



Hydropower Sustainability Assessment Protocol

Official Assessment

Kabeli Energy Ltd

Kabeli-A

Nepal

Project Stage: Preparation

Assessment Date: 31/08/2014 to 05/09/2014



Final

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Project size: 37.6 MW

Cover page photos: *To the left:* The Kabeli river with road bridge, foot bridge, temple and cremation site as well as the access road to the intake in the background. *To the right:* Rice terraces in the Kabeli area.

Acronyms

Acronym	Full Text
AEMP	Aquatic Ecology Management Plan
AIDS	Acquired Immuno-Deficiency Syndrome
BOD	Biological Oxygen Demand
BOOT	Build, Own, Operate and Transfer (a project-development model)
BPC	Butwal Power Company (majority-owners of KEL, the project-development company)
CIA	Cumulative Impact Assessment
CIDA	Canadian International Development Agency
COD	Chemical Oxygen Demand
DDC	District Development Committee
DO	Dissolved Oxygen
DoED	Department of Electricity Development
Dalit	According to SIA for the Kabeli project, Dalit is a self-designation for a group of people traditionally regarded as “untouchables”.
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
EmRMP	Employer’s Risk Management Plan
EPP	Emergency Preparedness Plan
FIDIC	International Federation of Consulting Engineers
FIRR	Financial Internal Rate of Return
FSL	Full Supply Level
GHG	Green-House Gases
GoN	Government of Nepal
GRO	Grievance Redress Officer
GWh	GigaWatt-hour
ha	hectare (10 000 m ²)
HCEL	Hydro-Consult Engineering Ltd
HIDCL	Hydroelectricity Investment & Development Company Limited (A Government of Nepal on-lending facility)
HIV	Human Immunodeficiency Virus
IDA	International Development Association (the World Bank’s soft-loan institution, aiming at helping the world’s poorest countries)
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IHA	International Hydropower Association

<i>ILO</i>	<i>International Labour Organization</i>
<i>IVCDP</i>	<i>Indigenous and Vulnerable Community Development Plan</i>
<i>IWRM</i>	<i>Integrated Water Resources Management</i>
<i>JICA</i>	<i>Japan International Cooperation Agency</i>
<i>KACCC</i>	<i>Kabeli-A Cooperation and Concern Committee</i>
<i>KAECDU</i>	<i>Kabeli-A Environment and Community Development Unit</i>
<i>KAHEP</i>	<i>Kabeli-A Hydro-Electric Project</i>
<i>KCA</i>	<i>Kanchanjunga Conservation Area</i>
<i>KEL</i>	<i>Kabeli Energy Ltd</i>
<i>Km</i>	<i>Kilometre</i>
<i>KTLP</i>	<i>Kabeli Transmission Line Project</i>
<i>kV</i>	<i>kilovolt (unit tension, on e.g. a power line)</i>
<i>m</i>	<i>Metre</i>
<i>m.a.s.l.</i>	<i>metres above (mean) sea level</i>
<i>mg</i>	<i>milligrams (equivalent to 10⁻⁶ kg)</i>
<i>MoE</i>	<i>Ministry of Energy</i>
<i>MOL</i>	<i>Minimum Operating Level</i>
<i>MoSTE</i>	<i>Ministry of Science, Technology and Environment</i>
<i>MW</i>	<i>Megawatt</i>
<i>NEA</i>	<i>Nepal Electricity Authority</i>
<i>NGO</i>	<i>Non-Governmental Organization</i>
<i>NPV</i>	<i>Net Present Value</i>
<i>NRS</i>	<i>Nepali Rupees</i>
<i>NTFP</i>	<i>Non-Timber Forest Products</i>
<i>OHS</i>	<i>Occupational Health and Safety</i>
<i>OP</i>	<i>Operational Policy (of the World Bank in this document)</i>
<i>PAD</i>	<i>Project Appraisal Document</i>
<i>PAP</i>	<i>Project-Affected People</i>
<i>PCPD</i>	<i>Public Consultation, Participation and Disclosure</i>
<i>PDA</i>	<i>Project Development Agreement</i>
<i>PMF</i>	<i>Probable Maximum Flood</i>
<i>PoE</i>	<i>Panel of Experts</i>
<i>PPA</i>	<i>Power-Purchase Agreement</i>
<i>PROR</i>	<i>Peaking Run-Of-River</i>
<i>RCIA</i>	<i>Rapid Cumulative Impact Assessment</i>
<i>RCLAP</i>	<i>Resettlement Compensation and Livelihood Assistance Plan</i>
<i>RPF</i>	<i>Resettlement Policy Framework</i>
<i>SA</i>	<i>Social Assessment (synonym of SIA, which is the preferred term throughout this document)</i>

<i>SAP</i>	<i>Social Action Plan</i>
<i>SCADA</i>	<i>Supervisory Control And Data Acquisition</i>
<i>SIA</i>	<i>Social Impact Assessment (synonym of SA) and the term preferred throughout this document</i>
<i>STD</i>	<i>Sexually Transmitted Disease</i>
<i>TCE</i>	<i>Tata Consulting Engineers Ltd</i>
<i>USc</i>	<i>United States cents</i>
<i>USD</i>	<i>United States Dollar</i>
<i>VDC</i>	<i>Village Development Committee</i>
<i>WB</i>	<i>World Bank</i>
<i>WBG</i>	<i>World Bank Group</i>
<i>WECS</i>	<i>Water and Energy Commission Secretariat (of the Government of Nepal)</i>

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Executive Summary

This report presents an Official Assessment conducted in accordance with the Preparation Tool of the Hydropower Sustainability Assessment Protocol. The assessment is conducted for the 37.6 MW Kabeli-A hydropower project, being planned for construction on the Kabeli River in the extreme east of Nepal. The Kabeli River is a left-bank tributary of the Tamor River, which in turn flows into the Koshi River which crosses the border with India and flows into the Ganges. The project developer is Kabeli Energy Ltd (KEL), which was established in 2010 as a special-purpose company for the development of the Kabeli-A project on a BOOT model, for 35 years. A majority of the shares in KEL (53.6%) are owned by Butwal Power Company (BPC) which, therefore, has a major influence over KEL's operations and governance. KEL presently has around 20 employees but will grow to somewhere between 600 and 800 during the construction phase of the project.

The assessment focuses on the sustainability performance of the Kabeli-A project specifically, but for several Protocol topics, the corporate-level performance of both KEL and BPC is relevant. The Preparation tool contains 23 topics. One topic is considered Not Relevant for the assessment of Kabeli-A. This is topic P-14, Resettlement, as the project will not cause any physical displacement. All other 22 topics are fully assessed and reported in this report. Appendix A show the written support for this Official Assessment by KEL and Appendices B and C contain information on the interviews conducted and the documents reviewed. The Assessment Team, together with KEL and BPC staff, have all done their best to ascertain the accuracy of the information provided in those appendices. Appendix D contains the visual, photographic evidence collected. Triangulation of evidence – visual, verbal and documentary – is an important requirement for the evidence-collection and assessment processes. To this end, particular attention was paid to interviews with project-affected communities, local authorities and regulatory agencies.

Follow-up evidence was requested by, and provided to, the assessors in the weeks following the assessment. This final report was provided to KEL on the 6th of December, 2014.

The project generally demonstrates very high standards in its sustainability management, with all topics scoring at the level of basic good practice or higher. Project development has benefitted greatly from the support of the IFC and the World Bank. In applying the IFC's Performance Standards on Environmental and Social Sustainability and the Safeguards of the World Bank, the project has been planned according to international standards for all sustainability aspects, social, economic, environmental as well as in terms of safety and technical quality. An impressive set of management plans are under development, and if these are completed in time for construction, and their compliance/conformance, monitoring and follow-up is implemented in a satisfactory manner, the project will likely meet at least basic good practice for all sustainability topics of the Implementation and Operation tools of the Hydropower Sustainability Assessment Protocol, throughout its construction and operation.

As stated above, the Kabeli-A project meets or exceeds basic good practice (a score of 3) for all the 22 topics assessed. The project performs at the level of basic good practice, but with two or more significant gaps at the level of proven best practice (a score of 3), for five topics: P-1 (Communications and Consultation); P-2 (Governance); P-9 (Financial Viability); P-11 (Economic Viability); and P-13 (Project-Affected Communities). The project performs with one significant gap at the level of proven best practice (a score of 4), for six topics: P-5 (Environmental and Social Impact Assessment and Management); P-7 (Hydrological Resource); P-8 (Infrastructure Safety); P-12 (Procurement); P-15 (Indigenous Peoples) and P-19 (Biodiversity and Invasive Species). The Kabeli-A project meets proven best practice (a score of 5) on the remaining eleven topics: P-3 (Demonstrated Need and Strategic Fit); P-4 (Siting and Design); P-6 (Integrated Project Management); P-10 (Project Benefits); P-16 (Labour and Working Conditions); P-17 (Cultural Heritage); P-18 (Public Health); P-20 (Erosion and Sedimentation); P-21 (Water Quality); P-22 (Reservoir Planning); and P-23 (Downstream Flow Regimes).

The spider diagram on the next page summarizes the Kabeli-A assessment in numbers. Detailed comments for each topic follow in sections 1-23.

The significant gaps that were identified by the assessment are listed in the table on page x, below. An important aspect of a Protocol Assessment is that significant gaps identified by the assessors are not double-counted. As such, a significant gap might be identified against the criteria in the scoring statements for several aspects of the same topic, or for several topics. It will be identified and noted for each place it occurs, but only be counted against the score in one place, unless warranted by the context or specific demands of the scoring criteria. The table on page x indicates whether or not they are counted towards the score – asterisk-marked gaps do not affect the score. Six of the 24 gaps identified against the proven best practice criteria do, hence, not affect the score of the topic for which they are identified.

The reader who requires additional explanations of the Protocol, the topics included and the scoring approach, is referred to www.hydrosustainability.org, where the “Preparation Assessment Tool” and the “Background Document” as well as other documentation on the Protocol can be downloaded.

Sustainability profile

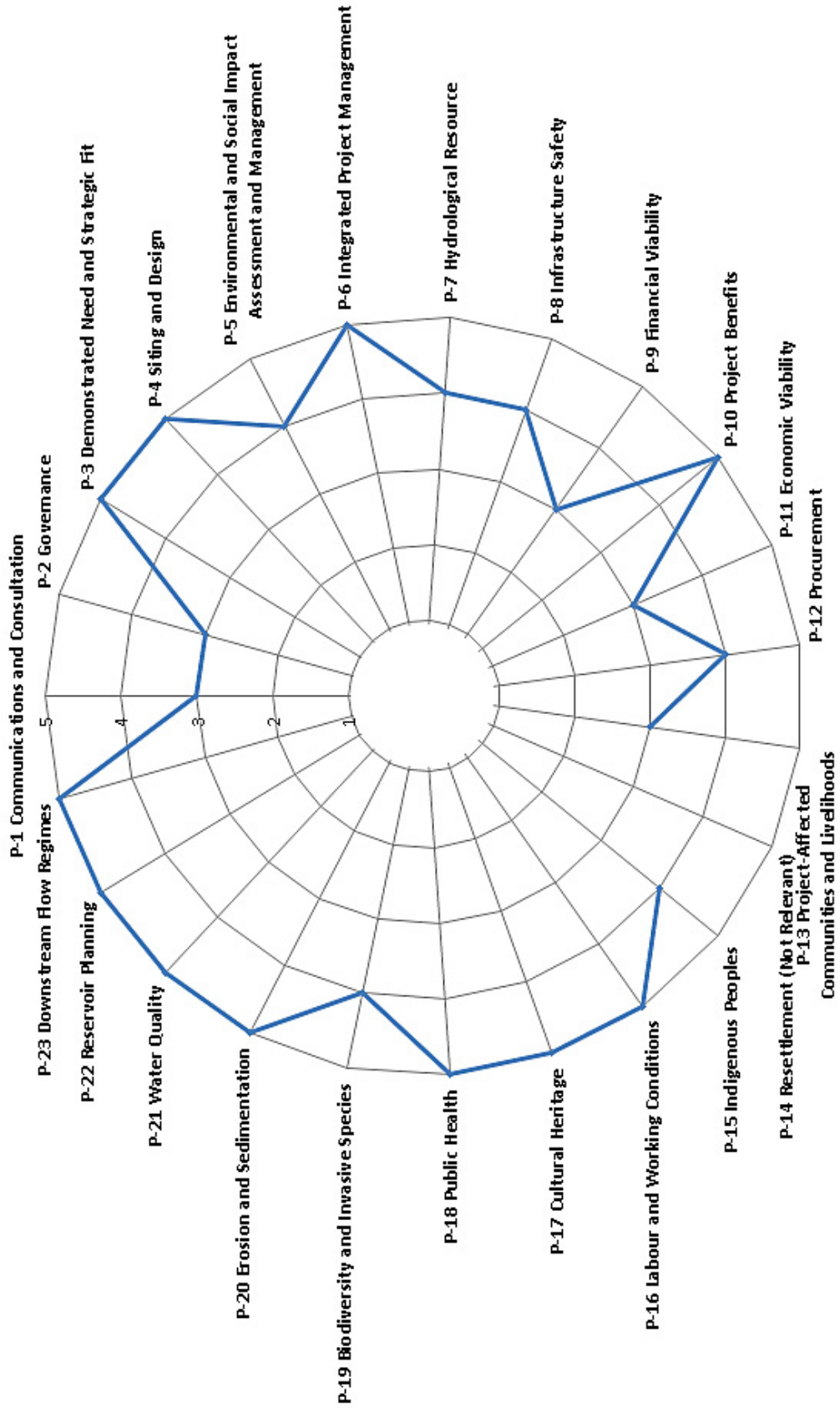


Table of Significant Gaps

	Level 3: Significant Gaps against Basic Good Practice	Level 5: Significant Gaps against Proven Best Practice
Assessment	No significant gaps	<p>P-2: The assessment of governance issues relating to KEL has significant room for improvement.</p> <p>P-5: The SIA baseline is too limited in its scope and range.</p> <p>P-7: Uncertainties and risks not extensively evaluated.</p> <p>P-9: Scenario testing and sensitivity analysis were not extensive.</p> <p>P-11: No broad considerations in the assessment.</p> <p>P-13: The SIA baseline is too limited in its scope and range.*</p> <p>P-15: Assessment and characterisation of indigenous people do not take broad considerations into account.</p>
Management	No significant gaps	<p>P-1: Lack of documentation of the grievance mechanism.</p> <p>P-2: Contractors will not be required to have consistent policies with BPC/KEL.</p> <p>P-9: The financial plan lacks well-considered contingencies for socio- environmental plans.</p> <p>P-12: Sustainability and anti-corruption criteria are not specified in the pre-qualification screening.</p> <p>P-13: The lack of clearly-defined eligibility for the RCLAP programmes</p>
Stakeholder Engagement	No significant gaps	<p>P-1: Limited consultation with women’s groups after initial studies.</p> <p>P-2: No assessment of areas of sustainability with high interest to stakeholders.</p> <p>P-11: The full viability analysis is not disclosed.</p> <p>P-13: Limited consultation with women’s groups after initial studies.*</p>
Stakeholder Support	No significant gaps	No significant gaps
Conformance/ Compliance	No significant gaps	<p>P-1: Limited consultation with women’s groups after initial studies*.</p>
Outcomes	No significant gaps	<p>P-2: BPC’s governance policy is not transferred to KAHEP.</p> <p>P-8: Plans do not address safety issues beyond those caused by the project.</p> <p>P-9: Scenario testing and sensitivity analysis were not extensive.*</p> <p>P-11: No broad considerations in the assessment has implications for proven benefit-cost ratio.*</p> <p>P-13: Uncertainties regarding the long-term self-sufficiency of some groups.</p> <p>P-15: Uncertainties regarding the long-term self-sufficiency of some groups.*</p> <p>P-19: No enhancements to pre-project conditions or contributions to issues beyond the project’s impacts.</p>

*Repeated gap, is not double-counted against the score.

Introduction

This report presents the findings of an assessment of the Kabeli-A Hydro-Electric Project (KAHEP), using the Preparation tool of the Hydropower Sustainability Assessment Protocol. The KAHEP is a 37.6 MW project being planned on the Kabeli River in eastern Nepal.

The Hydropower Sustainability Assessment Protocol

The Hydropower Sustainability Assessment Protocol (“the Protocol”) is a framework to assess the performance of hydropower projects according to a defined set of sustainability topics, encompassing environmental, social, technical, and financial issues.

Developed by the International Hydropower Association (IHA) in partnership with a range of government, civil society and private sector stakeholders, the Protocol is a product of intensive and transparent dialogue concerning the selection of sustainability topics and the definition of good and best practice in each of these topics. Important reference documents that informed the development of the Protocol include the World Bank safeguards policies, the Performance Standards of the International Finance Corporation, and the report of the World Commission on Dams. To reflect the different stages of hydropower development, the Protocol includes four assessment tools that are designed to be used separately, corresponding to the Early Stage, and Preparation, Implementation and Operation stages of a project.

Applying the Protocol delivers an evidence-based assessment of performance in each topic, with a set of scores providing an indication of performance in relation to basic good practice and proven best practice. The scoring system is as follows:

- 5 Meets basic good practice and proven best practice;
- 4 Meets basic good practice with one significant gap against proven best practice;
- 3 Meets basic good practice with more than one significant gap against proven best practice;
- 2 One significant gap against basic good practice;
- 1 More than one significant gap against basic good practice.

Assessments rely on objective evidence to support a score for each topic that is factual, reproducible, objective and verifiable. Key attributes of the Protocol are: (i) global applicability, i.e. it can be used on all types and sizes of hydropower projects, anywhere in the world; and (ii) consistency, i.e. the consistency of its application is carefully governed by a system of quality control encompassing accredited assessors, terms and conditions for use, and the Protocol Council.¹

Scoring is an essential feature of the Protocol, providing an easily communicated and replicable assessment of the project’s strengths, weaknesses and opportunities. The scoring system has been devised to ensure that a Protocol Assessment cannot provide an overall “pass” or “fail” mark for a project, nor can it be used to “certify” a project as sustainable. The Protocol provides an effective mechanism to continuously improve sustainability performance because results identify gaps that can be addressed, and the findings provide a consistent basis for dialogue with stakeholders.

¹ Full details of the Protocol and its governance are available on www.hydr sustainability.org.

Assessment Objectives

- Continue building on the established relationship between project stakeholders and project developer;
- Identify potential gaps in the existing planning documents to inform the developer and decision makers about possible areas for improvement;
- Build employee capacity;
- Demonstrate project sustainability to the stakeholders;
- Create a reference document for future planning;
- Improve cost optimization - balance investment in sustainability over all topics;
- Gain international recognition for the KAHEP project.

Project Description

The KAHEP will be developed by Kabeli Energy Ltd (KEL), a majority-owned subsidiary of Butwal Power Company (BPC). The project is located about 800 km east of Kathmandu. The project utilizes a 15-km long loop of the Kabeli River formed with the Tamor River (see figure 1 below). At completion, the project is expected to generate an average energy of 206 GWh per year. The project is a peaking run-of-river scheme.

The main components of the project include: a 14.3 m high and 60 m long dam creating a live storage of 335 000 m³; intake and settling basin; a tunnel (4 327 m long, 5.65 m diameter); and a power-house with a design discharge of 37.73 m³/sec and with a tailrace discharging directly into the Tamor River. The access road for the dam and intake is about 7.5 km, and the access road for the powerhouse is about 16 km. Other project facilities are the camps for engineers, contractors, and labourers; quarry; construction power, aggregate crushing, storage yards, batching plants and mechanical yards; spoil disposal sites, etc. All of these facilities will be located close to the dam/intake and powerhouse sites. A total of 47.71 ha of land will be required for the project, out of which 22.50 ha will be permanently required while the remaining 25.21 ha will only be required during the construction period. The project will take 4 years to construct and it is expected to be go into commercial operational in 2018.

The project is a peaking run-of-river (PROR) type with a proposed installed capacity of 37.6 MW. The diversion dam with provisions for short-term storage will be constructed 2.5 km upstream of Kabeli Bazaar at the Dhuseni village of Amarpur Village Development Committee (VDC) on the left bank, and Khudurke Ban of Thechambu VDC on the right bank. The intake will be situated on the left bank, and water will be diverted to the powerhouse, located on the left bank of the Tamor River close to Pinase village, via the underground settling basin and the 4 327-metre long headrace tunnel. The salient features of the project are presented in Table 1 below.

Table 1. Salient Features of the KAHEP.

Items	Description
Location	Amarpur and Panchami VDCs of Panchthar District and Thechambu of Taplejung District
Type of development	Peaking run-of-river
Catchment area at intake	862 km ²
100-year flood (Q ₁₀₀)	1 860 m ³ /s
1000-year flood (Q ₁₀₀₀)	2 650 m ³ /s
Mean flow	61.40 m ³ /s
Type of dam	Barrage with 4 radial gates
Full supply level (FSL)	577.3 m.a.s.l.

Live storage capacity of intake pond	335 000 m ³
Crest elevation of dam	561.0 m.a.s.l.
Gate Size	10.0 m wide, 9.0 m high
Diversion flood (20-year dry-season flow) during construction	230 m ³ /s
Coffer dams	200 m (earth-fill dams and stone masonry walls)
Approach tunnels from intake to settling basin	72.8 m
Headrace tunnel	4326.8 m, inverted D-shaped; shotcrete-lined and concrete-lined with an internal finished diameter of 5.65 m
Surge Shaft	68.2 m, 10-metre diameter
Penstock	3.55-metre diameter, 288 metres long (plus 2 x 20 metres bifurcation just above the powerhouse) penstocks.
Powerhouse	Semi-underground, 34.8 m X 18.6 m X 31.8 m
Tail-water level	458.5 m.a.s.l.
Tailrace	93.1 m
Turbine	2 Vertical-axis Francis, 18.8 MW each with a rated speed of 428.6 rpm
Gross head	118.8 m
Rated net head	112.6 m
Design discharge	37.73 m ³ /s
Installed capacity	37.6 MW
Annual estimated energy, excluding 6% outages	206 GWh
Transmission line	132 kV, 85 km
Access roads	7.5 km from Dubichaur at Mechi Highway to the intake and 15 km from Bhanu Chowk at Mechi Highway to the powerhouse.

