of IPPAN's initiative to conduct capacity consensus programmes to make local residents, journalists familiar with basic hydropower elements and units which would, in some way, contribute to sustainability of a hydropower project.

Dr Rabin Shrestha from The World Bank, gave his personal views regarding the HSAP protocol. Citing the examples of the development of hydropower sector in Norway, China and Brazil, he stated how he believed that what Nepal should prioritize is to actually start building projects rather than devote a huge time to assessment and study works. He gave example from his experience that while in KabeliA Hydropower Project funded by The World Bank (WB), the WB's requirement was already a stringent and

complex process, further conducting the HSAP assessment was unnecessary. He strongly feels that HSAP could be an extra burden for hydropower projects. He suggests that the assessment tools should initially be restricted within academic institutions and only when it is certain that the tool would be beneficial, should the tool be made a requirement or guideline.

The workshop was then opened to floor discussion. Mr Bhoj Raj Regmi from Investment Board Nepal (IBN) acknowledged the background of the protocol and instated his view that while the protocol is likely to be beneficial, the participants should, nevertheless, remain wary of any problems that might arise after implementation of the protocol. Mr Subarna Das Shrestha from IPPAN talked about how he believed that if the EIA is strengthened, the HSAP could be covered wholly by the EIA. Mr Mohan RatnaShakya from NEA talked about how he felt that HSAP could be a good assessment tool. He further talked about a practice in hydropower sector which he believes is illegal- pay for environmental services and the need to look into grid connected solar with seriousness.

Mr Suman Prasad Sharma, Secretary of Ministry of Energy, talked about how the concept of sustainability changes with time that is what is sustainable now might not be sustainable in the long run and vice versa. While it is undeniable that a good practice is required to contribute to sustainability of a hydropower project, he believes, with the situation of energy crisis in hand, Nepal should also be looking into alternatives like the solar energy for the short run.

Mr Dinesh Kumar Ghimire, Director General of Department of Electricity and Development (DOED) maintained that majority issues of the HSAP protocol in various fields and stages are covered by our present guidelines. Indeed, he feels that the HSAP can be instrumental tool to assess the gaps and further present the assessments in a structured way.

The closing remarks were made by Mr Sriranjana Coull, Vice President of NHA. He emphasized the need to figure out what is preventing sustainable hydropower development in Nepal and the urgency to start addressing the problems. He thanked all the participants for providing their time and suggestions in this workshop. The workshop was then officially adjourned.

ANNEX-V: LIST OF ATTENDEES FOR THE CONSULTATIVE MEETING

24th December 2015



Nepal Hydropower Association
Consultative Meeting
on
Promoting Sustainable Hydropower Development in Nepal

24th December 2015
Hotel Himalaya, Pulchowk

Registration

S.No.	Name	Organization	Phone Number	Email Address	Signature
1	Robin Chaudhary	MCA - Environment and Social Study Dept.	9841289677	rchaudhary2015@yahoo.co.in	[Signature]
2	Jeebun Mandal	WECF	9841317758	jeebunh@pmail.com	[Signature]
3	Pranab Poudel	SEATE Consultants P. Ltd.	9841288526	pranab@telus.com	[Signature]
4	Kamal Karki	"	985460333	karkikamal@gmail.com	[Signature]
5	Mudhu P. Shrestha	DOED	9841349563	bhatuwale@yahoo.com	[Signature]
6	Sheela Bhat	NEA	9851088570	sheela@online.com.np	[Signature]
7	Arun Rajauria	NHA	9851062618	rajauria@gmail.com	[Signature]
8	Sumendra Lal Mool	NHA	9851116940	sumendra.mool@judeconsult.com.np	[Signature]
9	Shashant Dhungana	NHA	9803610571	shashant.dit57@gmail.com	[Signature]
10	Chakra Agri	NHA	9749031515	secretariat.nha@gmail.com	[Signature]
11	Ganesh Pal Kharel	BPC	9851107321	ganesh.kharel@bpc.com.np	[Signature]
12	Prakash Poudel	KEL	985167598	prakash.poudel@kel.com.np	[Signature]
13	Pratik Pradhan	BPC	9851116679	pratik.pradha@bpc.com.np	[Signature]
14	Pronav Acharya	Hydro-consult	9851124266	pronav.acharya@bpc.com.np	[Signature]