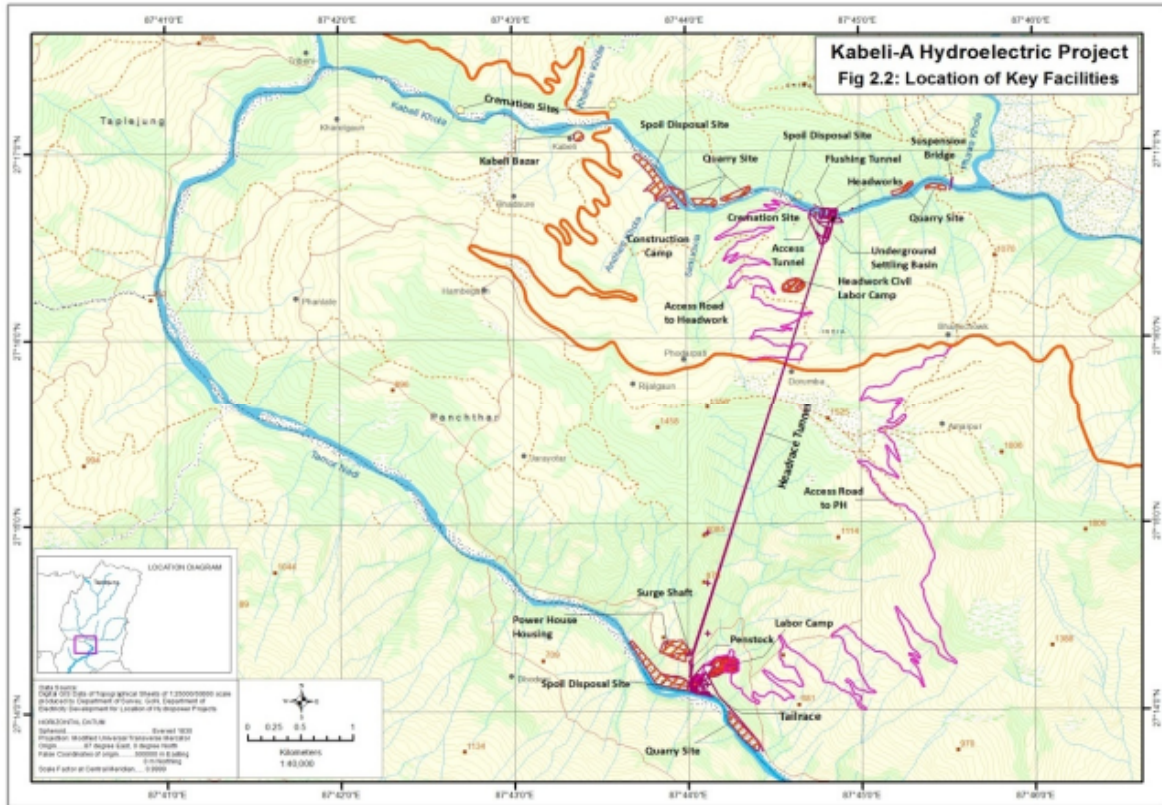


Figure 1. Location of Key Project Structures (the small-scale insert shows the north-easternmost corner of Nepal).

The power from the KAHEP will be evacuated to the national grid by the Kabela Corridor 132 kV Transmission Line, which is presently under construction, with funding from International Development Association (IDA). Hence the socio-environmental assessment and management of that transmission line is also conducted and planned with the application of the World Bank's Safeguards. Since the transmission line will serve many other generation projects planned for the so called Kabela corridor, it is considered as outside of this assessment of the KAHEP.

Project-specific environmental-assessment studies were undertaken from April 2010 through August 2011. These studies resulted in the first Initial Environmental Examination (IEE)² report as per Nepal's environmental legislation, approved by the Ministry of Energy, Government of Nepal (GoN) on the 13th of November, 2011. The project has been classified by the World Bank Group (WBG) as a "Category A" project. Therefore, a project-specific Environmental Impact Assessment (EIA) was prepared in August 2011 within the framework of the World Bank Safeguard Policies and International Finance Corporation (IFC) Policy and Performance Standards on Environmental and Social Sustainability. A Social Assessment (SA) was conducted during 2010 and 2011. On the basis of the SA, various social interventions were designed in line with GoN and WBG policies and performance standards related to Involuntary Resettlement, Indigenous Peoples, and Gender. These include a Resettlement Compensation and Livelihood Assistance Plan (RCLAP), Indigenous and Vulnerable Community Development Plan (IVCDP), Resettlement Policy Framework (RPF), Gender Action Plan, Public Consultations, as well as benefit-sharing mechanisms. These are contained in the Social Action Plan (SAP). The SAP goes beyond just mitigation of adverse impacts, and includes measures to support and promote sustainable socio-economic development in

² Initial Environmental Examination (IEE) is used in Nepal legislation for a limited Environmental Assessment. Local legislation requires a full scale EIA for a hydropower project larger than 50 MW, a project lying within officially declared protected areas, or a project requiring clearance of more than 5 ha of forest land. The Ministry of Energy (MoE) has the authority to approve IEEs while it is the Ministry of Science, Technology and Environment (MoSTE) which has the authority to approve hydropower-project EIAs.

the project areas. These measures include: income-generating programmes; vocational-skills training; and provision of, and improvement in, basic community infrastructure such as drinking water, health services, schools and roads. A major measure, responding to requests from the local communities, is to provide grid-electricity to the project-affected VDCs under the ongoing Kabeli Transmission Line Project (KTLP), managed by Nepal Electricity Authority (NEA). The project will create employment opportunities for the local population during its construction period and vocational training schemes will be designed to prepare people for these employment opportunities.

Additional studies were conducted in 2011 and 2013 to obtain local and international experts' opinion on the adequacy of the downstream ecological flow in the reduced-flow stretch of Kabeli River and to identify potential risks of fish entrapment at the head works and the impacts related to fluctuating daily flow during peak operation downstream of the tailrace. Also, additional consultations were carried out in the project area to check and confirm the findings and conclusions of the SA, particularly expectations and broad support from local communities, including vulnerable groups potentially affected by the project, namely women, Dalits (or "untouchables" – those who are religiously, culturally, socially, economically and historically oppressed and excluded) and Indigenous Peoples. The EIA, Environmental Management Plan (EMP), SIA and SAP were updated in February 2012, and in April, July and October of 2013 to incorporate information from the various studies, field surveys and consultations completed to date.

As per WBG procedures, the project sponsors have engaged a Panel of Experts (PoE) to review technical (dam safety and civil works, underground works and sediment transport) aspects as well as environmental and social safeguards, including the cumulative impacts of the project.

Assessment Process

This assessment has been conducted using the Preparation Protocol, which contains 23 individual topics.

This is an official assessment. The assessment-team members are accredited by the Protocol Governance Committee of the Hydropower Sustainability Assessment Protocol, and the assessment was conducted with the full support of KEL and its majority owners Butwal Power Company, as demonstrated by their support, see Appendix A.

Topic P-14, Resettlement, has been determined Not Relevant to this assessment, as there will be no physical displacement of people as a result of the project. This leaves 22 topics that have been assessed and are reported in detail in sections 1-13 and 15-23 of this document.

In accordance with the Protocol, we assess **the Project**, and not its owners, in order to capture all aspects of the project's sustainability performance properly, whether a certain responsibility rests with the owners, the financiers, the management or with external actors. However, in the case of the KAHEP, KEL was created as a special-purpose vehicle for developing and operating the project, making the distinction quite difficult to make at times.

An important general consideration for this assessment is that it was conducted quite early in the preparation phase. Hence several of the actions/processes that would respond to sustainability criteria in the Preparation tool of the Protocol are not yet met, sometimes not even initiated yet, due to the normal planning sequence of a hydropower project. In such cases, and when the assessors have found evidence that the preconditions that would ensure that these actions/processes will be implemented in a timely fashion are in place, these conditions have not been considered gaps against the criteria but would clearly develop into gaps if not addressed by the start of construction.

Cross-cutting issues are assessed in accordance with the instructions on pages 23-25 of the Hydropower Sustainability Assessment Protocol. Important cross-cutting issues in the Kabeli-A assessment are: Human Rights (mainly covered in P-5, P-13, P-15 and P-16); Climate Change (P-7); Corruption (P-2 and P-12); Gender (P-1, P-5, P-13, and P-16); Grievance Mechanism (P-1, P-2, P-13 and P-15); Livelihoods (P-5, P-10, P-13, P-15 and P-23);

IWRM (P-3, P-4, P-7 and P-23); Transboundary Issues (P-23) and Transparency (P-2, P-3, P-5, P-10, P-11, P-12, P-13, P-15 and P-23).

A Draft Report was delivered to KEL on the 2nd of November, 2014. This Final Report, including editorial changes prompted by KEL's comments on the Draft Report, was delivered to KEL on the 6th of December, 2014.

Assessment Experience

The assessment was very well organized by Prakash Poudel of KEL (the Single Point of Contact), with the assistance of his Local Support Team, consisting of Rabindra Hamal, Dak Prasad Poudel, Krishna Bahadur Poudel and Nama Raj Thapa. They assembled the documentary evidence and organized interviews with internal and external stakeholders. The need for interpretation in most of the interviews in the field was resolved with the use of a capable interpreter, Bala Ram Lamichhane, while interviews in Kathmandu were generally conducted in English.

The sharing of documentary evidence has been problem-free, utilising an Internet-based file-sharing site.

It is necessary to comment on one aspect of semantics in many of the KAHEP documents. In relation to livelihoods, this assessment has taken the KAHEP documents' terminology of "restore and improve livelihoods", to mean restoring and improving the capabilities, assets and activities required for project-affected communities' livelihoods. However, the intent of KAHEP is additionally interpreted as: to ensure that incomes and living standards do not fall below the pre-project baseline level in the short term, by providing immediate support if necessary, and we have, therefore, interpreted "restore" to mean "maintain" in this assessment.

The Assessment Team would like to thank all of the KEL and BPC project staff involved in the assessment for their friendly and efficient assistance to the team during the assessment process. We would also like to thank all the external interviewees, in the Kabela area, in Kathmandu and elsewhere, for providing their time and thoughts as well as assisting the assessment team with evidence, both in documentary and in verbal form.

The KAHEP is staffed and managed by a dedicated group of people – the strong stakeholder relations and the commitment to high standards in socio-environmental management are impressive.

Layout of this Report

This report consists of twenty-three sections numbered in direct correspondence with the twenty-three topics of the Protocol's Preparation tool. Four appendices are provided, including the written letter of support of the project developer (required for an official Protocol assessment), and detailing the items of verbal, documentary and visual evidence referred to under each topic. Topic P-14, Resettlement, is "Not Relevant" in this assessment, as the KAHEP will not cause any physical displacement of people.

For each topic, findings are provided according to the criteria used in the Protocol's methodology: Assessment, Management, Stakeholder Engagement, Stakeholder Support, Conformance/Compliance, and Outcomes. Findings are presented against a statement of "basic good practice" and a statement of "proven best practice" for each, with a "Yes/No" indication of whether the scoring statement is met. A summary of the significant gaps against the scoring statement, the topic score and a brief summary are presented at the close of each topic section.

The reader who requires additional explanations of the Protocol and the scoring approach is referred to www.hydrosustainability.org, where the "Background Document" to the Protocol can be downloaded.

1 Communications and Consultation (P-1)

This topic addresses the identification and engagement with project stakeholders, both within the company as well as between the company and external stakeholders (e.g. affected communities, governments, key institutions, partners, contractors, catchment residents, etc.). The intent is that 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.

1.1 Background Information

This topic addresses the overall assessment, management and outcomes of communications and consultation by the project. As a World Bank-funded project, the project's environmental and social assessments comply with the World Bank Safeguard Policy for Environmental Assessment (OP 4.01), and the International Finance Corporation's (IFC) Performance Standard 1 Assessment and Management of Environmental and Social Risks and Impacts. The project consultations have been and will continue to be conducted based on the concepts of free, prior and informed stakeholder engagement. Other topics assess stakeholder engagement in relation to specific issues, for example issues of communication with ethnic minorities are addressed under Topic P-15, Indigenous Peoples.

For uniformity throughout the report, the term SIA will be used for the Social (Impact) Assessment, even though the term SA is commonly used in documentation for the Kabeli-A Hydro-Electric Project (KAHEP).

1.2 Detailed Topic Evaluation

1.2.1 Assessment

Analysis against basic good practice

Scoring statement: *Stakeholder mapping has been undertaken to identify and analyse stakeholders, to establish those that are directly affected, and to establish communication requirements and priorities, with no significant gaps.*

Stakeholder mapping and consultations were undertaken at several stages to define the communication and consultation requirements necessary for the project studies, including EIA scoping (2010), Social Impact Assessment (SIA) and Social Action Plan (SAP) (2011), as well as the SIA/SAP update (2013).

Stakeholder mapping has identified the following groups as stakeholders that are directly-affected: households within affected villages that will be economically displaced due to loss of land or natural resources (note there will be no physical displacement); other households and businesses in the project area that may be affected by project activities including users of cremation sites downstream of the dam site; representatives of community-based organisations e.g. the Kabeli-A Cooperation Concern Committee (KACCC), Road Users Group, Community Forest Users Group; local government bodies such as the Village Development Committee (VDC) and District Development Committee (DDC) with jurisdiction over the areas affected; government agencies at the district, regional and national levels with responsibilities for specific functions e.g. Department of Local Infrastructure Development and Agriculture Roads; Kabeli Energy Ltd (KEL) employees, workers and contractors; Butwal Power Company (BPC); the upstream-located Kabeli-B project; the World Bank and the IFC.

Project-affected communities include: 13 households and 112 people in Amarpur Village Development Committees (VDC) of Panchthar District, affected by project land acquisition; approximately 21 100 people in Amarpur and Panchami VDCs of Panchthar District, Thechambu and Nangkholyang VDCs of Taplejung Districts, affected by other project socio-economic and cultural impacts. Among them, Amarpur will be most affected,

since it is located nearest to the main construction sites. Both project districts have limited transportation and electricity facilities, and a total population of approximately 336 000.

Other stakeholders include: civil society; consultants involved in the design and preparation of the project; media, NGOs and other interested parties.

The project's social studies established a socio-economic baseline and identified relevant stakeholders. More detailed baseline studies, surveys down to the individual household, and consultations and negotiations have been and will be conducted under various SAP programmes. For example, a socio-economic baseline survey of indigenous and vulnerable households is established to inform the preparation of the Indigenous and Vulnerable Community Development Plan (IVCDP). At a later stage, a detailed baseline of targeted households will be established prior to implementation of the IVCDP. The SAP prescribes four rounds of communication and consultation for the implementation of each programme: a first round to disseminate SAP options; a second round to agree on entitlement packages; a third round during actual implementation to collect comments; and the fourth round being continued engagement and feedback on progress and outcomes. The Public Consultations and Communication Strategy of the SAP establishes communication requirements and priorities to different stakeholder groups, with a focus on project-affected communities.

Internal communication lines within KEL's project team for planning and implementation of the SAP are defined by an organisational chart which also lists key external stakeholders such as the Department of Electricity Development (DoED), the World Bank, consultants, and two local committees (Community Guidance Committee and Compensation Fixation Committee) that are formulated with representatives from affected communities and government organisations.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the stakeholder mapping takes broad considerations into account.*

The analysis of wider stakeholders presented in the social assessment is broad in its geographical and institutional coverage. For example, the Public Consultation, Participation and Disclosure (PCPD) programme, developed and implemented in the course of the assessment, took into account the various areas of project influence and identified broader stakeholder groups, including the interested regional and national communities, political parties, community-based organisations, NGOs at local and international level, international organisations, and the local, regional and international media. The SIA considered the level of vulnerability to adverse impacts and risks raised by the project. For example, women, Dalits and indigenous people (*Adivasi Janajati*) are identified as disadvantaged in terms of access to livelihood, social inclusion, legal inclusion and economic marginalisation. Their rights and risks are assessed through a highly participatory planning process.

Criteria met: Yes

1.2.2 Management

Analysis against basic good practice

Scoring statement: *Communications and consultation plans and processes, including an appropriate grievance mechanism, have been developed at an early stage applicable to project preparation, implementation and operation that outline communication and consultation needs and approaches for various stakeholder groups and topics.*

The Public Consultations and Communications Strategy outlines approaches and plans based on concepts of free, prior and informed consultation with affected communities for project pre-construction, construction and operation phases. KEL's project-management team is responsible for disclosure of project information, and encourages participation of local stakeholders in the decision-making process and implementation of project

plans (for example the SAP programmes). KEL highlights that particular attention should be paid to indigenous and other vulnerable groups in selecting appropriate mechanisms to ensure their full engagement.

Plans and processes are in place, including: a Project Information Centre (PIC) has been established at the site and has been operational since 2009; a social team focused on communications (one Corporate Social Responsibility Officer in Kathmandu, one Public Relations Officer and three Public Relations Assistants at the site), and tasked with ensuring constant availability of information on the project; dissemination of project brochures to affected communities with details of the project-specific information in four major local dialects (Bantawa Rai, Khaling Rai, Limbu, Tamang); hardcopies of EIA and SAP executive summaries in those four major local dialects in addition to English and Nepali are available in the PIC; press releases to media (local and national newspapers, FM radio); personal interactions with project-affected people by resident project social staff; World Bank missions on communications; draft and final SIA and SAP disclosed through KEL's website in Nepali and English versions; and at an international level, public disclosure of key documents through the World Bank Infoshop and IFC's external website, hence available to the wider audience of national and international stakeholders.

The KEL Public Relations Officer holds monthly meetings to bring together village representatives and local political leaders and other leaders of the project area to update project progress and receive concerns of the community at large. These include meetings with community-based organisations (including KACCC, Road User Committees, Forest User Group) on specific issues that are of interest to the community, *ad hoc* discussions with affected households, as well as visits to government officers.

There are two grievance mechanisms in place: one "government" mechanism to address grievances related to compensation for land and assets, through the political hierarchy from village to district to regional government and the formal court-of-appeal system; and one "project" mechanism to receive routine emerging complaints from project-affected people and other stakeholders, via a Grievance Redress Officer (GRO, this role is now held by the Public Relations Officer). To date, KEL has received and addressed grievances raised by the affected communities on e.g. the access roads, compensation and benefit-sharing.

The monitoring setup includes both internal and external, independent third-party monitoring, as well as regular Panel of Experts (PoE) evaluation visits and World Bank review missions.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, communication and consultation plans and processes show a high level of sensitivity to communication and consultation needs and approaches for various stakeholder groups and topics; and processes are in place to anticipate and respond to emerging risks and opportunities.*

KEL has grouped stakeholders in the Communication Strategy as directly-affected communities, government agencies at district, regional and national levels, local government bodies (VDCs and DDCs), civil-society organisations in the project area, international organisations and NGOs, as well as media. Based on the Communication Strategy developed in the SAP, a separate Communication Action Plan has been drafted and submitted to the World Bank for review. The plan will guide the project communications throughout the implementation phase. The plan details communication activities, objectives, targeted stakeholders, methodology and schedule, in response to the need for communication and consultation for implementing each SAP programme, showing a high level of sensitivity.

The PIC, the 4 social staff placed on the site, coupled with the grievance-redress mechanism, will allow KEL to anticipate and respond to emerging communication and consultation risks and opportunities raised from project stakeholders. This management mechanism continues to build the network of communication that KEL has developed through the assessment process to allow stakeholders to raise issues, or make suggestions as to how the project can improve, and allow KEL in turn to provide timely feedback to the concerned stakeholders. For example, the route of the access road to the intake area was altered as a result of stakeholder suggestions. The

original access road was designed with a length of 2 km through a non-residential area. A Local Road User Group, on behalf of local communities, expressed their desire for the access road to go through their settlements such that they could benefit from the link to the Mechi Highway. Based on extensive consultation and negotiation, the access road was rerouted with a total length of 7.5 km. The community are happy to benefit from opportunities brought by the improved access.

However, KEL has not systematically recorded and managed these grievances e.g. kept a log of grievances, progress-tracking, records of resolutions, feedback to complaints, monitoring and evaluation after the conclusion of the EIA/SIA work. This is **a significant gap**.

The designed four rounds of consultation during the SAP implementation, and the SAP Monitoring and Evaluation Plan will also assist KEL to identify and address emerging risks and opportunities during the project implementation phase.

Criteria met: No

1.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The project preparation stage has involved appropriately timed communications and engagement, often two-way, with directly affected stakeholders on topics of interest and relevance to them; engagement is undertaken in good faith; ongoing processes are in place for stakeholders to raise issues and get feedback.*

KEL has carried out extensive consultations during the environmental and social assessment studies. Public consultations have been held at the community, local and national levels. Various tools were used including interviews, questionnaire surveys, focus-group discussions, community meetings, and public hearings.

In total, KEL conducted 12 formal consultation meetings during the EIA scoping phase, 14 focus-group community discussions during SIA and SAP study stage, supported by formal meetings with government stakeholders and informal household visits and community discussions. After the completion of EIA and SIA/SAP reports, KEL conducted one public consultation meeting, one public hearing, two district consultations and one national consultation in Kathmandu. Interviewed community representatives confirmed that engagement during the assessment process has been two-way and covered topics of interest to the directly-affected people. For example, local concerns on downstream flows sufficient for the needs at traditional cremation sites during the dry season were discussed, and a series of mitigation measures have been developed to ensure the affected communities' access to, and use of, the cremation sites all year around (see topic P-17, Cultural Heritage, for details).

Engagement was undertaken in good faith and the consultation process has enabled the community input to influence the design of the project. For example, the request of the local community for rural electrification is addressed by the SAP through a benefit-sharing mechanism.

Ongoing processes are in place for stakeholders to raise issues and get feedback. The presence of the PIC and resident social staff at the site allow the local community to make many informal queries about the project and receive timely feedback.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; negotiations are undertaken in good faith; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Directly-affected stakeholders have had ample opportunities to engage with the project through participatory focus-group discussions and meetings during the impact assessment and EIA public disclosure. KEL made a special effort to allow different stakeholder groups to express their thoughts about the project separately. For example, out of the 14 focus-group discussions during the SIA study, two were with women, one with Dalits, three with indigenous communities, one with KACCC, two with forest-user groups, one with school teachers and four with mixed groups, comprising all stakeholder group representatives. Interviewed stakeholder representatives indicated that the consultations have been and continue to be inclusive and participatory. The same basic methodologies were used for each meeting but were adapted to focus on issues of pertinence to each stakeholder group, such as compensations, or livelihood strategies, or access to the road. After the completion of the EIA/SIA, the directly-affected stakeholders have had direct interactions with KEL resident social staff, and routine and/or *ad hoc* meetings with KEL as described above. However, interviews with women representatives revealed that this group have had limited participation in project discussions after the completion of the impact-assessment and management-plan studies in 2011. Although women are represented on the KACCC, they have not attended KACCC meetings with KEL since 2011. This is a **significant gap**, and the same gap is also identified under Conformance/Compliance below.

The project has begun negotiations with stakeholders on land access. Interviews with directly-affected households suggest the consultation and negotiation have been and are undertaken in good faith.

Interviews with stakeholder representatives further suggest that KEL has provided feedback in a thorough and timely manner on how they have taken issues raised by the community into account. The EIA and Environmental Management Plan (EMP) mitigation programme, and the SAP programmes that have incorporated stakeholder comments into the project design, are disseminated to the communities through project brochures and flyers in the project area. The interviewees indicate that they are all aware of the basic concepts of those programmes. After the completion of the EIA, feedback to the community is provided through the grievance redress mechanism. Verbal evidences show that the grievance mechanism has functioned since the early stage of the project.

Criteria met: No

1.2.4 Conformance/Compliance

Analysis against basic good practice

Scoring statement: *Processes and objectives relating to communications and consultation have been and are on track to be met with no major non-compliances or non-conformances, and any communications related commitments have been or are on track to be met.*

A number of legal requirements, including the national constitution, which has articles requiring participation, governs the communication and consultation in the EIA process (e.g. public meetings and public hearings). The assessors did not find any evidence of non-compliances with these applicable legal requirements. In addition, KEL is committed to complying with ILO Convention 169 on Indigenous People, World Bank Policy Guidelines and the IFC's Performance Standards. There are no major non-conformances with the processes, objectives and plans set out in the Public Consultations and Communications Strategy.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, there are no non-compliances or non-conformances.*

The KEL grievance procedure contains no requirements for documentation, so the gap identified under Stakeholder Engagement is not a non-conformance.

Interviews with women representatives revealed that this group have had limited participation in project discussions after the completion of the impact-assessment and management-plan studies in 2011. Although

women are represented on the KACCC, they have never attended KACCC meetings with KEL since then. This is a non-conformance to the Communication Strategy and is a **significant gap**, but the same gap as that identified above under Stakeholder Engagement.

Criteria met: No

1.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

Lack of formal grievance documentation and management mechanism (Management).

Limited consultation with women’s groups after the completion of project studies (Stakeholder Engagement and Conformance and Compliance).

2 or more significant gaps

1.3 Scoring Summary

Communications and consultation have been carried out to a high standard. Several studies have identified communications and consultation requirements, and the stakeholder mapping has been broad in its geographical and institutional coverage. Specific communications plans and processes, among these two grievance mechanisms, are in place. In addition, KEL set up a Project Information Centre and stationed four Public Relations staff at the site. This mechanism enables KEL to maintain good communication and consultation with the affected community and respond to emerging risks and opportunities. However, KEL has not systematically managed and recorded grievances after the finalization of the EIA/SIA. This is a significant gap against the Management criteria. Furthermore, women’s groups have not been engaged with after the completion of the assessment and management-planning studies in 2011, which is a gap against the Stakeholder Engagement criteria and also a non-conformance with the project’s Communication Strategy, at the level of proven best practice.

There are two significant gaps against the level of proven best practice, affecting three criteria, resulting in a score of 3.

Topic Score: 3

1.4 Relevant Evidence

Interview:	8-15, 17-18
Document:	2-4, 6-21, 23-25, 27, 34, 44, 47, 61-63, 65
Photo:	1-7

2 Governance (P-2)

This topic addresses corporate and external governance considerations for the project. The intent is that the 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.

2.1 Background Information

Kabeli Energy Limited (KEL) was established in 2010 to develop, construct and operate the Kabeli-A Hydroelectric Project (KAHEP). The project was awarded by the Government of Nepal to KEL through international competitive bidding on a Build, Own, Operate and Transfer (BOOT) model for 35 years. A Project Development Agreement was signed between the Government of Nepal (GoN) and KEL in January 2010.

Shares of KEL are owned by three companies: Butwal Power Company (BPC) with 26%, Gurans Energy Limited (69%) and Asia-Pacific Power-Tech China (5%). Gurans Energy Limited is a Nepalese joint venture made up of InfraCo Asia Himalayan Hydro Pte. Ltd (60%) and BPC (40%). As the majority shareholder of KEL, BPC has major influence over its operations and governance. KEL is based in BPC's office and utilizes BPC's governance policies and practices, so this topic reviews the governance of BPC in relation to KEL.

This topic has some overlap with Topic P-12, Procurement, where procurement-related governance issues are discussed.

2.2 Detailed Topic Evaluation

2.2.1 Assessment

Analysis against basic good practice

Scoring statement: *Assessments have been undertaken of political and public sector governance issues, and corporate governance requirements and issues, through the project development cycle with no significant gaps.*

BPC regularly assesses political, operational, project, and investment risks, and has developed policies and business practices to mitigate potential adverse effects. As such, the company does not anticipate any financial or material losses resulting from these risks.

The assessment of political risks has highlighted lack of GoN support for the infrastructure required to develop a hydropower project, lack of local-level commitment to project development by activists, and an expectation at the local level for the developer to provide education, health, and water services. In terms of policy risks, BPC's assessment has highlighted the lack of policy and legal instruments to support hydropower development, issues with the ownership of resources, and a lack of a clear policy regarding the role of independent power producers and their contribution to address social issues. Project development risks stemming from the governance context include the risk that the Power-Purchase Agreement rate does not reflect the project cost, potential delays in financial closure, delay in achieving licences and project approvals, and lengthy custom and duty clearance time.

Corporate-governance risks are regularly checked through audits to assess compliance with various international standards, including: BS OHSAS 18001:2007 (occupational-health and safety-management system), ISO 9001:2008 (requirements of a quality-management system) and ISO 14001:2004 (criteria for an environmental management system). Compliance is reviewed internally twice a year.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, there are no significant opportunities for improvement in the assessment of political and public sector governance issues and corporate governance requirements and issues.*

There are no specific opportunities for BPC to improve its assessment of political and public-sector governance issues and of corporate-governance requirements and issues. As part of project appraisal, the World Bank assessed BPC's and KEL's organizational governance structures, examining financial management, procurement capacity, implementation challenges, the need for social oversight and participation, monitoring and evaluation, and disclosure and communications.

However, there is opportunity to improve the reporting of the assessment of political and public-sector governance issues as they relate to KEL specifically. Although BPC has undertaken an assessment of general governance risks, it is not clear how these risks apply specifically to the KAHEP. In addition, it is not clear how the risk assessment included in BPC's annual report is re-evaluated each year, as the same governance risks are identified in each report. This is a **significant gap** against proven best practice.

Criteria met: No

2.2.2 Management

Analysis against basic good practice

Scoring statement: *Processes are in place to manage corporate, political and public sector risks, compliance, social and environmental responsibility, grievance mechanisms, ethical business practices, and transparency; policies and processes are communicated internally and externally as appropriate; and independent review mechanisms are utilized to address sustainability issues in cases of project capacity shortfalls, high sensitivity of particular issues, or the need for enhanced credibility.*

BPC utilizes a number of management committees to address corporate, political and public sector risks. An audit committee oversees and assesses internal control processes, reviews financial statements, checks risk-management systems, and approves accounting policy. A human-resources committee reviews all policies and guidelines regarding human resources. A budget committee monitors and controls the annual budget and scrutinizes budgets proposed by management. A finance committee seeks to secure financing for BPC on a continuous basis. BPC uses a "corporate value framework", which comprises its vision, mission and values; business principles and policies; corporate governance code and code of conduct and ethics. In addition, compliance with corporate-governance standards is reported separately in a Corporate Governance Report. An ISO manager is responsible for reviewing compliance with standards, regulations, and internal policy and BPC is regularly audited by the international auditors DNV.

BPC states that transparency is a core business policy, and discloses information as required. Financial statements contain disclosures on related-party transactions, contingent liabilities and other relevant information. Policies and processes are communicated internally and externally as appropriate. A dedicated member of staff is responsible for circulating revised versions of corporate policies and plans, via team leaders and BPC's intranet. BPC does not have an anti-bribery or anti-corruption policy, nor are there clear whistle-blowing arrangements if an employee becomes aware of critical issues. However, supervision from the owner's engineer, the lenders engineer and the World Bank and IFC teams has been put in place to manage the identified fraud and corruption risk, so this is not considered a significant gap.

KEL has utilized a Panel of Experts to review high-sensitivity sustainability aspects of the project. Its key tasks were to review the Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA, abbreviated SA in most project documentation) processes and provide specific guidance on the critical issues including environmental flows, cumulative impact assessment, and construction-stage impacts.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, contractors are required to meet or have consistent policies as the developer; and processes are in place to anticipate and respond to emerging risks and opportunities.*

Contractors will be required to meet all legal requirements in Nepal and a number of additional standards specified in the bid documents. However, contractors will not be required to meet or have consistent policies with BPC. For example, they will not be required to use ISO-certified (or consistent) management systems, they will not be required to follow BPC's "corporate value framework" or to have a code of conduct or code of ethics. This is a **significant gap** against proven best practice.

BPC's board is responsible for anticipating and responding to emerging risks and opportunities by monitoring compliance with the codes of conduct and ethics, and by checking compliance with legal requirements. The board monitors and approves major financial and corporate strategies, financial results and new business investments. It is responsible for processes to check the integrity of the business and ensure ongoing risk assessment and management. BPC also maintains an awareness of evolving policy and legislation through the Independent Power Producer Association of Nepal which actively monitors developments in law with potential to affect the power sector.

Criteria met: No

2.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The business interacts with a range of directly affected stakeholders to understand issues of interest to them; and the business makes significant project reports publicly available, and publicly reports on project performance, in some sustainability areas.*

KEL has engaged with project-affected communities through focus groups and public consultations, described in more detail in topic P-1, Communications and Consultation. KEL operates a project-information centre at the site to facilitate an ongoing two-way flow of information. BPC works closely with GoN, particularly the Environment, Forest, Energy, and Finance ministries. KEL plans to employ a dedicated member of staff to liaise with GoN officials on a full-time basis, in order to negotiate the bureaucratic hurdles which contractors will face achieving the required permits. The KEL website hosts all significant project reports, such as the EIA (with EMP), SIA and SAP. Summaries of these documents are available in Nepali and four other local languages. BPC publicly reports on project performance in some sustainability areas in the annual report, which includes a short section on sustainability covering environmental, social and economic performance.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the business makes significant project reports publicly available and publicly reports on project performance in sustainability areas of high interest to its stakeholders.*

BPC does not publish a stand-alone sustainability report, and engagement with stakeholders has not assessed areas of sustainability that are of specific high interest to stakeholders. This is a **significant gap** against proven best practice.

Criteria met: No

2.2.4 Conformance / Compliance

Analysis against basic good practice

Scoring statement: *The project has no significant non-compliances.*

The project has met all legal requirements, and the appraisals by the World Bank and IFC have not revealed any significant non-compliances.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: The project has no non-compliances.

The project has no non-compliances.

Criteria met: Yes

2.2.5 Outcomes

Analysis against basic good practice

Scoring statement: There are no significant unresolved corporate and external governance issues identified.

There are no significant unresolved corporate and external governance issues identified. The project is privately owned by, and can draw on, BPC’s corporate resources and experience developing and managing hydropower projects. Monitoring and support from the World Bank and IFC also contribute to a strong understanding of the project’s governance issues.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: In addition, there are no unresolved corporate and external governance issues identified.

There is significant scope to improve how BPC’s governance polices and plans get translated into plans and processes used by KEL. During this assessment, some KEL staff appeared unaware of some of the BPC policies that in theory apply, or will apply, to KEL, such as the quality and environmental management system. This is a **significant gap**, and closely related to the gap identified under the assessment criteria above.

Criteria met: No

2.2.6 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There is opportunity to improve the reporting of BPC’s assessment of governance issues as they relate to KEL specifically (Assessment).

Contractors will not be required to meet or have consistent policies with BPC/KEL (Management).

BPC does not publish a sustainability report, and engagement with stakeholders has not assessed areas of sustainability that are of specific high interest to stakeholders (Stakeholder Engagement).

There is opportunity to improve how BPC’s governance polices and plans are translated into plans and processes used by KEL (Outcomes).

2 or more significant gaps

2.3 Scoring Summary

BPC has assessed political and public-sector governance issues and corporate-governance requirements and issues, such as a lack of policy and legal instruments in Nepal to support hydropower development. There are no significant opportunities for improvement in the assessment of political and public-sector governance issues and corporate-governance requirements and issues, following review by a number of external organisations. However, there is opportunity to improve the reporting of the assessment of political and public-sector governance issues as they relate to KEL specifically. This is a significant gap against the assessment criteria at proven best practice.

Processes are in place to manage corporate, political and public-sector risks, using a number of management committees, and corporate management is also guided by BPC's corporate value framework. Policies and processes are communicated internally and externally as appropriate. However, contractors will not be required to meet or have consistent policies with BPC/KEL. For example, contractors will not be required to use ISO-certified (or consistent) systems, they will not be required to follow BPC's corporate value framework or to have a code of conduct or a code of ethics. This is a significant gap against the management criteria at proven best practice.

BPC interacts with a range of directly-affected stakeholders, and the business has made significant project reports publicly available on the project website in English, Nepali and four local languages. However, BPC does not publish a stand-alone sustainability report, and engagement with stakeholders has not assessed areas of sustainability that are of specific high interest to them. This is a significant gap against the stakeholder-engagement criteria at proven best practice.

The project has no non-compliances.

There is significant scope to improve how BPC's governance policies and plans, like the QMS/EMS, get translated into plans and processes used by KEL. This is a significant gap against the outcomes criteria at proven best practice.

There are four significant gaps against the proven best practice criteria, resulting in a score of 3.

Topic Score: 3

2.4 Relevant Evidence

Interview:	2, 23, 37, 48
Document:	1, 2, 5-24, 28, 29, 36, 41, 50, 61-63, 65
Photo:	None

3 Demonstrated Need and Strategic Fit (P-3)

This topic addresses the contribution of the project in meeting demonstrated needs for water and energy services, as identified through broadly agreed local, national and regional development objectives and in national and regional policies and plans. The intent is that the 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.

3.1 Background Information

Nepal is heavily dependent on traditional energy, with almost 90% of the primary energy coming from non-commercial sources. About 75% of the country's population has access to electricity (including off-grid sources), but there is a strong difference between urban and rural populations, where the access in urban areas is estimated at around 90% while access in rural areas is as low as 30%. The energy consumption is very low, e.g. only 10% of that of India. This is mainly due to the limited supply, which is falling far short of the rapidly growing demand in the country.

Nepal has only just over 700 MW of installed capacity, over 90% of which comes from hydropower. Due to a lack of available storage, generation is often far below installed capacities in winter and the seasonal shortfall has reached at least 500 MW in recent years. This figure could potentially be considerably higher, given that the severely restricted supply limits the expressed demand. The country is expecting a continued shortage of power with a projection for 2017 of 900 MW of unsatisfied demand during the dry season, in spite of a projected 200% increase in installed capacity.

It is expected that the completion of the first large-capacity cross-border connection with India (expected completion date is 2016) will contribute to some alleviation of this situation.

The load-shedding, up to 18 hours per day in late 2012, contributes to significant losses to Nepal's economy, estimated at 1/8 of GDP, and 2 million Nepalese are forced to seek employment out of their own country.

3.2 Detailed Topic Evaluation

3.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of needs for water and energy services, of options to meet water and energy needs; and of national and regional policies and plans relevant to those needs, with no significant gaps.*

The Kabela-A Hydro-Electric Project (KAHEP) was first identified by the Koshi river-basin Master Plan Study (1983-85), and then during the Medium Hydropower Study Project in 1996-98, looking at proposed hydropower projects throughout Nepal in the range of 10 to 300 MW. A three-stage process of screening, coarse ranking and fine ranking was used to identify the most attractive projects. This screening and ranking process combined technical, economic, environmental and social criteria and included site visits and consultations. Socio-environmental criteria used were related to physical, biological and socio-cultural aspects such as need for land, catchment conditions, downstream impacts, number of affected people and cultural issues. A special-purpose Strategic Environmental Assessment of the studied projects was also undertaken.

The water and hydropower sectors are well linked in a planning framework underpinned by the Water Resources Strategy of 2002, the National Water Plan of 2005, the Irrigation Policy of 2003 and the Hydropower Development Policy of 2001. Together these documents provide a comprehensive assessment of the need for both water and energy services at a national level.

The Japan International Cooperation Agency (JICA) is supporting an ongoing study in order to identify “storage projects”, in order to address part of the strong dependence on run-of-river hydropower projects. This dependence is causing the capacity and energy shortfalls during the winter season mentioned above in the Background section. KAHEP is designed as a base-load project during the high-flow season but lacking significant storage it will revert to a double-peaking operation (2 hours in the morning and 4 hours in the late afternoon/early evening) during the dry season, adapting to the load curve.

The Kabeli EIA contains a comprehensive study of alternatives to the project, reviewing not only alternatives to obtaining the equivalent amount of capacity and/or energy, but also reviewing a zero alternative, import solutions as well as design alternatives at the project level.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment is based on dialogue with government planners, policy makers and key stakeholder groups; and the assessment shows a strong emphasis on social and environmental related needs, policies and plans including the need for sustainable development of the river basin and integrated water resource management.*

The assessment process resulting in the Government of Nepal’s (GoN) decision to offer KAHEP to developers through international competitive bidding has included an inter-governmental process which was documented as part of the Medium Hydropower Study in the 1990’s. This study, funded by the Canadian International Development Agency (CIDA), included significant inter-agency work within the GoN, encompassing both planners and policy makers. The later preparation and publication of the water- and power-sector documents referred to under basic good practice above has continued this inter-agency co-operation of high-level stakeholders in the definition of strategic priorities and development needs. The Water and Energy Commission Secretariat (WECS), established by GoN in 1975, is made up of representatives from 11 different ministries with the Minister of Energy as the Chair, and is charged with overall coordination on water resources development. The WECS also draws membership from well-known water resources and energy specialists; Tribhuvan University; Nepal Engineers' Association; and the Federation of Nepalese Chamber of Commerce and Industry.

The National Water Plan leads its preface by explaining how sustainable development can contribute to poverty alleviation and economic growth, and experts from e.g. the social sector, fisheries, agriculture, river-basin planning, irrigation, water supply and several others have made significant contributions to the Plan. The Water Resources Strategy specifically refers to Integrated Water Resources Management (IWRM) as an important planning component. The Medium Hydropower Study contained a special volume on Environmental aspects of the screening, and the Background section at the start of the Hydropower Development Policy document makes triple-bottom-line sustainability a clear priority.

KAHEP also addresses a further priority of the GoN, that of promoting private investments in the sector.

Local stakeholders have been involved in the detailed planning of the project as part of the feasibility studies, detailed design work and environmental and social assessment processes, see also topic P-4, Siting and Design.

Criteria met: Yes

3.2.2 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The results of the assessment of strategic fit are publicly disclosed.*

All the documents mentioned above under Assessment are publicly available and most of them are downloadable from the WECS web site.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: No addition to basic good practice.

3.2.3 Outcomes

Analysis against basic good practice

Scoring statement: The strategic fit of the project with needs for water and energy services, and relevant policies and plans can be demonstrated.

The Medium Hydropower Study conducted in the 1990's included KAHEP. The project responds to the urgent need for additional power in the country without compromising any other development priorities, and will also, through the larger Kabeli Transmission Corridor project, address rural electrification in a remote area of the country with its associated potential for induced economic and social development.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: In addition the project is one of the priority options to address demonstrated needs.

The Sectoral Environmental Assessment conducted as part of the Medium Hydropower Project supported the selection of KAHEP as one of the top-7 ranked projects in the Medium Hydropower Study.

Criteria met: Yes

3.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

3.3 Scoring Summary

The national Water and Energy Commission Secretariat (WECS) draws its very broad-based membership from 11 ministries and several other key relevant actors. It has the overall responsibility of Integrated Water Resources Development in Nepal. Key national policies on water, power, irrigation etc., are publicly available, primarily on the WECS web site.

The Kabeli-A project was ranked among the top 7 projects in the CIDA-funded Medium Hydropower Study on screening and ranking of potential developments, demonstrating the near-perfect fit with identified priorities and needs at a national level.

At the regional and local level, stakeholders have been able to weigh in on project design and options through the feasibility studies and the comprehensive environmental and social impact assessment studies.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

3.4 Relevant Evidence

Interview:	5, 14, 19, 27, 28, 30, 31, 49
Document:	2-4, 6, 25, 53-63, 65
Photo:	None

4 Siting and Design (P-4)

This topic addresses the evaluation and determination of project siting and design options, including the dam, powerhouse, reservoir and associated infrastructure. The intent is that siting 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.

4.1 Background Information

Hydropower is the preferred supply option for medium- and large-scale electricity generation in Nepal. The iterative process of project identification, screening and ranking described under topic P-3, Demonstrated Need and Strategic Fit above, has led to a list of projects which includes the Kabeli-A Hydro-Electric Project (KAHEP).

Nepal suffered from a decade of armed insurgencies which made infrastructural development difficult or even impossible in much of the country. This is reflected in the project-development of KAHEP, where little happened during the first decade of the 21st century. This is the background to the apparent jump in the project-development cycle between the finalization of the Medium Hydropower Project in the late 1990's and the award of KAHEP following international competitive bidding, and resulting in a Project Development Agreement (PDA) being signed in 2010.

The stakeholder engagement described below refers specifically to the work on siting and design. For general aspects of the project's interactions with its stakeholders, please refer to topic P-1, Communication and Consultation. Sediment transport in the river is dealt with under this topic as it affects design, but the assessment of the load and nature of sediment in the river is dealt with under topic P-20, Erosion and Sedimentation.

4.2 Detailed Topic Evaluation

4.2.1 Assessment

Analysis against basic good practice

Scoring statement: *Technical information has been analysed at an early stage alongside social, environmental, economic, financial, and regulatory considerations in order to develop a preliminary project design and some options around this.*

As stated above under topic P-3, Demonstrated Need and Strategic Fit, KAHEP was first identified in the 1980's as part of the Koshi river-basin Master Plan Study. It was further developed as part of the Medium Hydropower Study Project in 1996-98, looking at proposed medium-sized hydropower projects throughout Nepal. This three-stage process of screening, coarse ranking and fine ranking was used to identify the most attractive projects through inclusion of technical, economic, environmental and social criteria, and included site visits and consultations. Key socio-environmental criteria used for screening and ranking included the need for land, catchment conditions, downstream impacts, number of affected people and cultural issues. On the basis of this holistic assessment, KAHEP was identified as one of the top-7 development options in Nepal.