Nepal Hydropower Association
Consultative Meeting
on
Promoting Sustainable Hydropower Development in Nepal

24th December 2015
Hotel Himalaya, Pulchowk

Registration

S.No.	Name	Organization	Phone Number	Email Address	Signature
1	Dr. D. Sagar	ICIMOD	9841493527	dsagar@icimod.org	[Signature]
2	Sagar Shiwakoti	WDC	9841281264	sagarshiwakoti@hidol.org.np	[Signature]
3	Arun Rajauria	NHA	9851062613	rajauria@gmail.com	[Signature]
4	Ganesh Pal Kharel	BPC	9851107321	ganesh.kharel@bpc.com.np	[Signature]
5	Prakash Poudel	KEL	9851169578	Prakash.Poudel@kel.com.np	[Signature]
6	Pratik Pradhan	BPC	9851116679		[Signature]
7	Pronav Acharya	Hydro-consult	9851124266	pronav.acharya@bpc.com.np	[Signature]
8	Sumendra Lal Mool	NHA	9851116940	sumendra.mool@judeconsult.com.np	[Signature]
9	Wahid	ICIMOD	9851130851	swahid@icimod.org	[Signature]
10	Shashant Dhungana	NHA	9803610571	shashant.dit57@gmail.com	[Signature]
11	Rashmi K. Shrestha	ICIMOD	98410905334	rashmi.shrestha@icimod.org	[Signature]
12	Mohan R. Shrestha	NEA	9841208085		[Signature]
13	Prof. Dr. Ramachandran Maskey	KU	9851102669 9801218059 (AU)	rmaskey@ku.edu.np	[Signature]
14	Chakra Agri	NHA	98419051315	secretariat.nha@gmail.com	[Signature]

ANNEX-VI: LIST OF ATTENDEES OF THE WORKSHOP

24th December 2015



Nepal Hydropower Association
Half-day Workshop
on
Promoting Sustainable Hydropower Development in Nepal

27th December 2015
Hotel Radisson, Lazimpat

Registration

S.No.	Name	Organization	Phone Number	Email Address	Signature
1	Achyt Babu Khinire	Tarak Hydropower Limited	9751024021	ghiaachyt@yasho.com	
2	Shyamji Bhandari	" "	9856024827	shyamjib@yasho.com	
3	Sumanida M. Mool	Jade Consult (NHA)	985110400	sumanida.mool@jadeconsult.com.np	
4	Mohan Raj Pant	NHA			
5	Kumar Pandey	IPPAN	985165778	kumar.pandey@ippan.com	
6	Binu				
7	Ravi Kumar	BPC	9851126673	ravikumar.gautam@bpc.com.np	
8	Kamshanku Upadhyay	UKS/NHA	9851181452	kamshanku@uks.com.np	
9	Maha M. Khatriwal	DOED	984549563	maha.m@doed.com	
10	Bhoj Raj Regmi	IPAN	9851887665	regmi.bhojraj@ipan.com	
11	Khadga Bisht	EPAN	9802024406	khadga.bisht@epan.com	
12	Udayan Shrestha	NEA	?	!	
13	Ramesh Singh	T.U.	9851047526		
14	Y.P. Pandey	Manthe	984153809		

15	Uttar Shrestha	BPC	985111245	uks.shrestha@bpc.com	
16	Subarna D. Shrestha	Saarna/IPPAN	9857045432	subarna@saarnahydro.com	
17	Felix P. Landel	" "	9802001012	felix@saarnahydro.com	
18	Uttar Amatya	BPC	9851146667	uttaramatya@bpc.com	
19	Vishnu Bdr. Singh	NHA	9851021809	vbs@uk.net.np	
20	Melando Manandhar	NEP	985707666	mehando.manandhar@nep.com	
21	Deepak Rawar	HDCL	9851084885	deepak@hidco.org.np	
22	Chakra Bdr. Singh				
23	Shashwat, Dhungana				
24	Mansij Raj Bhandari				
25					