The feasibility study, carried out by Nepal Consult Private Ltd, was concluded in 1998. In it, KAHEP was designed with a capacity of 30 MW project. The project was offered to the private sector as a Build, Own, Operate and Transfer (BOOT) project under rules of international competitive bidding. KEL won this competition and signed a Project Development Agreement (PDA) with the Department of Electricity Development (DoED) in 2010.

The sediment load of the Kabeli River and the mineral composition of those sediments are assessed (see topic P-20) and the total load was high enough to warrant a desander to be added to the design.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, options take into consideration sustainable river basin design and integrated water resource management.*

Sustainable river-basin development and integrated water resources management are integrated priorities of the national Water Resources Strategy and were also used as criteria in the screening and ranking of projects leading up to KAHEP being selected as one of the top-priority hydropower projects for development in Nepal (see Topic P-3).

The design process has responded to a number of community concerns (see below under Stakeholder Engagement), some of which relate to non-hydropower use of the river.

Criteria met: Yes

4.2.2 Management

Analysis against basic good practice

Scoring statement: *An optimization process has been undertaken to assess the project siting and design options.*

The sequence of studies undertaken during the three decades of progressive project development have included the identification of basic hydropower potential, screening and ranking as part of the Medium Hydropower Project in the mid to late 1990's, and then detailed design by Kabeli Energy Ltd (KEL) after having won the project in the bidding process. This has resulted in gradual changes, but the more recent stages have included only small changes to the pre-existing solution.

The screening and ranking studies of the Medium Hydropower Project, and also the Sectoral Environmental Assessment conducted as part of that exercise, focussed on analyses and optimization of the key engineering as well as sustainability aspects of hydropower development in Nepal. This included impacts on fish and aquatic resources in general as well as the potential for erosion and sedimentation problems, the maintenance of adequate water quality, and glacial-lake outburst floods.

As a condition of the PDA, the developer was charged with submitting an updated feasibility study and an environmental impact assessment to the DoED within one year. As part of this work the basic design from the 1998 feasibility study has been refined and the updated design, conducted by Hydro-Consult Engineering Ltd (HCEL), was presented in 2011. This report recommended investigating a higher installed capacity using a design flow with 35% duration. This is not an accepted standard approach in Nepal, and was not utilized in the later work on detailed design, see below. The updated feasibility study investigated alternative locations of project components such as the dam, the powerhouse, the access roads, tunnels, construction camps, quarries and muck disposal etc. These were looked at with a view to avoiding/minimizing environmental, social and technical risks. The focus of the design team has been to prepare as simple a design as possible, in order to reduce potential problems with construction, operation and maintenance.

Many of the project's design parameters have also been analysed by the detailed review of project-development alternatives conducted as part of the World Bank-supported EIA and SIA, finalized in 2013. This alternatives study looked at technical, economic, social and environmental issues and concluded that KAHEP was a priority solution to the development of additional power supply to the national grid.

Following the approval of the feasibility update, HCEL produced the detailed design in 2012. It is based on the standard Nepal Electricity Authority recommendation of using the 40% duration flow as the design flow, resulting in the installed capacity of 37.6 MW.

The handling of suspended and bedload sediments has been the subject of detailed discussions and some different opinions on whether a desander arrangement is needed or not (really whether it makes financial sense or not) have been voiced. The detailed design is a risk-averse decision including an underground desander which

will allow operation up to a sediment concentration of 100 g/l, a very high figure. The trapping efficiency is designed to be >90%.

Some of the aspects that have received attention during project development include (but are not limited to): Shifting the site of the powerhouse in order to protect it from flooding; moving the intake approximately 500 metres upstream. This was done for engineering purposes, but also brought the added benefit of increased head for the project; Extensive discussions with local stakeholders regarding potential impacts to cremation sites, resulting in agreements regarding necessary mitigation; Protection of the temple located downstream from the intake; The alignment of the road to the intake was changed and the adopted solution has been developed by the local road-users committee with technical and financial support from KEL. The new alignment has increased the distance from 2 km to over 7 km in response to community requests to route the road through their settlements, and the community provided the land for the road free of cost; the alignment of the road to the powerhouse was also adjusted.

The addition of a desander, with a so called Serpent Sediment Sluicing System (S4) solution for flushing the sediments at least hourly will allow for minimal disturbance to downstream sediment transport regime in the river, while removing a significant portion of the aggressive hard minerals from the turbinated water, which would otherwise have caused significant maintenance issues as a result of turbine damage.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *No addition to basic good practice.*

4.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The siting and design optimization process has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; ongoing processes are in place for stakeholders to raise issues and get feedback.*

Consultation with the local community has been an inherent feature of KAHEP's development since its identification in the 1980's.

During the Medium Hydropower Project, the Sectoral Environmental Assessment conducted consultations and information meetings with local and regional stakeholders.

As a part of the impact assessment studies, the Kabeli-A Cooperation Concern Committee (KACCC) was formed in 2011 in order to provide an organized voice for the local stakeholders to bring their concerns to the project. The KACCC members interviewed are generally positive to the project and its interactions with local stakeholders, and they consider the Project Information Centre and the formal grievance procedure (see topic P-1 for details) to be well-functioning tools for appropriately-timed and two-way engagement between the community and the project through which they receive timely feedback on issues raised.

The many focus group discussions organized as part of the Social Impact Assessment (SIA) dealt specifically with issues such as: factual information on project location, particularly the main project structures such as dam, tunnel, adits, powerhouse, surge tank, tailrace, access roads and tentative locations for the quarries, construction camps and operations buildings of the project; providing information on the potential impacts of the project arising from technical considerations during project construction and operation; getting stakeholder opinions on the potential impacts of the project on the local infrastructure; and soliciting the opinions of local people on potential alternative mitigation measures to avoid, minimize or mitigate the potential impacts.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive, and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

The assessment studies and other consultations with the community are reported by multiple community and local/regional government interviewees as having been inclusive and participatory. The focus groups used during the SIA included a cross-section of the Kabeli community, including vulnerable people such as women and Dalits. Indigenous people are in a majority in the area (see topic P-15) and also make up a majority of the KACCC membership.

The feedback provided on the inclusion of issues raised into project design and development has been thorough and timely.

Criteria met: Yes

4.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *The final project siting and design has responded to many sustainability considerations for siting and design.*

The design has responded to many sustainability considerations. Key among these are: a fish passage has been built into the design of the dam; an ecological flow will be released through the fish passage at all times, which will also serve as a “socio-cultural flow” – providing sufficient water for e.g. cremation ceremonies; the delineation of the access roads have been changed in response to community and geo-technical concerns; the intake has been moved in order to (among other issues) increase the head; a desander arrangement with continuous emptying; and the powerhouse has been moved in order to improve its safety against floods.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *The final project siting and design is optimal with respect to sustainability considerations for siting and design.*

The project siting and design has responded to an iterative process of optimization, addressing technical, social, economic, financial and environmental aspects in the process. The resulting detailed design provides a project with demonstrated profitability to the owner KEL (see also topic P-9, Financial Viability), net benefits to the community and country (see also topics P-10, Project Benefits and P-11, Economic Viability) and well-designed mitigation of the key socio-environmental concerns, e.g. impacts on cremation sites and on the migratory fish population.

However, there is at least one issue relating to considerations for the catchment-level sustainability of the Kabeli River and that is the design of other hydropower projects being planned for locations upstream on the Kabeli. The Kabeli-B project, planned for development in the near future, is a small project (<5 MW), but its design will likely include a dam with no fish passage. This would make the fish passage at the Kabeli intake largely redundant unless mitigation can be put in place. The World Bank has responded to these concerns by providing funds to the Government of Nepal to assist with both capacity building on issues of river connectivity and possible physical mitigation of other projects in the catchment. A detailed Cumulative Impact Assessment (to supplement the preliminary work done as part of the Kabeli EIA, see topic P-5, Environmental and Social Impact Assessment and Management) is also planned for the larger Tamor catchment, of which the Kabeli River is a tributary. The gap against “optimal” siting and design is, therefore, considered not significant, considering that mitigation is in place, with secured funding.

The siting and design of the project can, therefore, be considered as an optimal solution.

Criteria met: Yes

4.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

4.3 Scoring Summary

The earliest phase of the Kabeli-A project's development took place in the 1980's with preliminary project definition in the Koshi basin study. This has continued through the comprehensive national-level Medium Hydropower Study which led to the feasibility study published in 1998. A period of no development during the political unrest in the country followed, before the project was put up for bidding by the Government, resulting in KEL winning the development rights and signing a Project Development Agreement in 2010. Detailed design and further optimization by KEL and their consultants HCEL has followed.

The siting and design process has involved local and regional stakeholders throughout this long process, and the final design has responded to a large number of technical, financial and sustainability-related concerns. Stakeholders express their satisfaction with the process and their ability to participate actively on equal footing with the company.

On a project level the solution can be considered optimal. However, there are concerns that future upstream developments will create issues concerning river connectivity, primarily for migratory fish. Mitigation with earmarked funding has been designed, making the assessor consider this gap as not significant.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

4.4 Relevant Evidence

Interview:	5, 9, 10, 14, 15, 19, 29, 41, 42, 44, 50, 54
Document:	2-6, 24-26, 30-35, 44, 53-55, 61-65, 68
Photo:	8-17

5 Environmental and Social Impact Assessment and Management (P-5)

This topic addresses the assessment and planning processes for environmental and social impacts associated with project implementation and operation throughout the area of impact of the project. The intent is that environmental and social impacts are identified and assessed, and avoidance, minimisation, mitigation, compensation and enhancement measures designed and implemented.

5.1 Background Information

Under Nepali law the Kabeli-A Hydro-Electric Project (KAHEP), was required to undergo an Initial Environmental Examination (IEE) rather than a full Environmental Impact Assessment (EIA) process, as the project has an installed capacity of less than 50 MW, does not affect an area of forest greater than five hectares and is not located within any protected areas. However, finance from the World Bank required compliance with its environmental and social safeguard policies and as a “Category A” project, the Bank required specific EIA and Environmental Management Plan (EMP) reports prepared within the framework of the World Bank’s Operational Policies. Finance from the IFC also necessitated compliance with the IFC Performance Standards. To satisfy these additional requirements, an EIA (with EMP), a Social Impact Assessment (SIA, named SA in most project documentation but consistently described as an SIA in this report) and a Social Action Plan (SAP) were prepared by Hydro Consult, a local consultant, with input from the World Bank and IFC.

The KAHEP will affect the areas of four Village Development Committees (VDCs), with a population totalling approximately 21 000 people of mixed caste and ethnicity. Nepali, Limbu and Bantawa are the major languages spoken and major religions practiced are Hinduism, Kirat and Buddhism. The literacy rate is 49% and economic activity is a mixture of farming and non-farming activities. The project is not located within any existing or planned conservation areas. The nearest protected area is the Kanchanjunga Conservation Area (KCA), about 25 km north of the project site.

This topic largely concerns the general processes for environmental and social issues assessment and management, and refers to issues that are fully addressed by other topics to illustrate these processes. Please refer to the detailed topics for a fully-detailed discussion of pertinent issues.

5.2 Detailed Topic Evaluation

5.2.1 Assessment

Analysis against basic good practice

Scoring statement: *Assessments of project environmental and social impacts have been undertaken for project implementation and operation, including evaluation of associated facilities, scoping of cumulative impacts, role and capacity of third parties, and impacts associated with primary suppliers, using appropriate expertise and with no significant gaps; and a baseline has been established and well-documented for the pre-project condition against which post-project changes can be compared.*

Hydro Consult undertook environmental assessment studies in the project area from April 2010 to August 2011 using a multi-disciplinary team of experts. This resulted in the IEE report, which was approved by the Government of Nepal (GoN) in November, 2011. In addition, the EIA, including an EMP, was prepared in August 2011 in line with the World Bank Safeguard Policies and IFC Policy and Performance Standards on Environmental and Social Sustainability. Hydro Consult also led the studies for the SIA between 2010 and 2011, examining the potential project-related impacts on affected people. The assessment covers the potential impact on agricultural land, fishing, physical cultural resources, religious practices, water supply, sanitation and health.

Between 2011 and 2013, a number of additional studies were conducted by local and international experts to examine areas of uncertainty remaining in the EIA and SIA. The additional studies covered downstream flow in the dewatered stretch of the Kabeli and Tamor rivers, the potential risks of fish entrapment at the head works, and impacts from fluctuating daily flow downstream of the tailrace. Checks were also made to confirm the conclusions of the SIA, particularly the support from local communities, focusing on women, Dalits and Indigenous People. On the basis of additional studies, the EIA and SIA were updated a number of times, most recently in October of 2013.

The EIA includes evaluation of associated facilities and primary suppliers such as access roads, construction-power generators, the labour camp, five quarry sites, batching plants, crushing plants, construction-material storage, and spoil-disposal areas. The project transmission line is being constructed as a separate project and has its own EIA. As explained in the “Project Description” at the beginning of this report, that activity is considered to be outside of this assessment.

The EIA scopes cumulative impacts in a “Rapid Cumulative Impact Assessment” (RCIA) to identify issues which could generate cumulative impacts when considered together with planned and predictable future developments. Cumulative impacts identified which may require management include reduction of water quality and quantity, increased landslides and related sediment availability, aquatic-habitat degradation and fragmentation, adverse impacts on spiritual and religious sites and practices, and landscape conversion.

The EIA assesses the role and capacity of third parties, scoping the plans, policies and strategy of the GoN. Local government were well engaged in the public consultations, and discourse is ongoing with KEL. The EIA utilized appropriate expertise over a wide range of disciplines, including expert review by an independent Panel of Experts (PoE) and experts from the financing organisations.

The EIA established a bio-physical baseline for the pre-project condition against which post-project changes can be compared, covering soils, climate, hydrology, erosion and sedimentation, air and water quality, noise, land use, forest and plant diversity, terrestrial wildlife, and aquatic flora and fauna. The socio-economic baseline of the directly-affected area was established through household surveys and focus groups, covering the demography of project-affected communities, including literacy, religion, language, ethnicity, land-use pattern and economic activities.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition the assessment takes broad considerations into account, and both risks and opportunities; and the social impact assessment incorporates assessment of human rights.*

The assessment takes some broader considerations into account, such as the basin-level RCIA, and project-, regional- and national-level perspectives on benefit sharing. The methodology for the assessments was reviewed by a number of parties, including the WB, IFC and the PoE, which led to additional studies such as the IFC’s investigation into the downstream-flow regime and the World Bank’s requirement for a full CIA to be undertaken next year. However, the assessment did not take broad socio-economic considerations into account. The socio-economic baseline was limited in its scope and the range of stakeholders identified, with the household survey only covering directly-affected households, which is **a significant gap** against proven best practice.

The EIA includes a risk assessment for the project construction and operation, including long-term environmental and socio-economic risks. Construction risks identified include: increased dust and noise, water pollution, waste production and social issues caused by the influx of construction labour. The key long-term environmental risks stem from the introduction of a migration obstacle, the dam and intake structures, in the river which could create a barrier to migratory fish and entrap resident and migratory species. Long-term socio-economic risks stem from economic displacement of directly affected people.

Numerous opportunities for socio-economic development have been assessed by the project, including rural electrification, local employment, schools and health centres as well as the preservation of local traditions and cultural heritage. Potential environmental benefits assessed include improving catchment protection by increasing forest cover to reduce the risk of erosion and landslides.

The SAP includes a discussion of human rights. Although human rights are not explicitly incorporated into the plan, at the local level the rights of project-affected people (PAP) have been respected. Stakeholders have been well engaged and contributed to the design of the SAP.

Criteria met: No

5.2.2 Management

Analysis against basic good practice

Scoring statement: *Environmental and social issues management plans and processes have been developed with appropriate expertise (internal and external) for project implementation and operation with no significant gaps; in addition to key social and environmental issues relating to the hydropower project, plans address construction-related waste, noise, air quality, land disturbance and rehabilitation; the environmental and social impact assessment and key associated management plans are publicly disclosed.*

The EIA includes an EMP which covers the management of construction impacts, and the adaptive management of selected environmental issues. The EMP was prepared using appropriate expertise from Hydro Consult, with review by the IFC, World Bank and PoE. Plans for the operation phase of the project are still being finalized. The construction-phase EMP outlines key issues such as constructing a fish passage, putting in place infrastructure for cremation sites, protecting sacred trees during construction, ensuring slope stability of earth cuts, and maintaining minimum downstream flows. The contractor will be required to produce management plans to address construction-related waste, noise, air quality, land disturbance and rehabilitation. Specific plans will cover construction camps, traffic, land acquisition, pollution abatement, terrestrial and aquatic ecology, erosion, and public health and outlines for these are provided in the EMP.

Various management plans have been devised on the basis of the socio-economic assessment, detailed in the SAP. The SAP contains a Resettlement Compensation and Livelihood Assistance Plan, Indigenous and Vulnerable Community Development Plan, Resettlement Policy Framework, Gender Action Plan, Public Consultation and Participation Strategy, as well as benefit-sharing mechanisms.

KEL has disclosed the EIA (including the EMP), the SIA and the SAP on the project website. The executive summaries of the EIA and SAP are also available on the website in local languages, Nepali, Limbu, Bantawa Rai, Khaling Rai and Tamang. Project information is also available at the Project Information Centre (PIC) in Amarpur, Panchthar district.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; plans are embedded within an internationally-recognized environmental management system which is third party verified, such as ISO 14001; and independent review mechanisms are utilized.*

The owner's engineers will be responsible for monitoring environmental and social compliance throughout the construction phase to identify emerging risks and opportunities for improvement. The contractor will be required to maintain daily records of the mitigation implementation and monitoring during the construction phase. The Kabeli-A Environment and Community Development Unit will also monitor the contractor's activities and maintain records of activities such as tree cutting, resettlement and land acquisition which will be shared with the owner's engineer.

KEL will also hire an independent monitoring consultant who will monitor environmental and social performance and compliance every six months. In addition, KEL will be required to report to lenders on project progress every month, which will also drive the identification of environmental risks and opportunities for improvement.

A number of ongoing studies will investigate emerging risks and opportunities in greater detail as part of the adaptive-management approach of the EMP. These studies include an improved understanding of the aquatic biodiversity and community water uses of the Tamor and Kabeli rivers, a fish-hatchery planning study, a catchment-area treatment plan and the new CIA. BPC uses an integrated quality-management system, which includes their ISO 14001-certified environmental management system. KEL will use a system based on BPC's, but during construction KEL will not require this system to be third-party verified. Decision on formal certification will be made at a later date. This is common practice and is not considered a significant gap. KEL utilized a PoE to review areas of the project of high sensitivity. Its key tasks were to review the EIA and SIA processes and provide specific guidance on critical issues such as environmental flows, cumulative impacts, and construction-stage impacts.

Criteria met: Yes

5.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The environmental and social impact assessment and management planning process has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; ongoing processes are in place for stakeholders to raise issues and get feedback.*

The EIA and SIA process involved appropriately-timed, and often two-way, engagement with directly-affected stakeholders. Key stakeholders identified in the EIA at the local level are the affected VDCs and the district development committee, non-governmental organisations, and community forest-user groups. KEL held 14 focus-group discussions between 2010 and 2011, and consultation was also carried out during the earlier EIA scoping process. There were four public consultations, one at site, two at the district level and one at the national level. Information exchange has been two-way, KEL provided information on the project and local people raised potential impacts to be investigated. The PIC also provides an ongoing means for stakeholders to raise issues and get feedback.

A grievance mechanism is in place to allow PAPs to address issues of concern associated with the project. At the local level, issues will be addressed by the Grievance Redress Committee, made up of the Grievance Redress Officer, and one representative from both the Kabeli-A Cooperation Concern Committee (KACCC) and the contractor. If the complainant is not satisfied at the local level the issue will be escalated and addressed by a Grievances Committee, made up of the Project Manager, the Chief District Officer and the Chairman of the KACCC. If the issue still cannot be resolved then it will be handed to the formal court of appeal system.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Engagement with directly-affected stakeholders has been inclusive and participatory. The focus groups were held separately for women, indigenous people, and for disadvantaged groups such as those from lower castes. Each focus group was held in an area local to the affected people. These meetings were separate from the public consultation in acknowledgement that public hearings often raise only the concerns of the most empowered.

Feedback on how issues raised have been taken into consideration has been thorough and timely. PAPs have received formal notification of how their concerns have been incorporated into the design at the public hearings.

Any grievance lodged by an affected person must be addressed and reviewed by the project-grievance committee. By checking if the grievance has been resolved, the committee give feedback to the person who lodged the issue. Feedback on issues raised at the PIC has often been given immediately. For more details on the grievance system, please see Topic P-1, Consultation and Communication.

Criteria met: Yes

5.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *Environmental and social plans avoid, minimize and mitigate negative impacts with no significant gaps.*

The potential project impacts are well investigated by the EIA and SIA, and if correctly implemented the management plans should avoid, minimize or mitigate negative impacts with no significant gaps. There remains some uncertainty of the impact of the project on the local fish population. Although an impact on the fish population at Kabeli would not be significant to the national population, if other planned projects in the catchment also go ahead the cumulative impact could be significant across the Tamor River catchment. A number of mitigation measures have been put in place to address this risk and monitoring is ongoing, so this is not considered a significant gap. More detail on this issue can be found under Topic P-19, Biodiversity and Invasive Species.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, environmental and social plans avoid, minimize, mitigate and compensate negative project impacts with no identified gaps; and plans provide for enhancements to pre-project environmental or social conditions or contribute to addressing issues beyond those impacts caused by the project.*

Pre-project social conditions will be enhanced by opening the area to tourism through improved transport and electricity infrastructure, providing opportunity for local business. During the construction period there will be opportunities for local employment, skills development, improved schools and health centres, although opportunities for local people will decline significantly post-construction. Improved catchment management will increase forest cover, reducing erosion and the risk of landslides.

Environmental and social plans, if correctly implemented, should avoid, minimize, mitigate or compensate negative project impacts with no identified gaps. Compensatory afforestation (25 trees for every tree lost) will also be undertaken by the project in accordance with the Nepali Forest Guideline. The resettlement compensation and livelihood assistance plan based on the entitlement matrix is in place, discussed in more detail under Topic P-13, Resettlement.

A number of interviewees, including the PoE, have expressed concern that despite good preparation and contractual obligations, the project will have insufficient control over the environmental and social impacts caused by the construction process. However, given the speculative nature of these concerns, they cannot be considered a significant gap

Criteria met: Yes

5.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

The socio-economic baseline in the Social Impact Assessment is limited in its scope and range of stakeholders identified, with the household survey only covering directly-affected households (Assessment).

1 significant gap

5.3 Scoring Summary

Environmental and Social Impact Assessments have been undertaken over the last four years, for project implementation and operation with no significant gaps, and have established a baseline against which post-project changes can be compared. The assessment takes some broad considerations into account, but the socio-economic baseline was limited in its scope and the range of stakeholders identified, with the household survey only covering directly-affected households, constituting a significant gap against proven best practice. The EIA and SIA do, however, satisfactorily assess the environmental and social risks posed by the project, in the short and long term.

An EMP and an SAP have been developed, using expertise from within KEL, Hydro Consult and the financing institutions, and both documents have been publically disclosed. A number of processes are in place to anticipate and respond to emerging risks and opportunities such as monitoring by the owner's engineer, and ongoing studies to improve understanding of aquatic biodiversity and community water uses in the Kabeli basin.

Stakeholder engagement involved appropriately timed, two-way, engagement with directly-affected stakeholders in an inclusive and participatory manner using focus groups and household surveys. Ongoing processes are in place for stakeholders to raise issues and get feedback through project staff on site, a project-information centre, and a formal grievance mechanism.

Environmental and social plans avoid, minimize, mitigate or compensate negative project impacts with no identified gaps, and plans provide for social enhancements through local employment, skills development, improved schools and health centres. Improved catchment management will increase forest cover, reducing erosion and the risk of landslides.

There is one significant gap against proven best practice, resulting in a score of 4.

Topic Score: 4

5.4 Relevant Evidence

Interview:	3, 20-22, 24, 25, 36, 38, 40, 46, 48
Document:	1, 3-21, 24, 27, 31, 37-39, 41, 47, 50, 61-63, 65
Photo:	None

6 Integrated Project Management (P-6)

This topic addresses the developer's capacity to coordinate and manage all project components, taking into account project construction and future operation activities at all project-affected areas. The intent is that the project meets milestones across all components, delays in any component can be managed, and one component does not progress at the expense of another.

6.1 Background Information

Kabeli Energy Ltd (KEL) won the right to develop the Kabeli-A project under a Build, Own, Operate and Transfer (BOOT) model and signed a Project Development Agreement with the Department of Electricity Development of the Government of Nepal in 2010. KEL will undertake all procurement of goods, works, consulting and non-consulting services that the project requires. KEL engaged Hydro-Consult Engineering Ltd (HCEL) for the majority of project design and preparation of the bid documents. KEL also engaged Tata Consulting Engineers Ltd (TCE) as owner's engineer to review project design before issuing the tender documents. In addition, IFC's lender's engineer and the World Bank's PoE also reviewed the documents. Bids for the construction contracts have been received under an international competitive tender process and are currently under evaluation by KEL.

This topic focuses on the management processes for project delivery. Governance of the project is addressed under Topic P-2, Governance, whilst management of the project's environmental and social issues is addressed under Topic P-5, Environmental and Social Issues Assessment and Management. This topic is also closely linked to Topic P-12, Procurement.

6.2 Detailed Topic Evaluation

6.2.1 Management

Analysis against basic good practice

Scoring statement: *An integrated project management plan and processes have been developed that takes into account all project components and activities with no significant gaps; and a construction-management plan has been developed that identifies construction risks and describes processes that contractors and others are required to follow to manage these risks.*

TCE and HCEL have advised KEL on the preparation of the bid and technical documents which will go on to form the basis of the project's construction and equipment contracts. These documents contain KEL's integrated project-management plan and consider scheduling, milestones, significant-path analysis, budget targets and cost-control mechanisms. KEL will continue to engage TCE as owner's engineer, and the IFC and the World Bank will engage an international consulting firm as a lender's engineer. Both engineering firms will give input on project management and provide construction supervision.

The employer's risk-management plan has been developed as part of the bid documents. It identifies construction risks and describes processes that contractors will be required to follow to manage these risks. The risk assessment covers issues that could cause delay, injury to workers, damage or economic loss to third-party property, harm to the environment, or financial loss to KEL. Significant project risks identified are interruption of fuel supply, risk of delays due to road transport, and slow customs clearance of imported goods. The contractor will be required to submit a construction management plan to KEL to address all the identified risks before construction begins.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the integrated project management plan sets out measures to manage interface and delay issues without impinging on overall project timetables and budgets; construction management plans ensure that land disturbance and waste generation activities will be managed so that later rehabilitation activities can be undertaken efficiently and effectively; and processes are in place to anticipate and respond to emerging risks and opportunities.*

Interface issues are addressed in a specific “interface agreement form” that will form part of the agreement between KEL and contractors. The agreement binds contractors to submit a programme that shows how coordination issues will be managed to ensure work can be completed within the schedule. The agreement specifically covers: coordination with other contractors in good faith; agreement of appropriate division of tasks with other contractors; establishment of a coordination committee of contractors operating by consensus; sharing all information regarding scheduled activities; and providing notification of any coordination matter or other conflict.

In line with the EMP contained within the EIA, the contractor will be required to prepare a muck and spoil disposal plan, and a topsoil-saving and reuse plan. When the site is being prepared for the construction of access roads, powerhouse and headworks, contractors will manage topsoil, saving it separately for use in land rehabilitation when construction is completed.

Processes are in place to anticipate and respond to emerging risks and opportunities through an interface and risk-management committee made up of representatives from KEL, the contractor and the owner’s engineers, which will revise risks and look for opportunities for improvement on a monthly basis.

Criteria met: Yes

6.2.2 Outcomes

Analysis against basic good practice

Scoring statement: *The project is likely to meet overall budget and timing objectives and targets, and plans avoid, minimize and mitigate construction risks with no significant gaps.*

Work to optimize the bid documents by TCE and HCL addressed weaknesses identified in the implementation of other hydropower projects in Nepal, and aimed at reducing cost and time overruns whilst improving social and environmental management. In addition, as the project will be constructed under an EPC contract, the contractor will be legally bound to deliver the project on time and to budget, and will pay a penalty fee if the project is delayed. In addition, KEL will maintain 5% of each invoice, which will be paid three months after the completion of each work section, when KEL is satisfied the work has been delivered to the required standard. The project has secured access to finance and has appropriate contingencies built into the budget.

The project negotiation documents will avoid, minimize and mitigate construction risks with no significant gaps, if correctly implemented. The one major risk which has been identified by a number of parties is the geological one which could delay the tunnelling operation and hence the rest of the project. The tunnelling budget has a large contingency, and there are no plausible mitigation strategies to address the risk further, so it is not considered a significant gap.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the project is highly likely to meet overall budget and timing objectives and targets; and plans avoid, minimize, and mitigate construction risks with no identified gaps.*

There are a number of aspects which could affect the project’s ability to meet overall budget and timing objectives. As a special-purpose company, this is the first project KEL has developed and BPC has not

implemented a hydropower project for the last 15 years. There are a number of risks associated with the project that cannot be mitigated, particularly geological risks, landslides blocking road access, and restricted access to fuel. However, the preparation has been undertaken by reputable firms and reviewed by a number of experts from the financing organisations. The project has clear access to finance, good risk assessment and management, large contingencies and good stakeholder relationships, so it is highly likely to meet overall budget and timing objectives and targets. The negotiation documents put in place requirements for contractors which, if implemented correctly, should avoid, minimize and mitigate construction risks with no identified gaps.

Criteria met: Yes

6.2.3 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

6.3 Scoring Summary

An integrated project-management plan and a construction-management plan have been developed as part of the project’s bid documents. These documents account for all project components and activities, including scheduling, milestones, significant-path analysis, budget targets and cost-control mechanisms. The documents also identify construction risks that could cause delay, injury to workers, or harm to the environment, and identify processes to manage these risks.

The integrated project-management plan sets out measures to manage interface and delay issues using a specific interface agreement form that will form part of the agreement between KEL and contractors. An interface and risk-management committee made up of representatives from KEL, the contractor and the owner’s engineers will revise risks and look for opportunities for improvement on a monthly basis. Construction-management plans ensure that land disturbance and waste-generation activities will be managed through a muck and spoil disposal plan, and a topsoil-saving and reuse plan.

Work to optimize the bid documents, use of an EPC contract, secure access to finance, good risk assessment and management, large contingencies and good stakeholder relationships make it highly likely that the project will meet overall budget and timing objectives and targets, and avoid, minimize and mitigate construction risks.

There are no significant gaps against the proven best practice criteria, resulting in a score of 5.

Topic Score: 5

6.4 Relevant Evidence

Interview:	1, 2, 48
Document:	6, 33, 49, 50, 61-65
Photo:	None

7 Hydrological Resource (P-7)

This topic addresses the level of understanding of the hydrological resource availability and reliability to the project, and the planning for generation operations based on these available water inflows. The intent is that the 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 (including climate change) that could affect the project.

7.1 Background Information

The Kabeli River is a tributary of the Tamor River, which is one of the major rivers of the Sapta Koshi Basin that drains the Eastern Development Region of Nepal. The Kabeli River has a catchment area of 862 km² at the intake, ranging in altitude from 560 m.a.s.l. to 5 600 m.a.s.l. and encompassing three major tributaries, the Tawa Khola, Phawa Khola and Inwa Khola.

This topic has some overlap with P-23, downstream flow regimes, where all aspects associated with calculating the appropriate flow to the dewatered stretch is discussed.

7.2 Detailed Topic Evaluation

7.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of hydrological resource availability has been undertaken utilising available data, field measurements, appropriate statistical indicators, and a hydrological model; issues which may impact on water availability or reliability have been identified and factored into the modelling; and scenarios, uncertainties and risks have been evaluated.*

HCEL undertook an assessment of hydrological resource availability utilising available literature, existing meteorological data, gauging-station readings, and discharge measurements. The Kabeli River was ungauged until March 2010, when KEL established a gauging station in order to develop a rating curve. Since the installation, a local person has recorded flow data twice a day and technical staff have undertaken flow measurements at the gauging station. The assessment of hydrological resource also utilized hydrological data from four official gauging stations in the Tamor basin, which have been in operation for between 11 and 41 years. No rainfall data existed for the Kabeli basin itself, but data was available from 11 rainfall stations in the Tamor basin.

The average discharge of the Kabeli River at the dam site has been determined to be 61 m³/s, with a maximum derived flood discharge of 703 m³/s, and minimum estimated flow of 1.7 m³/s. The 100-year return period flood is estimated to be 1 859 m³/s, and the 200-year flood 2 083 m³/s. The assessment of the hydrological resource was carried out by Hydro Consult (HCEL) and reviewed by the World Bank, IFC and PoE.

To make use of the limited data set available for the Kabeli River, various methods were used to determine the project hydrology, including the HYDEST method developed by the Nepali Department of Hydrology, correlation with the Tamor River at Mulghat, and the MSHP method developed by the Nepal Electricity Authority (NEA). Five different methods were used to estimate the precipitation in the Kabeli basin based on the available rainfall data, including the arithmetic-mean method, Thiessen-polygon method, inverse-square-distance method, inverse-distance-weight method and the iso-hyetal method. The estimated flows were checked against the gauging data and analysed for long-term trends. The accuracy of the rating curve was checked using the coefficient of determination and mean-absolute-error method. Ultimately, HCEL chose to adopt the long-term monthly average hydrograph from the catchment correlation with the Mulghat station (44 years of data), adjusted for

rain, snow and proration factor. KEL has incorporated this estimate of discharge into a basic spreadsheet hydrological model.

The feasibility study states that the project has no water-sharing issues, and assumes that all available river flow (with the exception of the downstream release) can be used for power generation. The impacts of potential upstream projects (Phawa Khola, Kabeli B, Iwa Khola and Upper Ingwa Khola) are not assessed, but as these are all run of river projects, this is not considered a significant omission. There is no assessment of external factors that may affect water availability, such as changes to agricultural activities, development of upstream industry or irrigation. However, this type of development is considered unlikely in the remote upper catchment of the Kabeli River and the SAP contains river basin management planning to improve watershed management, so again, this is not considered a significant omission. Trend analysis based on the available hydrological statistics has been undertaken and suggests a long-term increase in average flow, maximum flow and minimum flow. The average flow has increased from approximately 50 m³/s in 1965 to approximately 70 m³/s in 2005.

The feasibility study includes analysis of low flows and flood flows using a variety of methods. The Weibull method was used to estimate low flows, and flood flows were assessed using the Catchment Area Ratio (CAR) method, by regression analysis and by regional flood-frequency analysis. The risk of glacial-lake outburst has been examined, although there are few glacial lakes in the Kabeli basin, and all are located below 4500 m.a.s.l. None of the lakes in the Kabeli catchment are considered dangerous by the International Centre for Integrated Mountain Development, better known as ICIMOD (a regional research organisation), and an outburst from one of the largest lakes above the site would yield a peak discharge lower than a 10-year flood.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, issues that may impact on water availability or reliability have been comprehensively identified; and uncertainties and risks including climate change have been extensively evaluated over the short- and long-term.*

The hydrological study does not make a comprehensive assessment of issues that may affect water availability or reliability, such as future hydro projects, future changes in water-resource use, and future development of agriculture, industry, or population growth. However, such issues are unlikely to develop in the remote areas of the upper Kabeli, so this is not considered a significant gap.

Uncertainties and risks including climate change have not been extensively evaluated over the short or long term, which is a **significant gap** against proven best practice. The World Bank's Project Appraisal Document considers general climate-change impacts for Nepal, but there has been no analysis of site-specific temperature and precipitation changes using a global climate models or runoff modelling to estimate future changes in net water yield. Although modelling of the impact of climate change on the Koshi basin has been done by the International Water Management Institute (IWMI), this was not factored into the analysis of hydrological resource by HCEL.

Criteria met: No

7.2.2 Management

Analysis against basic good practice

Scoring statement: *A plan and processes for generation operations have been developed to ensure efficiency of water use, based on analysis of the hydrological resource availability, a range of technical considerations, an understanding of power system opportunities and constraints, and social, environmental and economic considerations including downstream flow regimes.*

The project design has considered the available hydrological resource and the required downstream water release, to optimize the generation operation plan. The project will operate as a peaking run-of-river project, running at full capacity continuously in the monsoon period, and at reduced capacity for a variable number of

hours during the dry season. During the monsoon, the available river's discharge will exceed the project's design discharge, so the majority of the flow will pass down the river channel as it does today, over open gates. During the dry period, the plan is based on an understanding of power-system opportunities and constraints, aiming to meet the peak needs of the Nepali power grid, which has strong demand between 6 am and 8 am, and 6 pm and 10 pm. According to the World Bank Appraisal Document, the plant operations will use a gradual start up and shut down to avoid rapid changes in the river flow.

The preparation of the operation plan was carried out by HCEL and they have been reviewed by the World Bank, IFC and PoE. The operation plan and associated planned downstream-flow releases have considered social, environmental and economic issues, which are discussed in detail in other topics. Safety considerations are discussed in P-8, Infrastructure Safety; erosion and sedimentation considerations are discussed in P-16, Erosion and Sedimentation; and downstream-flow considerations are discussed in P-23, Downstream Flow Regimes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, generation operations planning has a long-term perspective; takes into consideration multiple uses and integrated water-resource management; fully optimizes and maximizes efficiency of water use; and has the flexibility to adapt to anticipate and adapt to future changes.*

In addition, generation operations planning takes a long-term perspective by, for example, implementing a catchment management plan which includes provision to train local people to improve their management of the forest in the river basin. The planned cumulative impact assessment will provide resources to examine basin wide planning in more detail.

As a run-of-river project with limited storage capacity, the project does not have the ability to incorporate flood-management practices or assist with irrigation or water-supply management. The plan takes into account the limited multiple uses of the river, particularly provision of sufficient water for bathing and funerals, discussed in detail under other topics such as P-13, Project-Affected Communities and Livelihoods, and P-23, Downstream Flow Regimes. The plan optimizes and maximizes efficiency of water use, making best use of the hydrological resource given the opportunities and constraints. It has the ability to adapt to future changes by, for example, varying the periods when it is operating at full and partial capacity.

Criteria met: Yes

7.2.3 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against proven best practice.

0 significant gaps

Analysis of significant gaps against proven best practice

Uncertainties and risks including climate change have not been extensively evaluated over the short or long term (Assessment).

1 significant gap

7.3 Scoring Summary

An assessment of hydrological resource availability has been undertaken utilising available data from existing gauging and rainfall stations in the Tamor basin as well as a newly established gauging station on the Kabeli River. To make up for the limited data set available for the Kabeli River, various statistical methods were used to

determine the river’s hydrology and this estimate of discharge has been built into a basic spreadsheet hydrological model.

Issues that may affect water availability or reliability have not been clearly identified and factored into the modelling, but the remote, sparsely populated nature of the upper Kabeli basin means there are no issues that could have a large impact on the resource, so this is not considered a significant gap. The feasibility study includes analysis of low flows and flood flows using a variety of methods, and examines the risk of glacial-lake outburst floods.

The project has not undertaken extensive evaluation of uncertainties and risks that might affect the hydrological resource. Although the broad impacts of climate change in Nepal have been discussed, there has been no detailed analysis of the potential Kabeli-specific climate-change impacts carried out as a part of the hydrological modelling. This is a significant gap against proven best practice.

A plan and processes for generation operations has been developed to ensure efficiency of water use, with the project operating as a peaking run-of-river project during the dry season and running at full capacity during the monsoon. In addition, generation operations planning has a long-term perspective; takes into consideration other water uses such as ritual baths and cremations, and has the flexibility to adapt to future changes by varying its generating schedule.

There is one significant gap against the proven best practice criteria, resulting in a score of 4.

Topic Score: 4

7.4 Relevant Evidence

Interview:	20, 39, 48
Document:	6, 31-33, 35, 61-63, 65
Photo:	None

8 Infrastructure Safety (P-8)

This topic addresses planning for dam and other infrastructure safety during project preparation, implementation and operation. The intent is that life, property and the environment are protected from the consequences of dam failure and other infrastructure safety risks.

8.1 Background Information

The Kabeli-A Hydro-Electric Project (KAHEP) will have a peaking reservoir with a total capacity 0.67 million m³ and live storage of 0.335 million m³. It will utilize a 15-meter wide low-crested breast-wall barrage structure with three weir bays and one sluice bay. The dam is designed to be capable of passing a 1 000-year return period flood, equivalent to 2 750 m³/s, with all four gates open. At full supply level (FSL) the reservoir sits at 577.3 m.a.s.l, 14 meters above the riverbed. Other structures associated with the project include two underground settling basins, a 225-metre diversion tunnel during construction, a 437-metre access tunnel, a 4 327-meter headrace tunnel, a surge shaft and a penstock. The powerhouse, on the left bank of the Tamor River, will be partially underground, located just downstream of the switchyard. The project is located in a zone of high seismicity.

This topic has overlaps with P-7, Hydrological Resource where the calculation of potential high flows is discussed, and P-13, Project-Affected Communities and Livelihoods, which discusses safety aspects in local communities.

8.2 Detailed Topic Evaluation

8.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of dam and other infrastructure safety risks with appropriate expertise during project preparation, construction and operation, with no significant gaps.*

Hydro-Consult Engineering Ltd (HCEL) has undertaken an assessment of dam and other infrastructure safety risks, using appropriate internal expertise, with review by TCE, the IFC, the World Bank and the Panel of Experts (PoE). The project triggered the World Bank Operational Policy 4.37 (Safety of Dams) which required KEL to meet the appraisal-stage requirements of this policy. In addition, the assessment of safety risks had to comply with the IFC Performance Standard 4 on Community Health, Safety and Security.

The Employers' Risk Management Plan (EmRMP) assesses construction-period risks such as monsoon flood, dry-season flood, weak foundation strata, groundwater seepage, earthquakes, slope failure, collapse of excavated surfaces and breaching of the cofferdam. The emergency preparedness plan for the operation phase includes assessment of potential safety issues such as flood, upstream landslide damming river, earthquake, seepage, internal erosion, gate failure, power loss, fire, sabotage and uplift pressure. The geological baseline study made a detailed investigation into the regional geology, seismicity, in-situ stress conditions, and geology at project sites.

The civil design includes analysis and design of bridge, piers and breast wall, barrage floor, taintor gates, flood walls and the emergency spillway. HCEL also conducted stability analysis for the main structures considering normal dry conditions, normal flood conditions, an earthquake in dry conditions and an earthquake in flood conditions. HCEL undertook a dam-break analysis, based on the predicted flows, and from this created inundation maps to analyse the potential impact of a dam break on downstream areas.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment includes consideration of a broad range of scenarios, and includes both risks and opportunities.*

The analysis looks at the most probable dam-break scenario, which is a failure of the control gates. Analysis did not consider a broad range of scenarios, however, given the limited risk associated with a dam break, this is not considered a significant gap.

The studies include a good assessment of risks, as outlined above, covering most conceivable safety issues. A number of opportunities to investigate improvements to dam safety have been taken, prompted by a review by the IFC, including increasing the design flood to the 1 000-year flood and expanding the scope of monitoring to cover seepage and uplift.

An assessment of opportunities to use new technologies has led to a number of automated safety features and extensive monitoring instrumentation, discussed under Management below. The instrumentation installed will allow future assessment of design performance, prediction of future emerging safety issues, legal evaluation following an adverse event, and improvement to future designs. In addition, a supervisory control and data acquisition (SCADA) system will be used to monitor water levels and to control the plant's operation.

The project took advantage of local expertise from Hydrolab, a hydraulic laboratory in Kathmandu, which was commissioned to build a 1:50 physical model of the project to test the hydraulic design. The model was used to test, among other things, the safe passage of design floods, and passage of floating debris.

Criteria met: Yes

8.2.2 Management

Analysis against basic good practice

Scoring statement: *Dam and other infrastructure safety management plans and processes have been developed for project implementation and operation in conjunction with relevant regulatory and local authorities with no significant gaps and provide for communication of public safety measures; emergency-response plans include awareness and training programmes and emergency-response simulations; and dam safety is independently reviewed.*

HCEL has prepared plans for construction supervision and quality assurance as part of the negotiation documents for the project tender. In addition HCEL has prepared a brief for Dam Safety Plans for the operation phase which includes plans for an Operation and Maintenance Manual (OMM), an Emergency Preparedness Plan and an Instrumentation Plan.

The OMM will be finalized before commercial operation begins. It will document operation procedures, and maintenance and surveillance plans. The plan will define preventative actions for the operator if issues such as cracks in the dam, movement of the dam on its foundations or excessive seepage are identified. The maintenance plan will specifically address issues with concrete structures such as uplift pressure and water seepage, abrasion, alkali aggregate reaction and sulphate attack. Checks on steel structures will investigate alignment, anchor bolts, welds, and protective coatings. The plan will require a dam-safety operations logbook to be maintained which will record weather conditions, upstream river damming, landslides and construction of other dams.