Nepal Hydropower Association
Half-day Workshop
on

Promoting Sustainable Hydropower Development in Nepal

27th December 2015
Hotel Radisson, Lazimpat

Registration

S.No.	Name	Organization	Phone Number	Email Address	Signature
1	Bhanu Pokharel	NHA	9851059557		
2	Sriranjan Jaiswal	NHA	9851023257	locals@gmail.com	
3	Prasanna Pujapati	BKPC	9851045789	npujapati62@gmail.com	
4	Shree Sita Shrestha	WEA	9851038560	shrestha@whe.com.np	
5	Ganesh Prasad Khanal	BPC	9851107391	ganesh.khanal@bpc.com.np	
6	Pranav Acharya	Hydro-consult	9851124260	pranav.acharya@hydroconsult.com.np	
7	Prakash Poudel	Kabali Energy Limited	9851169578	prakash.poudel@kbl.com	
8	Hari Pandit	IOE, Patanchowk Campus	9851123430	hppioe@gmail.com	
9	Rabin Shrestha	WB	980050102	rshrestha@worldbank.org	
10	Mani Raj Dahal	NHA	985105244	coepit@gmail.com	
11	Shobhit Shrivastava	NHA	9851061757	shobhit.shrivastava@gmail.com	
12	Prema Pradhan	BK	985111661		
13	Arun Rajaram	NHA/HIDCL	9851062613	rajarama@gmail.com	
14	Uma Manandhar	WWF	985138080	uma.manandhar@wwf.org.np	

15	Shri/Endra Guragain - IFFAN		9851029720	guragain.shri/endera@gmail.com	
16	Rohan B. Tamang	WECS-Secretary			
17	Uttar K. Shrestha	BPC	9851111245	uks.shrestha@gmail.com	
18	Tuk Anand Poudel	Sanima	9802001012	tuk@sanimahydro.com	
19	Subarna D. Shrestha	Sanima/IFFAN	9851049432	subarna@sanimahydro.com	
20	Ramesh Kumar Maskey	Katmandu University	9851102669	rmaskey@ku.edu.np	
21	Dinesh Kumar Ghimire	DOED	9851181619	dghimire@hotmail.com	
22	Suman Prasad Sharma	Secretary Ministry of Energy	9851059940	spsharma@moep.gov.np	
23	Dhan Bahadur Tamang	Secretary WECS	9851059531	damdhana@yahoo.com	

ANNEX-VII: PHOTOGRAPHS FROM THE CONSULTATIVE MEETINGS

24th December 2015



Photo1:MrArunRajauria, General Secretary of NHA welcoming the participants in the consultative meeting.



Photo 2: From left to right: MrPratik M S Pradhan, Mr Ganesh P Khanal, MrPrakashPoudel and MrPranavAcharya before starting the facilitated discussions.



Photo 3: The participants at the consultative meeting.



Photo 4: Pratik MS Pradhan and MrPranavAcharya having a facilitated discussion with participants of the meeting.

ANNEX VIII: PICTURES FROM THE HALF DAY WORKSHOP

27th December 2015



Photo 5: Mr Bhanu Pokharel, President of NHA welcoming the participants in the half day workshop on “Promoting Sustainable Hydropower Development in Nepal”.



Photo 6: Participants listening to the presentation on HSAP and its gaps.



Photo 7: Mr Pratik MSPradhan introducing the HSAP protocol and discussing key findings of the consultative meeting.



Photo 8: Panel members expressing their views on the HSAP protocol. From left to right: Mr Pratik MS Pradhan, Mr Sher Singh Bhat, Mr Dinesh Kumar Ghimire, Mr Suman Prasad Sharma, Mr Dhana Bahadur Tamang, Mr Khadga Bahadur Bisht, Dr Rabin Shrestha and Mr. Bhanu Pokharel.