Dam gates will be routinely inspected before each monsoon season. During the monsoon season, the reservoir will be maintained at the lowest regulation level of 572.5 m.a.s.l, allowing monsoon flows to pass the dam freely. A flood and sediment sensor will be also be installed 1.5 km upstream of the dam to warn operators to open the gates in the event of high flows. If the water in the reservoir rises to within half a meter of FSL then a flap gate will automatically open and lower the reservoir level to 572.5 m.a.s.l. In addition, there is an emergency spillway on the right bank of the river that will function when the reservoir level exceeds FSL. There are openings above the gate structures, and below the bridge deck, which will also prevent damming in an emergency situation.

Nepal does not have a regulator responsible for dam safety as all previous projects have been developed by the Government rather than by a private developer. As such, safety plans have not been developed in conjunction with the authorities. Emergency-response plans have been developed in conjunction with local government authorities such as the District Development Council and the Chief District Officer and the local police force.

Public-safety issues and preventative measures for both construction and operation have been discussed with project-affected communities during the consultation process. There are plans for signage at the river and construction areas from the construction period onwards, to warn of the danger associated with the quarries, dam site, tunnel outlets and tailrace outlet.

An emergency-response plan (entitled Emergency Preparedness Plan, EPP) will be developed to deal with a potential breach of the dam or other high-flow event. The plan will describe actions that will be taken in the event of an emergency, and will define responsibilities within the KEL, local government and police. In the event of a dam breach, KEL will be responsible for contacting a large number of external stakeholders, including the chair of the water user's committee, the farmers' association, the fishing community and the VDC. KEL will provide regular training to staff responsible for implementing the EPP.

The EPP will be regularly tested to ensure that its documentation is sufficient and that staff have had sufficient training. Tests will range from a desktop review to a full-scale simulation, contacting all appropriate people, although evacuation of downstream communities will not be necessary or planned.

Dam safety was reviewed by the independent PoE with expertise in dam engineering, dam safety, geology and tunnelling. The PoE confirmed that the dam will be safe under normal conditions and extreme conditions such as earthquakes and floods. The PoE have also confirmed that the dam meets the World Bank's OP 4.37.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; plans provide for public safety measures to be widely communicated in a timely and accessible manner; and emergency-response plans are independently reviewed.*

A number of instruments will be installed in the dam to monitor changes in real time to anticipate emerging risks. These include instruments to monitor uplift, seismography, seepage and piping measurement, air and water temperature, and a plumb line to check verticality. A SCADA system will be used to monitor water levels and to control the plant's operation.

The operations manual will be revised regularly, at intervals not exceeding one year, beginning six months prior to the first filling of the reservoir. This will incorporate new risks and opportunities that have been identified, with strategies in place to address them. The EPP will be tested on an annual basis to identify the need for updates or amendments in response to emerging risks and opportunities, such as availability of new engineering expertise in the event of an emergency.

Public safety measures will be communicated across the affected area. During operation, the project will use sirens to communicate to people in the dewatered stretch and downstream of the powerhouse to indicate an imminent change in flow rate.

Emergency-response plans were independently reviewed by the PoE.

Criteria met: Yes

8.2.3 Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimize and mitigate safety risks with no significant gaps.*

Plans avoid, minimize and mitigate safety risks with no significant gaps. The risk-assessment process has rigorously identified potential issues and put in place mitigation and monitoring measures. The emergency-response plan will include communication, allocation of responsibility and a defined response to all identified potential failure modes.

The reservoir will not contain a large volume of water, and its release in the event of dam break would result in a flow less than the 100-year flood. Inundation maps have been prepared and show that in the event of a dam breach and the anticipated 1 082 m³/s discharge, no household or settlement would be affected. After the confluence with the Tamor River the impact of a dam break would be less significant and again there are no riverside settlements which would be affected. Nonetheless, a flood-warning system will be installed to warn people downstream of the dam in the event of a possible breach.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans contribute to addressing safety issues beyond those risks caused by the project itself.*

Plans do not contribute to addressing safety issues beyond those risks caused by the project itself. There are opportunities to improve the safety of existing roads, prevent risk of drowning in bodies of water not influenced by the project, which could be taken to meet this criteria. This is a **significant gap**.

Criteria met: No

8.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

Plans do not contribute to addressing safety issues beyond those risks caused by the project itself (Outcomes).

1 significant gap

8.3 Scoring Summary

HCEL undertook an assessment of dam and other infrastructure-safety risks for implementation and operation phases using internal expertise. This has been reviewed by experts from the owner's engineer and the financing organisations. The assessment includes risks such as earthquake, seepage and sabotage, and also opportunities such as using local specialists to physically model the safe passage of design floods. The assessment does not consider a broad range of scenarios, but this is not considered a significant gap given the limited risk associated with dam break.

Dam and other infrastructure-safety management plans and processes have been developed for project implementation as part of the construction supervision and quality-assurance documents. Safety management during the operation phase will be covered by an Operation and Maintenance Manual (OMM), an Emergency-Preparedness Plan and an Instrumentation Plan. The EPP puts in place processes for the communication of public safety measures and includes public awareness and training programmes and emergency-response simulations. Dam safety and the EPP have been independently reviewed by the PoE.

In addition, processes are in place to anticipate and respond to emerging risks and opportunities. A number of instruments will be installed in the dam to monitor changes in real time to anticipate emerging risks, the operations manual will be revised regularly to cover new risks and opportunities and the EPP will be tested on

an annual basis to identify the need for updates or amendments. Plans provide for public-safety measures to be widely communicated in a timely and accessible manner, signs will be used to warn the public of site dangers and a siren will be used to warn of an impending change in river flow rate.

Plans avoid, minimize and mitigate safety risks with no significant gaps. The risk-assessment process has rigorously identified potential issues and put in place mitigation and monitoring measures. However, plans do not contribute to addressing safety issues beyond those risks caused by the project itself, which is a significant gap at the proven best practice level.

There is one significant gap against proven best practice, resulting in a score of 4.

Topic Score: 4

8.4 Relevant Evidence

Interview:	39, 47, 48
Document:	6, 26, 30-34, 50, 61-65
Photo:	None

9 Financial Viability (P-9)

This topic addresses both access to finance, and the ability of a project to generate the required financial returns to meet project funding requirements, including funding of measures aimed at ensuring project sustainability. The intent is that 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.

9.1 Background Information

Butwal Power Company (BPC) the owners of the Kabeli-A Hydro-Electric Project (KAHEP) won the right to develop the project from the Government of Nepal (GoN) in 2010 following an international competitive bidding process. The bid process also secured a Power Purchase Agreement (PPA) with the Nepal Electricity Authority (NEA) for all the power generated by the project. BPC established Kabeli Energy Limited (KEL) in 2010 as a special-purpose entity to develop, construct and operate the project.

The project will be financed through a mix of debt from international financing organisations and shareholder equity. The proposed cost of the project is US\$102.6 million, which comprises US\$40.0 million IDA credit, US\$38.6 million IFC senior loan, US\$1.0 million commercial bank senior loan and US\$23.1 million KEL equity reserve.

This topic has some overlap with P-2, Governance, which discusses project ownership structure, and P-12, Procurement, which addresses procurement plans and processes.

9.2 Detailed Topic Evaluation

9.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of corporate financial viability, including potential project costs and likely revenue streams, has been undertaken using recognized models with no significant gaps; analyses include risk assessment, scenario testing and sensitivity analyses.*

During the bidding process, BPC created a financial model to analyse project costs and revenues in order to demonstrate the project's viability to the GoN, based on the proposed tariff. The model's estimate of project cost is based on engineering costs, the cost of financing, capacity royalty, energy royalty, operation and maintenance costs, insurance (construction and operation), and taxes (following 15-year exemption period). The model's estimate of project revenues is based on expected energy generation (from the hydrological study) and the tariff rate. The model also accounts for the disbursement schedule to estimate project cash flow. The model's parameters, assumptions and findings have been reviewed by Synergy (an Indian consultant), the World Bank and the GoN, and BPC has incorporated suggested revisions.

BPC undertook a risk assessment to analyse possible impacts on financial viability. The contracting process will pass many of the project financial risks onto the contractor, but KEL remains exposed to fluctuation in the value of foreign exchange and changes in interest rates. An over-estimation of the hydrological resource is also highlighted as a risk which could reduce revenue.

Sensitivity analysis has been undertaken by both BPC and the World Bank to determine how financial viability could be affected by variation in the project's underlying assumptions. BPC's analysis looks at the effect of project cost overrun on return on equity. Whilst the base case gives a return on equity of 14.56%, a cost overrun of 5% is predicted to reduce the return on equity to 13.68%, a reduction in project costs of 9.09% (equivalent to unused contingencies) is predicted to increase the return on equity to 17.75%. The World Bank's analysis looks at the sensitivity of financial internal rate of return (FIRR) from a base case of 10.5%. A 20% cost increase is anticipated

to reduce the FIRR to 8.8%, a decrease in benefit of 20% would reduce the FIRR to 8.0% and a one-year delay in commissioning would reduce the FIRR to 9.7%.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, project costs and revenue streams are fully detailed; and financial viability of the project has been analysed and optimized including extensive scenario testing, risk assessment, and sensitivity analyses.*

Project costs and revenue streams are fully detailed. The financial viability of the project has been analysed, however, the scenario-testing and sensitivity analysis were not extensive. The range of scenarios tested was limited and there is no evidence of significant research into variation in market conditions or other risks which could affect the financial viability of the project. This is a **significant gap**.

Criteria met: No

9.2.2 Management

Analysis against basic good practice

Scoring statement: *Financial management plans and processes have been developed for project implementation and operation with no significant gaps, and opportunities for project financing have been evaluated and pursued.*

The project financial plan sets out the results of the financial modelling and sets short and medium term financial targets and the debt coverage ratio. The plan puts in place the annual disbursement schedule for the implementation period and the budget for the operation period. World Bank funds will be channelled to KEL via the GoN on-lending facility, the Hydroelectricity Investment & Development Company Limited (HIDCL). The HIDCL will act as an intermediary only, receiving and disbursing the subordinated loan.

The base tariff agreed with NEA is 6.2985 USc/kWh, including VAT. To reduce the risk of foreign-currency fluctuation, BPC has chosen to finance the project largely in USD, and has negotiated that NEA will pay 60% of the project's tariff in USD. The proportion of the revenue received in USD will be sufficient to repay the international loans. The remaining revenue received in NRS will be used to pay for the project's ongoing operation and maintenance. The foreign-currency component of the tariff will escalate at 3% for 10 years; the local-currency component will escalate at 6% for 10 years.

To reduce exposure to interest-rate fluctuation, international finance will be received at a fixed-interest rate, based on the London Interbank Offered Rate³ (LIBOR). The interest on local finance will be adjusted annually. KEL will also maintain a debt-service reserve account of USD 2.63 million, which will be available to service debt repayment in the event of delayed project commissioning.

KEL will pay two royalties to the GoN based on the installed capacity and the amount of energy generated. A "capacity royalty" of 100 NRS/kW will be paid for 15 years, increasing to 1 000 NRS/kW from year 16 until the end of the licence period. An "energy royalty" of 2% of the total revenue from the sale of energy will be paid for 15 years, increasing to 10% from year 16 until the end of the licence period.

Opportunities for project financing from the World Bank and IFC have been successfully pursued. This option was chosen since the cost of finance from commercial banks would have rendered the project unprofitable.

Criteria met: Yes

³ The average interest rate estimated by leading banks in London that the average leading bank would be charged if borrowing from other banks.

Analysis against proven best practice

Scoring statement: *In addition, financial management plans provide for well-considered contingency measures for all environmental and social mitigation plans and commitments; and processes are in place to anticipate and respond to emerging risks and opportunities.*

Financial management plans include contingency measures for tunnelling (25%), civil works (15%) and for hydro- and electro-mechanical works (7%). Although the costs of environmental and social management plans are included in the financial plan, well-considered contingency measures are not accounted for; which is a **significant gap**.

Processes are in place to anticipate and respond to emerging risks and opportunities. KEL will report to the World Bank and IFC every quarter, this will drive KEL to identify emerging risks and opportunities and put in place measures to manage them. The financial model is regularly reviewed and updated to accommodate changes in the external context. For example, in the last fiscal budget the GoN put in place incentives to speed up project development by extending tax exceptions, this has been incorporated into the model. The next scheduled revision of the model will be undertaken when the construction contracts are signed. BPC also commission internal financial audits on a periodic basis by an independent auditor who checks internal control and risk management of the company.

Criteria met: No

9.2.3 Outcomes

Analysis against basic good practice

Scoring statement: *The project can manage financial issues under a range of scenarios, can service its debt, can pay for all plans and commitments including social and environmental, and access to capital can be demonstrated.*

Demand for electricity in Nepal is high, all the power generated by KAHEP is likely to be fully dispatched, and the PPA provides additional legal security to the project income. The project is anticipated to have a net income of approximately USD 2million in its first year of operation, increasing gradually and levelling out at approximately USD 4.5 million per year after 15 years of operation. BPC has demonstrated access to capital by securing investment in the project from both the IFC, the World Bank and from local investors

The World Bank has assessed the project return on equity to be marginal, given the project's cost escalation over the last five years and the relatively low tariff agreed with GoN. However, the project is financially viable with financing at concessionary rates from IFC and the World Bank, resulting in an FIRR of 10.5%. The project will be able to service its debt, with the minimum debt-service cover ratio of 1.25, which implies that the project will be able to meet its financial commitments within the loan period.

The project can manage financial issues under a range of scenarios, as demonstrated by the financial modelling. Financial planning is accompanied by a risk assessment which gives confidence that risks can be avoided, minimized or managed. Measures have been put in place to reduce the project's exposure to the financial risks that have been identified. The financial management plan factors in all environmental and social commitments.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the project can manage financial issues under a broad range of scenarios.*

The limited scope of the sensitivity analysis and scenario testing limits the extent to which the project can demonstrate its ability to manage financial issues under a broad range of scenarios. This is a **significant gap**. It is, however, the same gap as that identified under Assessment above, and will not be double-counted here.

Criteria met: No

9.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

Scenario testing and sensitivity analysis were not extensive (Assessment and Outcomes).

The financial plan does not account for well-considered contingency measures for environmental and social management plans (Management).

2 or more significant gaps

9.3 Scoring Summary

BPC undertook an assessment of potential project costs and revenue streams, using a recognized model to demonstrate the project's financial viability. The modelling included a basic sensitivity analysis of the impact of cost overrun on return on equity. Sensitivity analysis by the World Bank also considered the impact on the FIRR of a cost increase, a decrease in benefits, and a one-year delay in commissioning. However, the range of scenarios tested was limited and there is no evidence of significant research into variation in market conditions that could affect the financial viability of the project. This is a significant gap at the level of proven best practice.

Financial management plans and processes have been developed for project implementation and operation with no significant gaps, and opportunities for project financing have been evaluated, pursued, and secured from the World Bank, IFC and commercial finance institutions. Although the costs of environmental and social management plans are included in the financial plan, well-considered contingency measures are not accounted for which is a significant gap at the level of proven best practice. Processes are in place to anticipate and respond to emerging risks and opportunities. The financial model will be regularly revised and KEL will report to the World Bank and IFC every quarter on emerging risks and opportunities.

The project can manage financial issues under a range of scenarios, and the analysis demonstrates it is financially viable with financing at concessionary rates from IFC and the World Bank, with a financial internal rate of return of 10.5%. However, the limited scope of the sensitivity analysis and scenario testing limits the extent to which the project can be said to have demonstrated its ability to manage financial issues under a broad range of scenarios. This is a significant gap against proven best practice, but the same gap has been scored under Assessment and will only be counted once.

There are two significant gaps against proven best practice, resulting in a score of 3.

Topic Score: 3

9.4 Relevant Evidence

Interview:	3, 4, 23, 37
Document:	5, 6, 50, 51, 61-63, 65
Photo:	None

10 Project Benefits (P-10)

This topic addresses the additional benefits that can arise from a hydropower project, and the sharing of benefits beyond one-time compensation payments or resettlement support for project-affected communities. The intent is that 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.

10.1 Background Information

This topic addresses additional benefits and benefit-sharing strategies with affected communities, beyond mitigation and compensation of direct impacts.

For a full description of directly- and indirectly-affected communities, and of the social conditions in the project area, please refer to topic P-13, Project Affected Communities and Livelihoods.

This topic has some inter-relationships with other social topics which are clarified below.

Local employment creation as a compensation for land acquisition is covered under P-13; while support for local businesses and job opportunities for unemployed local people will be covered under this topic.

This topic will address payment of local and regional royalties and transfers as a benefit-sharing mechanism; income-generating programmes; vocational-skills training; provision of, and improvement in, basic community infrastructure; and other voluntary programmes and development initiatives.

Other contributions to addressing affected communities beyond the impacts caused are addressed under topic P-13, in particular at the level of proven best practice. Additional public-health benefits are addressed under topic P-18, Public Health. Additional benefits directed specifically to Indigenous Peoples are addressed under topic P-15, Indigenous Peoples.

10.2 Detailed Topic Evaluation

10.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of opportunities to increase the development contribution of the project through additional benefits and/or benefit-sharing strategies has been undertaken; and the pre-project baseline against which delivery of benefits can be evaluated post-project is well-documented.*

Hydro-Consult Engineering Ltd. (HCEL) conducted an assessment of project benefits and development opportunities as part of the Social Impact Assessment (SIA) and Social Action Plan (SAP) studies. The SIA identifies key regional and community benefits to be provided in the project area. Based on the SIA, the SAP establishes a benefit-sharing mechanism and details it at two levels. At the project level, there are community-development initiatives (through the provision of the re-aligned access road, improvement of health facilities, local employment creation), support to local development (including support to local economy, drinking-water scheme, rural community electrification, occupational-skill training, financial services, improvement of education facilities, and agricultural-extension services), and company Corporate Social Responsibility (CSR) programme. Activities carried out to date under the CSR programme have included establishment of a seedling nursery, a free dental campaign, supports to local youth clubs, improvement of local school facilities etc. It is planned that at the implementation stage further CSR actions will be identified through community-needs surveys and consultations. At the regional and national level, benefits will be provided through power supply and royalty payments.

The benefit-sharing assessment identifies two categories of funding for local development that will be generated by the Kabeli-A Hydro-Electric Project (KAHEP). The first is the project fund to be used for the four affected VDCs over 3.5 years during the construction period, and it is already included in the project cost. The second source of funding is project royalties paid to the Government of Nepal (GoN) during the 30-year license period. These royalties will be allocated as per the national legislation: 50% stays at the central-government level and 50% is channelled to the project-affected region (i.e. Eastern Development Region) for local development activities. Of these 50, 12 will be allocated directly to project-affected districts (in the case of the KAHEP, 9 is allocated to Panchthar District and 3 to Taplejung District); and the remaining 38 will be distributed among all districts of Eastern Development Region. From the share received by the districts, 1% of the total royalty will be provided to VDCs that are directly affected by the project (i.e. four VDCs in the two districts) for the sole purpose of expanding village electrification.

The pre-project socioeconomic baseline against which delivery of benefits can be evaluated is documented in the SIA and SAP, including data at regional, district and VDC levels as well as from the household questionnaire survey. The SIA/SAP provides a baseline for regional and local development activities, access to civic amenities, employment, migration trends, livelihood patterns and practices, existing infrastructure, and a vulnerability analysis of affected communities. As reported by KEL, a detailed needs survey including some level of baseline study of the affected communities will be conducted prior to the implementation of the benefit-sharing programmes. For example, when the rural electrification programme is initiated, KEL will undertake a community needs survey to identify individual households who seek electrification and have the ability to pay for the electricity.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, broad considerations have been taken into account in identifying opportunities.*

The benefit-sharing measures consider a broad view of the geographic area and a breadth of types of benefits with objectives for local and regional development. While KEL plans direct and intensive assistance and support to the four project-affected VDCs through SAP programmes, it also provides broad support to local economic development in the districts and the region through employment, CSR activities and royalty distribution. And the benefit-sharing measures consider a breadth of stakeholder interests and respond to most pertinent concerns of the affected communities, including local electrification, improvement of road access, preferential employment and training. For example, a major measure, responding to requests from the local communities, is to provide grid-electricity to the project-affected VDCs under the ongoing Kabeli Transmission Line Project (KTLP), managed by Nepal Electricity Authority (NEA).

The SAP considered interrelationships amongst opportunities and development objectives. The Indigenous and Vulnerable Community Development Plan (IVCDP) provides additional specific development opportunities for vulnerable groups, including indigenous peoples. It comprises a women-focused programme (e.g. micro-credit, small business), a capacity-building programme with engagement of a local NGO, specific provision for indigenous people (*Adivasi Janajati*), loan assistance and measures to increase vulnerable groups' participation.

In addition, as part of the EIA, HCEL conducted a Rapid Cumulative Impact Assessment. As one identified mitigation measure, KEL plans to work with the World Bank, GoN and other stakeholders to design a governance mechanism to mitigate and monitor environmental and social cumulative impacts across the Tamor River basin. This will be conducted through technical assistance for the Ministry of Energy (MoE) to increase GoN's capacity.

Criteria met: Yes

Analysis against basic good practice

Scoring statement: *Project benefit plans and processes have been developed for project implementation and operation that incorporate additional benefit or benefit-sharing commitments; commitments to project benefits are publicly disclosed.*

Plans and processes that incorporate additional benefit and benefit-sharing commitments are developed for project implementation and operation, including: project benefit-sharing measures; enhancement measures to support vulnerable groups (indigenous people, Dalits and women) as specified in the ICVDP; royalty payments to GoN to support rural electrification and regional development; and technical assistance for the Ministry of Energy (MoE).

The project benefit-sharing measures are budgeted for in the SAP, which covers a local development fund for the affected VDCs over 3.5 years during the project implementation phase. The ICVDP is also included in the SAP budget. Payment of royalties will start during the operation phase.

Capacity building of GoN will be conducted through technical-assistance funding provided by the International Development Association (IDA). A budget of USD 2 million is assigned.

KEL is committed in the SAP to support measures for development and welfare opportunities for local and regional project-affected communities. Flyers of the executive summary of the EIA and SAP reports in local languages are distributed to the affected communities in the project area and made available in the Project Information Centre (PIC). Consultations with representatives of project affected communities show that they are aware of the proposed benefit-sharing programmes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes have been developed to anticipate and respond to emerging risks and opportunities.*

KEL has developed processes in place to anticipate and respond to emerging risks and opportunities during the implementation of benefit-sharing measures.

Firstly, the SAP designs four rounds of consultation for the SAP implementation, including a first round to disseminate SAP options; a second round to agree on entitlement packages; a third round during actual implementation to collect comments; and the fourth round being continued engagement and feedback on progress and outcomes. This mechanism allows KEL to identify and responds to emerging risks and opportunities.

Secondly, the SAP Monitoring and Evaluation Plan will assist KEL in anticipating, identifying and addressing emerging risks and opportunities during the project implementation phase. Four levels of monitoring are in place, internal monitoring, external monitoring, Panel of Expert (PoE) review and World Bank review missions (for details on this, see topic P-5, Environmental and Social Impact Assessment and Management). In addition, a renewed baseline study will be conducted halfway through the construction phase (estimated to be in 2017) on project-affected communities in the Project Area. Outcomes of the benefit-sharing measures will be monitored, evaluated and fed back for potential changes as needed.

Thirdly, the PIC, the four social staff placed on the site, coupled with the grievance redress mechanism, will allow KEL to anticipate and respond to emerging risks and opportunities raised from project stakeholders.

Criteria met: Yes

10.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning process relating to project benefits has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; ongoing processes are in place for stakeholders to raise issues and get feedback.*

The assessment and planning process relating to project benefits has been and will continue to be conducted through free, prior and informed consultations. During the EIA scoping phase, community baseline information was collected to facilitate assessing and planning for benefit-sharing measures, while project information was disseminated to stakeholders; at the SIA and SAP phase, comments from stakeholders were discussed and fed back to action development; at the implementation stage, a community needs assessment and four levels of consultation will be conducted. HCEL conducted 12 formal consultation meetings during the EIA scoping phase, 14 focus-group community discussions during SIA and SAP study stage, supported by formal meetings with government stakeholders and informal household visits and community discussions. Verbal evidence shows that engagement has been two-way and covered topics of interest to the directly-affected people.

Ongoing processes are in place for stakeholders to raise issues and get feedback. The presence of the PIC and resident social staff at the site allow the local community to make many informal queries about the project and receive timely feedback.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Engagement with directly affected stakeholders has been inclusive and participatory, as indicated by interviewees. Extensive consultation during the SIA and SAP studies gave affected communities the opportunity to raise issues and concerns on the project, and propose ideas to mitigate those impacts; those issues have been incorporated into the SAP and the benefit-sharing measures developed. For example, improvement of the road access is one of the first benefits implemented by KEL, in response to the community's request.

Interviews with stakeholder representatives suggest that KEL has provided feedback in a thorough and timely manner. Community comments and queries have been addressed and responded to through the grievance-redress mechanism.

Criteria met: Yes

10.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *Plans deliver benefits for communities affected by the project.*

The benefit-sharing measures will deliver benefits for communities affected by the project, including provision of and improvement on basic facilities, promotion of employment and local economic development, capacity-building of affected communities and government, support to rural electrification, financial services, support to local services, agricultural intensification, as well as provision of tax, revenue and royalty to government. Vulnerable group such as indigenous people, Dalits and women will receive additional assistance, including training, micro loans and preferential employment opportunities.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans deliver significant and sustained benefits for communities affected by the project.*

Benefit-sharing measures will deliver significant sustained benefits for local project-affected communities. Measures and monitoring plans in place aim to develop the local and regional economy. Once the project starts operating, it will provide a sustained revenue stream for affected VDCs, districts and regional governments.

With 38% royalty allocated to the regional government, a wider society will get benefits through electrification and other infrastructure programmes, which may not have been possible without the project.

Criteria met: Yes

10.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

10.3 Scoring Summary

HCEL assessed opportunities for additional benefits during the SIA and SAP studies, and put plans and processes into place including benefit-sharing measures such as community-development initiatives, support to local development, CSR programme, and specific assistance to indigenous people and vulnerable groups. Royalty payments and capacity building of GoN on management of cumulative impacts will further provide project benefits to a wider range of stakeholders.

Management process of the SAP implementation, as well as the monitoring and evaluation schemes are in place to anticipate and respond to emerging risks and opportunities.

Broad considerations have been taken into account in identifying opportunities, through two-way, inclusive and participatory engagement with directly-affected communities. The project is expected to deliver significant and substantial benefits to local and regional communities.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

10.4 Relevant Evidence

Interview:	8-10, 14-16, 34
Document:	2-4, 6-16, 24-25, 27, 34, 37, 61-63, 65
Photo:	1-4, 18-19, 35

11 Economic Viability (P-11)

This topic addresses the net economic viability of the project. The intent is that there is a net benefit from the project once all economic, social and environmental costs and benefits are factored in.

11.1 Background Information

The Kabeli-A Hydro-Electric Project (KAHEP) draws part of its funding from the World Bank and the International Finance Corporation, IFC. As such, the project has had to undergo the standard project appraisal process to which all World Bank Group (WBG) projects are subjected. This includes stringent evaluation of, among others, economic viability.

11.2 Detailed Topic Evaluation

11.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of economic viability has been undertaken with no significant gaps; the assessment has involved identification of costs and benefits of the project and either valuation in monetary terms or documentation in qualitative or quantitative dimensions.*

The Detailed Design report from 2012 contains no economic assessment, only a financial one. However, as part of regular project appraisal, the WBG performed an economic analysis of the project. The full analysis is not included in the Project Appraisal Document (PAD), but a summary of the most important findings is, as Annex 8. This summary presents the key aspects of the identification and valuation of significant costs and benefits, focussing strongly on the generated electricity. This is justified by it having been identified as the strongly dominant benefit. This benefit, together with one environmental benefit (see below) has then been compared with project costs.

Valuation is conducted in monetary terms using the long-term marginal cost of electricity based on a Nepal Electricity Authority study from 2005, which was then brought to 2013 price levels to establish what the most likely alternative electrical energy (diesel generation in this case) would cost society. The environmental benefit of a reduction of carbon emissions as compared to the base alternative yielded a benefit of over US\$ 1.8 million/year. This was, however, based on a carbon price as high as US 16/tonne, which is more than twice the market value at the time of this assessment.

Verbal evidence indicates that while the annex contained in the PAD is very brief and lacks any analytical detail (the assessors have not been able to view to complete economic analysis), the detailed identification of all costs and benefits which are possible to monetize has been carried out as part of standard WBG project appraisal.

The analysis has used sensitivity testing against three different (negative) scenarios besides the base case. These scenarios are: cost increase of 20%; benefits decreased by 20%; and a one-year delay in project commissioning.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and includes sensitivity analyses.*

Some sensitivity analysis has been carried out, but there is no evidence available to the assessment team to show that broad considerations have been taken since the full economic valuation is not disclosed and has not been shared with the assessors. The lack of demonstrated broad considerations is a **significant gap**.

Criteria met: No

11.2.2 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The results of the economic viability analysis are publicly disclosed.*

The results are published as Annex 8 of the PAD for the project, which is disclosed on the World Bank’s web site for the KAHEP.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *The economic viability analysis is publicly disclosed.*

The full viability analysis is not disclosed. This is a **significant gap**.

Criteria met: No

11.2.3 Outcomes

Analysis against basic good practice

Scoring statement: *From an economic perspective, a net benefit can be demonstrated.*

The base-case valuation, without carbon pricing and based on the long-run marginal cost of energy, yielded an Economic Internal Rate of Return (EIRR) of 13.3% and a Net Present Value (NPV) of \$US 21.9 million at the chosen discount rate of 10%. If the calculation was instead based on the import tariff, these numbers improved to 15.2% and \$US 44.3 million, respectively.

If carbon-credit benefits were included, the numbers for the long-run-marginal-cost case improved to 15.8% and \$US 39.3 million. For the import-tariff-based calculations, the numbers were then 17.0% and \$US 60.4 million. It is worth reiterating that these calculations were based on a carbon price significantly higher than the price in 2014, at the time of this assessment.

The sensitivity testing (described above under Assessment) demonstrated reduced, but not dramatically so, EIRRs for the project, with each evaluated case still delivering an EIRR >10%. The worst case was that of benefits decreased by 20% and using the long-run marginal cost as the basis of the calculation.

There has, however, been no valuation of the cost of not providing the electricity at all. This is regarded as a gap though not a significant one at the level of basic good practice, as this cost would add benefits to the tested scenarios which already result in a clear economic benefit derived from the project under a wide range of circumstances.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the project benefits outweigh project costs under a wide range of circumstances.*

There is no evidence available to the assessment team to show that benefits outweigh costs under a wide range of circumstances as the full economic valuation is not disclosed and has not been shared with the assessors. This is a **significant gap**, but considered the same gap as that identified under Assessment above.

Criteria met: No

11.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

The lack of demonstrated broad considerations in the assessment which also means that it is not demonstrated that benefits outweigh costs under a wide range of circumstances (Assessment and Outcomes).

The full viability analysis is not disclosed (Stakeholder Engagement).

2 or more significant gaps

11.3 Scoring Summary

The project's feasibility and design studies do not include any economic valuation comparing project benefits with project costs. However, as part of World Bank and IFC appraisal, an economic valuation has been undertaken. The results of this valuation is disclosed as part of the Project Appraisal Document but the full study is not disclosed to the public, and has not been available to the assessment team.

The valuation focusses on the generated electricity as the most important benefit and disregards e.g. the cost of not providing the electricity which the project will generate. This result of the valuation would be expected to be better with that benefit included. The valuation has considered three scenarios for sensitivity testing and all generate EIRRs > 10%.

As the full economic valuation is not available, it has been impossible to ascertain whether benefits outweigh costs under a wide range of circumstances or if broad considerations have been taken in the assessment, resulting in a significant gap affecting both Assessment and Outcomes at the level of proven best practice. The lack of disclosure of the full study is, in itself, a significant gap against proven best practice for the Stakeholder Engagement criteria.

There are two significant gaps against proven best practice affecting three criteria, resulting in a score of 3.

Topic Score: 3

11.4 Relevant Evidence

Interview:	14, 19, 27, 49, 50, 52, 53
Document:	5, 6, 33, 61-63, 65
Photo:	None.

12 Procurement (P-12)

This topic addresses all project-related procurement including works, goods and services. The intent is that 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.

12.1 Background Information

The Government of Nepal awarded the Kabeli-A project (KAHEP) to Kabeli Energy Ltd (KEL) through an International Competitive Bidding process on Built Own Operate Transfer (BOOT) terms, in 2010. KEL, with the assistance of Hydro-Consult Engineering Ltd (HCEL), prepared a detailed project design and bidding documents for the project. The work was originally divided into seven distinct packages for separate tenders for the access road, work camp, miscellaneous works, civil surface works, civil underground works, hydro-mechanical works and electro-mechanical works. However, delayed financial closure required KEL to merge all the tender packages into one, with the exception of the electro-mechanical works, that were still tendered separately. Both packages are the subjects of international competitive bidding with a pre-qualification stage. Bid evaluation was ongoing at the time of this Protocol assessment.

This topic has some overlap with P-2, Governance, which addresses issues associated with project ownership and corruption. There is also overlap with P-6, Integrated Project Management, which addresses the developer's capacity to coordinate and manage all project components.

12.2 Detailed Topic Evaluation

12.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of major supply needs, supply sources, relevant legislation and guidelines, supply chain risks and corruption risks has been undertaken with no significant gaps.*

A detailed assessment of the project's supply needs is included in the negotiation document for civil and hydro-mechanical works, and the negotiation document for electro-mechanical works, prepared by HCEL for the tender. These documents include a detailed bill of quantities and require the prospective contractor to list potential sources of materials in their bid. All the documents included in the tender package were reviewed by Tata Consultant Engineers (owner's engineer, TCE) and verified by Fichtner (lenders engineer), and the Panel of Experts.

Supply-chain risks are assessed in the Employers Risk Management Plan (EmRMP), included in the negotiation documents. The assessment highlights the key supply-chains risks to be the availability and quality of cement and steel reinforcement, as most steel and cement will have to be imported due to limited local production, exposing the contractor to price fluctuation, foreign-currency fluctuation, and customs duty. Other supply-chain risks assessed include the availability of aggregates, tools and equipment.

An assessment of the Nepali legislative requirements by the World Bank concluded that use by KEL of the International Federation of Consulting Engineers (FIDIC) guidelines would preclude the need to follow national procurement guidelines. The risk assessment included in the World Bank's Project Appraisal Document (PAD) assesses the risk of fraud and corruption to be high, although there is no further detail as to how this assessment was made.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment includes opportunities for local suppliers and local capacity development.*

KEL has made an assessment of opportunities for local suppliers to be involved in minor construction activities and in some implementation components of the Social Action Plan (SAP). Some of the work on the access roads will be offered exclusively to local contractors, as will the construction of schools, health facilities and water-supply infrastructure. Local companies will be invited to bid for these packages of work during the implementation phase.

An assessment of the need for local capacity development has highlighted the need for driving, electrical and plumbing skills. People from the four project-affected communities will receive training to build capacity to allow them to respond to the need for skilled workers on the project, in coordination with the contractor. This capacity building is necessary, as 40% of the project workforce will be sourced from project-affected communities.

Criteria met: Yes

12.2.2 Management

Analysis against basic good practice

Scoring statement: *Procurement plans and processes have been developed for project implementation and operation with no significant gaps.*

KEL prepared the tender documents in accordance with the FIDIC procurement-procedures guide. KEL employees participated in FIDIC procurement-procedure training in 2011, which allowed them to prepare the bid documents for the main contracts. The tender documents also contain the Geotechnical Baseline Report and EmRMP that establish a framework to address potential disputes with contractors which could arise during implementation.

KEL will follow BPC's procurement guidelines for minor procurement during project implementation. The World Bank has reviewed the BPC procurement guidelines, concluding that they conform to good commercial practices and are acceptable for the implementation of the project. Procurement during the operation phase will follow a procedure set in the project's operation manual, which will be drafted towards the end of the construction phase.

Following an assessment of procurement and financial risks by the World Bank, capacity building measures within KEL have been put in place to reduce the identified risks. It is intended that the procurement unit within KEL will be managed by a senior procurement manager with extensive procurement experience, although this position is not yet filled. TCE will continue as owner's engineer during the construction phase, and provide support with contract management, quality control and cost management.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; sustainability and anti-corruption criteria are specified in the pre-qualification screening; and anti-corruption measures are strongly emphasized in procurement planning processes.*

KEL will require the contractor to regularly reassess all project risks and opportunities for improvement, including procurement risks and particularly those relating to the supply chain. Risks will be reported to TCE and KEL at regular meetings of the "interface and risk management committee". The committee, made up of representatives from KEL, contractors and the owner's engineer, will revise risks and assign ownership to those risks on a monthly basis.

The tender pre-qualification process covers potential bidders' performance record, financial resources, experience with hydropower, experience in Nepal and experience working with the World Bank. However, sustainability and anti-corruption criteria are not specified in the pre-qualification screening, which is a

significant gap. It should be noted however that sustainability criteria are part of the contractor questionnaire and the final bid-selection process.

Anti-corruption measures are strongly emphasized in the procurement planning processes. Procurement will be undertaken following FIDIC guidelines, the negotiation documents state that tenders will be rejected if the tenderer is found to have engaged in corrupt or fraudulent practices, and there are a number of project management measures in place to address the risk of corruption, including supervision from the owner’s engineer, the lenders engineer, IDA and IFC teams.

Nonetheless, there are areas where corruption risks could be reduced. BPC do not have an anti-corruption policy, and there is no whistle-blowing mechanism in place for potential issues to be raised. Potential contractors do not have to undergo a third-party review for corruption. The World Bank PAD only makes one reference to corruption risks.

Criteria met: No

12.2.3 Conformance / Compliance

Analysis against basic good practice

Scoring statement: *Processes and objectives relating to procurement have been and are on track to be met with no major non-compliances or non-conformances, and any procurement related commitments have been or are on track to be met.*

The tendering process is almost complete, and processes and objectives relating to procurement are on track to be met with no major non-compliances or non-conformances, and procurement-related commitments have been or are on track to be met. All requirements set by the financing institutions have been met.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, there are no non-compliances or non-conformances.*

In addition, there are no non-compliances or non-conformances.

Criteria met: Yes

12.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *Procurement of works, goods and services across major project components is equitable, efficient, transparent, accountable, ethical and timely, and contracts are progressing or have been concluded within budget or that changes on contracts are clearly justifiable.*

To date, the procurement process has been conducted using fair and open processes. Procurement has been transparent, well understood by suppliers and no corrupt practices have been identified. Responsibility for procurement within KEL is clearly defined so individuals responsible can be identified to defend decisions made against the policies used, in an accountable manner.

The procurement of the lead contractors is on track to meet the project timelines. The pre-evaluation of tenders is now complete, and KEL have sought clarification from bidders. The final tender evaluation is being prepared by the owner’s engineer. Three bids are being evaluated for the civil and hydro-mechanical package. Four bids are being evaluated for the electro-mechanical package.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, opportunities for local suppliers including initiatives for local capacity development have been delivered or are on track to be delivered.*

In addition, opportunities for local suppliers including initiatives for local capacity development have been and are on track to be delivered. Local contractors have successfully relocated Shingha Primary School in Panchthar District. Planning for the inclusion of local suppliers in the work on the new access roads is ongoing. The capacity-building initiatives of the SAP are on track.

Criteria met: Yes

12.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

Sustainability and anti-corruption criteria are not specified in the pre-qualification screening (Management).

1 significant gap

12.3 Scoring Summary

An assessment of major supply needs, sources, and supply-chain risks has been undertaken by HCEL, and is included in the negotiation documents. Key supply-chain risks will be the availability and quality of cement and steel reinforcement. The risk of fraud and corruption is assessed to be high. The assessment includes opportunities for local suppliers to be involved in access-road construction as well as the constructing of schools and health centres.

KEL prepared the tender documents in accordance with the FIDIC procurement-procedures guide, and will follow BPC's procurement guidelines for minor procurement during project implementation. In addition, regular meetings of the interface and risk management committee will anticipate and respond to emerging risks and opportunities. Anti-corruption measures are emphasized in procurement-planning processes, through clauses in the negotiation documents and ongoing supervision of procurement by the owner's engineer, the lenders engineer, IDA and IFC teams. However sustainability and anti-corruption criteria are not specified in the pre-qualification screening, which is a significant gap at the level of proven best practice.

The tendering process is almost complete, and processes and objectives relating to procurement are on track to be met with no non-compliances or non-conformances. All requirements set by the financing institutions have been met.

Procurement of works, goods and services across major project components has been equitable, efficient, transparent, accountable, ethical and timely. The procurement of the lead contractors is on track to meet the project timelines. Local contractors have successfully relocated Shingha Primary School in Panchthar District. Planning for the inclusion of local suppliers for work on the access roads is ongoing.

There is one significant gap against proven best practice, resulting in a score of 4.

Topic Score: 4

12.4 Relevant Evidence

Interview:	2, 3, 20, 23
Document:	29, 45, 50, 61-65
Photo:	None

13 Project-Affected Communities and Livelihoods (P-13)

This topic addresses impacts of the project on project-affected communities, including economic displacement, impacts on livelihoods and living standards, and impacts to rights, risks and opportunities of those affected by the project. The intent is that 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.

13.1 Background Information

This topic focusses on households affected by economic displacement (e.g. loss of land, fishing or other means of livelihood), and other socio-economic impacts on individual households or on communities. Issues related specifically to indigenous-peoples issues are addressed under topic P-15, Indigenous Peoples. Other closely inter-dependent topics are P-1, Communications and Consultation, which deals with general aspects of the communications and consultations ; P-10, Project Benefits, which deals with project-derived benefits and the sharing of those with the affected peoples; P-17, Cultural Heritage, which addresses physical cultural heritage; and P-18, Public Health, which covers public health.

As identified in topic P-1, the directly-affected people comprise of: 13 households and 112 people in Amarpur Village Development Committees (VDC) of Panchthar District, affected by project-related permanent and temporary land acquisition for the dam site, powerhouse and labour camps; and approximately 21 100 people in Amarpur and Panchami VDCs of Panchthar District, Thechambu and Nankholyang VDCs of Taplejung District. The latter are not economically displaced, but may experience other project socio-economic impacts such as on recreational fishing and construction-related impacts. Most of the construction activities (powerhouse, intake, and tunnel) are located in the Amarpur VDC, hence it is the most affected community.

The project-affected area is mainly located in Panchthar District, a hilly district in eastern Nepal. Some components are located in the bordering VDCs of Taplejung District, a mountainous district bordering India in the east and China in the north. These four affected VDCs comprise an ethnically heterogeneous mix of people, including various indigenous groups. Limbu and Rai make up the dominant population. Nepali, Limbu and Bantawa Rai are the major languages spoken. Major religions practiced include Hinduism (53%), Kirat (37%) and Buddhism (10%). The literacy rate stands at 55% and 45% for males and females respectively, similar to Nepal's national average. Average household size is 5.6. The overall livelihood structure is characterized by a mixture of farming and non-farming activities. Main occupations of the affected communities in the project area are agriculture and livestock raising. However, these only contribute to less than 10% of family income. Non-farming income includes foreign employment, services, pension, trade, wage labour and cottage industries. Overseas remittances contribute to over 50% of household income.

The two districts have limited transportation and electricity facilities. Women, Dalits and Indigenous Peoples (*Adivasi Janajati*) are particularly disadvantaged in terms of access to livelihood, social inclusion, legal inclusion and economic integration (i.e. they are subject to marginalisation). Poverty alleviation is the overriding government objective of local development.

In the project area, the Kabele River is not used for irrigation, drinking, water mills or any other human consumptive uses. It is, however, occasionally used for swimming, bathing, utensil washing, recreational fishing, gravel and sand mining.

Communities will also be affected by the 77-km line of the Kabele Transmission Project, through temporary and permanent land acquisition. However, as mentioned in the Project Description of this report, that is a separately-funded project and outside the scope of this assessment.

13.2 Detailed Topic Evaluation

13.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of issues relating to project-affected communities has been undertaken with no significant gaps, utilising local knowledge.*

Hydro-Consult Engineering Ltd. (HCEL) undertook studies of the project-affected communities during several stages of project development, using a multi-disciplinary team of experts. These stages include the EIA scoping (2010), Social Impact Assessment (SIA) and Social Action Plan (SAP) (2011), as well as the SIA/SAP update (2013). These studies are carried out in accordance with the Nepal Government's statutory guidelines, World Bank's Safeguard Policies and Guidelines, and IFC Social and Environmental Sustainability Performance Standards.

Among the four project-affected VDCs, nine settlements were identified as falling in the project's directly-affected area, and ten as located in the indirectly-affected area. The SIA baseline study included a socio-economic household questionnaire survey conducted in 2010, a cadastral survey (2010) and an impact-inventory survey (2011). The household survey sampled 46 households within three VDCs, including all 13 households economically displaced by project land acquisition. The household survey covered household demographic and socio-economic data, livelihood practices, related physical properties and assets acquired by the project, preferred mode of compensation and rehabilitation, and perceptions of the project. The cadastral survey was conducted with the District Land Survey Office to identify and enumerate affected land of affected households. The asset inventory survey was conducted by KEL, and provided a complete inventory of affected households, persons and assets. The affected households, local communities, and local government agencies participated in these field surveys and contributed to the development of the management measures.

Based on the baseline study and stakeholder consultation (for details see topic P-1, Communication and Consultation), the SIA predicted the following project impacts on directly-affected community groups: Loss of agricultural land and income as a result of the project's permanent and temporary land acquisition: respectively 7.7 hectare and 9.3 hectare of privately-owned land will be permanently and temporarily acquired, affecting 13 households. Among them, eight households will lose less than 25% of their land and two households will lose more than 50% of their land. The acquired land is assessed as low-quality land, and the average total agricultural income of these households contributes less than 10% of family income. Loss of the land-derived income is assessed as being of minor significance. In addition, 1.6 hectare of communal forest land will be permanently acquired, affecting some communities in Amarpur VDC; loss of standing crops and trees associated with the project's land use, as described above; no physical displacement is anticipated; recreational fishing will be affected in the 5.6 km dewatered zone during the dry season. As there are no full-time fishermen in Kabeli river, the number of affected people is not determined; impacts on water supply, sanitation and health, associated with the influx of workers and camp followers during construction including impacts putting further stress on already inadequate local facilities, resulting in conflicts among existing and new resource users; potential water pollution as a result of insufficient sanitary measures; possible outbreak of diseases, including sexually transmitted diseases (STDs), and Human Immunodeficiency Virus (HIV), these are addressed in topic P-18, Public Health; impacts on civic amenities and institutions, mainly pressures on public facilities during the construction phase, including transportation, health posts, police posts and schools. The number of affected people is not determined but expected to be located within the four VDCs; possible conflict between local community and construction workforce; impacts on indigenous people (separately addressed under topic P-15) and disadvantaged groups; and socio-cultural impacts, including impacts on physical cultural resources, cremation sites, religious practices, customary use of fauna and ritual practices. These impacts will not be detailed in this topic but further discussed in topic P-17.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The assessment takes some broader considerations into account, such as the basin-level Rapid Cumulative Impact Assessment (RCIA), and project-, regional- and national-level perspectives on benefit-sharing. The methodology for the assessments was reviewed by a number of parties, including the WB, IFC and the Panel of Experts (PoE), which prompted additional studies, such as the IFC's investigation of stakeholder support and the World Bank's requirement for, and funding of, a more comprehensive CIA to be undertaken during 2015.

However, the assessment did not take broad socio-economic considerations into account in the following areas: the socio-economic baseline was limited in its scope and range of stakeholders identified, i.e. the household survey covers only the 13 economically-displaced households and 34 other randomly selected households, and only in three of the project-affected VDCs; and the SIA has not estimated the number of households affected by the loss of fishing, or loss of access to gravel- and sand-mining in the river.

The deficiencies in the SIA outlined above constitute **a significant gap** against proven best practice, but it is the same gap that has been identified under topic P-5, Environmental and Social Assessment and Management, and will not be double-counted.

KEL has undertaken a comprehensive assessment of project opportunities for construction and operation phases. Numerous opportunities for socio-economic development have been identified. Construction-phase opportunities cover employment opportunities for the local population, economic stimulation of micro-enterprises and small industries, improvement of public facilities and infrastructures, and capacity-building. Operational-phase benefits assessed in the EIA and SIA include positive impact on the rural economy due to royalty payments, opportunities for more hydroelectric development, changes in local economic activities, development of new infrastructures and support for rural electrification. Improvement of public-health facilities are discussed under topic P-18, Public Health.

The SAP includes a discussion of human rights. Although human rights are not explicitly incorporated into the plan, at the local level the rights of project-affected people (PAP) have been respected. Stakeholders have been well engaged and contributed to the design of the SAP.

Criteria met: No

13.2.2 Management

Analysis against basic good practice

Scoring statement: *Management plans and processes for issues that affect project-affected communities have been developed with no significant gaps including monitoring procedures, utilising local expertise when available; and if there are formal agreements with project-affected communities these are publicly disclosed*

Various management plans have been devised on the basis of the socio-economic assessment, detailed in the SAP. The SAP contains a Resettlement Policy Framework (RPF), Resettlement Compensation and Livelihood Assistance Plan (RCLAP), Indigenous and Vulnerable Community Development Plan (IVCDP), benefit-sharing mechanisms and a Public Consultations and Communication Strategy. It is worth noting that the RPF and RCLAP are standard World Bank Group (WBG) management-plan documents and the Kabeli-A Hydro-Electric Project (KAHEP) will result in no physical resettlement (topic P-14, Resettlement is Not Relevant).

The RPF sets out principles for how the project will manage land-acquisition-related impacts, aiming to at least maintaining the pre-project livelihood of the affected households throughout project implementation. Those principles include compensation at replacement cost, disclosure and consultation, grievance redress and additional assistance to vulnerable groups. The project-entitlement matrix, RCLAP, IVCDP and benefit-sharing mechanisms are developed based on these principles.

The project-entitlement matrix defines mitigation actions to each identified project social impact. The RCLAP addresses impacts related to economic displacement, including compensation and livelihood restoration of project economically-displaced households. The IVCDP specifically manages impacts on three groups of identified vulnerable people; women, Dalits and indigenous peoples. It defines actions to support livelihoods of vulnerable groups in the project area, including agricultural initiatives, employment-generation, skills and capacity-building, improvement of infrastructure, loans, and specific programmes focused on women and indigenous people. The benefit-sharing mechanism establishes action plans for project benefit sharing. More details about this are discussed under topic P-10, Project Benefits.

Formal agreements with affected groups on implementation of these plans and programmes have not been signed, except for the benefit-sharing programme. But this is not a significant gap. Formal agreements at this point might be premature, given the uncertainty around the timing of the project commencement.

KEL has disclosed the EIA, the SIA and the SAP on the project website. The executive summaries of the EIA and SAP are also available on the website in local languages, Nepali, Limbu, Bantawa Rai, Khaling Rai and Tamang. This and other project information is also available at the Project Information Centre (PIC) in Amarpur, Panchthar district.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

The SAP includes processes to anticipate and respond to emerging risks and opportunities during the implementation, including four rounds of community consultation for SAP implementation, a Monitoring and Evaluation Plan, and the project's social-management mechanism involving the PIC, the four social staff stationed at the site, and the grievance-redress mechanism. These processes, discussed in details in topic P-1 and P-10, will allow KEL to anticipate and respond to emerging risks and opportunities raised from project stakeholders. In addition to that, a renewed baseline study will be conducted halfway through project implementation (estimated to be in 2017) to establish a second baseline for the project-affected communities in the KAHEP area. Outcomes of SAP programmes will be monitored, evaluated and fed back for potential necessary changes.

The eligibility for the RCLAP programmes is not clearly defined in the SAP, owing to the assessment's failure to identify some directly-affected households (e.g. those who will lose access to fishing, or lose access to gravel and sand mining). This is a **significant gap** against proven best practice.

Criteria met: No

13.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *Engagement with project-affected communities has been appropriately timed and often two-way; ongoing processes are in place for project-affected communities to raise issues and receive feedback.*

The assessment and planning process relating to project-affected communities has been and will continue to be conducted through free, prior and informed consultations. At the EIA scoping phase, community baseline information was collected to facilitate assessment and planning for compensation and livelihood restoration measures; at the SIA and SAP stage, comments from stakeholders were discussed and fed back to mitigation development; at the implementation stage, a community needs assessment and four levels of consultation will be conducted. HCEL conducted 12 formal consultation meetings during the EIA scoping phase, 14 focus-group community discussions during the SIA/SAP study stage, supported by formal meetings with government stakeholders and informal household visits and community discussions. Verbal evidence shows that engagement during the process has been two-way and covered topics of interest to the directly-affected people.

Ongoing processes are in place for stakeholders to raise issues and get feedback. The presence of the PIC and resident social staff at the site allow the local community to make many informal queries about the project and receive timely feedback.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with project-affected communities has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

As described under topic P-1, Communications and Consultation, engagement with affected communities has been inclusive and participatory, through impact-focus group discussions and meetings with community organisations. These meetings gave the opportunity for affected communities to raise issues and concerns on the project, and propose ideas to mitigate those impacts; many of those recommendations have been incorporated into the SAP. For example, during the meetings with Thechambu-6 of Amarpur VDC, it was found that many families relied on fishing as their main protein source. Loss of fishing could have significant impacts on their livelihood. The representatives expected to receive livelihood restoration assistance through employment, skills training, and capacity-development. This is included in the SAP.

Interviews with stakeholder representatives suggest that KEL has provided feedback in a thorough and timely manner. Community comments and queries have been addressed and responded to through grievance redress mechanism.

Interviews with women representatives show that they have not been engaged after the completion of the impact-assessment and management-planning studies. This is a **significant gap** to proven best practice, but it is the same gap as that identified under topic P-1, and it will not be double-counted.

Criteria met: No

13.2.4 Stakeholder Support

Analysis against basic good practice

Scoring statement: *Affected communities generally support or have no major ongoing opposition to the plans for the issues that specifically affect their community.*

There is no evidence of major ongoing opposition from stakeholder groups or communities to the assessment or the management and compensation plans. Verbal evidence proves that the community participated in meetings and focus group discussions during the social studies, and they show strong support for the implementation of the project.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, formal agreements with nearly all the directly-affected communities have been reached for the mitigation, management and compensation measures relating to their communities.*

Current SAP plans and programmes for compensation, livelihood restoration, infrastructure improvement, community development and assistance to vulnerable groups are supported by all local communities. It is still early for the project to have signed detailed formal implementation-orientated agreements with directly-affected stakeholder groups. Nevertheless, the executive summary of EIA and SAP, including many of the general formal management commitments, are distributed in the project area in local languages. Verbal evidence shows that affected people are aware of the principles, concepts, and actions of the SAP's compensation and mitigation measures.

13.2.5 Outcomes

Analysis against basic good practice

Scoring statement: *Plans provide for livelihoods and living standards impacted by the project to be improved, and economic displacement fairly compensated, preferably through provision of comparable goods, property or services.*

Compensation for permanent land acquisition has been and will be paid in cash as per negotiations with land owners based on market price. Loss of standing crops and trees are paid at replacement cost. Loss of fishing will be compensated with livelihood-restoration programmes, training programmes, prioritized fishing in the reservoir and the provision of a fish hatchery as defined in the RCLAP. Construction-related impacts will be mitigated through provision of, and improvement to, sanitation and drinking water programmes, health care, schools etc. Verbal evidence shows that the interviewed land owner was fairly paid. Replacement land was purchased utilizing the compensation.

The livelihood restoration programme specified in the RCLAP is expected to maintain and ultimately improve the livelihood of affected people. Living standards of affected communities are expected to be improved through various community facility-improvement programmes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition plans provide for livelihoods and living standards that are impacted by the project to be improved with the aim of self-sufficiency in the long-term; and the project contributes to addressing issues for project-affected communities beyond impacts caused by the project itself.*

The development of the SAP programmes have taken into account long-term sustainability and self-sufficiency for affected communities. The RCLAP entitles economically-displaced households with vocational training, preferential employment and agricultural intensification. These will assist them in obtaining long-term livelihood skills. The IVCDP provides grants and skills training to vulnerable groups, particularly poor women and vulnerable indigenous people, to enable them to engage in economically viable and sustainable income-generating activities, such as livestock-keeping, agriculture, crafts, and the forestry, trade and service sectors. The benefit-sharing programme aims to promote local development in a sustainable way. In general, it is expected that the SAP programmes will assist affected communities in enhancing their livelihoods and living standards in a sustainable manner.

However, there are some uncertainties regarding the long-term self-sufficiency of some groups, including the economically-displaced households (particularly the three Majhi families) and the Majhi communities close to the powerhouse site. Also due to the unclear eligibility of the RCLAP, it is not certain that all affected households are entitled to the assistance measures. This uncertainty regarding long-term self-sufficiency is **a significant gap**.

The benefit-sharing programmes that will benefit the four VDCs, and royalty payments that target the districts and the region, will address certain issues beyond impacts caused by the project. These are described in topic P-10, Project Benefits.

Criteria met: No

13.2.6 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

No significant gap is identified against good practice.

Analysis of significant gaps against proven best practice

The socio-economic baseline in the SIA is limited in its scope and range of stakeholders identified, and the SIA has not assessed certain project risks (Assessment). This is the same gap as that identified and scored under topic P-5, and will not be double-counted here.

The lack of clearly-defined eligibility for the RCLAP programmes (Management).

Limited consultation with women's groups after the completion of project studies (Stakeholder Engagement). This is the same gap as that identified and scored under topic P-1, and will not be double-counted here.

There are uncertainties regarding the long-term self-sufficiency of some groups (Outcomes).

2 or more significant gaps

13.3 Scoring Summary

Studies and surveys have been conducted to identify affected communities and to design programmes to mitigate and compensate impacts, to improve living standards and livelihoods, and establish training and other project benefits for the project affected people.

Project-affected communities have generally been identified including groups that are affected indirectly. Stakeholder engagement has been responsive, and there is broad support for the project's approach to mitigation and compensation.

However, the assessment did not identify all potential project negative social impacts, or all affected groups. Some impacts have been incompletely identified (e.g. tunnelling), or identified but not properly addressed (loss to access to gravel and sand mining). The baseline data did not have broader consideration into account. The RCLAP programmes have not provided clear eligibility criteria. There are some uncertainties regarding the long-term self-sufficiency of some groups, especially three Majhi economically displaced households.

There are two significant gap counted against proven best practice for this topic, resulting in a score of 3.

Topic Score: 3

13.4 Relevant Evidence

Interview:	8-10, 13-18, 33-34,
Document:	2-4, 6-16, 24-25, 27, 34, 37, 40, 44-45, 61-63, 65
Photo:	1-4, 20-36

14 Resettlement (P-14)

This topic addresses physical displacement arising from the hydropower project development. The intent is that the dignity and human rights of those physically displaced are respected; that these matters are dealt with in a fair and equitable manner; and that livelihoods and standards of living for resettles and host communities are improved.

Topic P-14, Resettlement was not assessed. It is considered Not Relevant for this project as there will be no physical displacement resulting from the KAHEP.

15 Indigenous Peoples (P-15)

This topic addresses the rights, risks and opportunities of indigenous peoples with respect to the project, recognising that as social groups with identities distinct from dominant groups in national societies, they are often the most marginalized and vulnerable segments of the population. The intent is that 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.

15.1 Background Information

Nepal is a country with considerable cultural, linguistic, religious and ethnic diversity. *Adivasi Janajati* are recognized indigenous peoples, having their own territory, language, traditional rites and customs, distinct cultural identity, social structure, and history. Nepali society has a stratified structure which is based on the Hindu caste system. Traditionally, *Adivasi Janajati* have been outside the purview of this caste system. Although they are starting to have more interactions with the Hindu communities, they still remain largely separated from mainstream society. In 2001, the National Foundation for the Development of Indigenous Nationalities (NFDIN) classified 59 *Adivasi Janajati* in Nepal, accounting for over 37% of the total population of the country. Among them Magar, Tharu, Tamang, Newar, Rai, Gurung, and Limbu are the largest groups.

During the past decade, Nepal has formulated a framework of policies to advance the socio-economic development of indigenous peoples, including ratification of International Labour Organization Convention No. 169 and endorsement of the United Nations Declaration on the Rights of Indigenous People in 2007.

The four project-affected village development committees (VDCs) comprise an ethnically heterogeneous mix of people, including various *Adivasi Janajati*. These constitute 53% of the total population, and the most important are Limbu (56%), Rai (14%), and Tamang (10%). All of the *Adivasi Janajati* are recognized by the government, i.e. as belonging to the officially-recognized 59 indigenous groups. In Amarpur VDC, the most affected by project activities, most affected households are from Limbu, Tamang and Majhi indigenous groups. Limbu and Rai have a higher literacy rate, 59%, compared to Tamang, 42%, and Majhi at 37%. However, the project-affected communities, while belonging to different ethnicities, share common approaches and patterns in their economic and livelihood activities.

Limbu are considered as the “original” inhabitants of the area since all other groups have migrated in at a later date. They have a communal land tenure system inherited from their ancestors. In the project area, villages and rivers are named in the Limbu language, which has later been changed with Hindu meanings.

Rai is an indigenous group that have migrated to the present locality, starting from the 18th century, from Majhi Kirat. They also have traditional communal land ownership in the project area.

Tamang is one of the major Tibeto-Burman-speaking communities in Nepal, and they maintain a belief that they originally came from Tibet. *Tamang* living in the project area retain very little of their original culture, art, or religion. They usually adopt many of the cultural patterns of their immediate neighbours. Every ritual of *Tamang* is guided by Lamaism. Mostly, *Tamang* are found in the upstream area of the project.

Majhi are traditionally known as fishermen. The main traditional occupation of the *Majhi* people is boat-building and river-transport services. *Majhi* people identified in the project area have lost their mother tongue. They live near the powerhouse site. In Nepal, including the project area, *Majhi* are economically, socially and politically vulnerable and highly marginalized.

There are some *Newars* identified in the project area. They live in the downstream area and have totally lost their culture, language and traditional life style. Together with *Limbu* and *Rai*, they are an advantaged group among the *Adivasi Janajati*.

In the project area, there are no cultural and archaeological sites that are directly-affected and which would therefore have to be relocated. However, some sacred places and historical sites associated with the existence of *Limbu* are located in the near vicinity of the project area. These are discussed under topic P-17, Cultural Heritage.

This topic is closely inter-dependent with P-1, Communications and Consultation, P-10, Project Benefits, P-13, Project Affected Communities and Livelihoods, P-17, Cultural Heritage and P-19, Biodiversity and Invasive Species.

15.2 Detailed Topic Evaluation

15.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of the representation of indigenous peoples in the project-affected community, their rights, risks and vulnerabilities, and any cultural sensitivities and needs has been undertaken with no significant gaps, utilising local knowledge and expertise.*

The assessment of project-affected indigenous peoples was undertaken through social impact studies at several stages using a multi-disciplinary team of experts. These stages include the EIA scoping (2010), Social Impact Assessment (SIA) and Social Action Plan (SAP) (2011), as well as the SIA/SAP update (2013). These studies are carried out in accordance with the Nepal Government's statutory framework, World Bank's Safeguard Policies and Guidelines, and IFC Performance Standards.

The social studies identified indigenous peoples in the project area, assessed their social, economic, cultural and institutional characteristics, sensitivities and vulnerabilities, analysed their interests, attitudes and expectations, and developed mitigations to address project-induced impacts. The mitigations are defined in the Indigenous Vulnerable Community Development Plan (IVCDP). Local knowledge was drawn upon through the surveys and consultations, with high levels of participation (described more fully in topic P-1).

The social-baseline study conducted 46 household socio-economic questionnaire surveys, comprising of 23 *Limbu*, seven *Tamang*, five *Majhi* and 11 high-caste (*Brahmin* and *Chhetri*) households. All economically-displaced households are included. In total, six *Tamang*, three *Majhi* and one *Limbu* households will lose some of their lands due to project development.

The SIA concluded that the project-affected indigenous groups share common approach and patterns in their economic and livelihood activities, despite their different ethnicities. It concludes that indigenous groups are expected to experience similar physical and economic impacts from the project as other project-affected peoples, in spite of their caste and ethnic differences. However, *Majhi* households that reside near the powerhouse area are identified as being in need of more attention and support, given their low level of education, skills and income, and their marginalized status.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment has been undertaken with the free, prior and informed participation of indigenous peoples; and the assessment takes broad considerations into account, including both risks and opportunities.*

The assessment has been undertaken with the free, prior and informed participation of indigenous peoples (described in P-1). This process is documented in the SIA and SAP, and verified by verbal evidence provided by representatives of indigenous peoples.

The community characterisation and assessment does not take broad considerations into account, which is a **significant gap** against proven best practice. For example, there are a number of risks and vulnerabilities associated with indigenous people that have not been assessed: the project will economically displace ten indigenous people's households, including three *Majhi* households, who are identified as being the most vulnerable among the project-affected communities, but the SIA and SAP have no specific assessment of their vulnerability as a result of the land acquisition; the socio-economic status of these three *Majhi* households is mixed with, and lost in, the average of the 46 sampled households; the baseline study contains no household sampling of *Rai*, *Newar* and *Gurung* ethnic groups; the vulnerability of *Majhi* households that reside close to the powerhouse station but who will not be economically displaced by the project is not assessed.

The project has undertaken a comprehensive assessment of opportunities for the construction and operation phases. These are detailed in topic P-10, Project Benefits and topic P-13, Project-Affected Communities and Livelihoods.

In addition, the Rapid Cumulative Impact Assessment (RCIA) of the Tamor-Kabeli basin identifies that the Kabeli River Valley has its own cultural and spiritual significance to the local indigenous peoples. Water quantity and quality of Kabeli River are extremely important to local indigenous peoples. These concerns are assessed and addressed under topic P-17, Cultural Heritage and topic P-21, Water Quality.

Criteria met: No

15.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes have been developed for project implementation and operation to address issues that may affect indigenous peoples in relation to the project; and formal agreements with indigenous peoples are publicly disclosed.*

Various management plans have been developed in the SAP to address issues that may affect indigenous peoples in relation to the project. These include a Resettlement Compensation and Livelihood Assistance Plan (RCLAP) for the economically-displaced households, the Indigenous and Vulnerable Community Development Plan (IVCDP) to assist indigenous people and other vulnerable groups in the project area, the benefit-sharing mechanisms, as well as the Public Consultations and Communication Strategy.

The IVCDP sets out commitments to address issues that are related to ethnicity, specifically identifying measures that are additional to the compensation and wider-community benefit-sharing measures. It defines actions to maintain and improve livelihood of indigenous peoples in the project area, including agricultural initiatives, employment, skills and capacity-building, drinking water, health and sanitation support. In particular, the IVCDP develops a series of programmes targeting indigenous people to help unleash their potential through various training, assistance measures and project employment: employment of at least one member from each affected indigenous-community household will be guaranteed in project construction and maintenance work; at least one member from each of the affected indigenous-community households will be involved in livelihood enhancement activities such as skills training for income generation and other livelihood improvement activities; preference will be given to qualified indigenous-community individuals in recruitment of community facilitators who will maintain frontline contact with the community in implementing IVCDP activities; supplementary infrastructure facilities will be developed for the *Majhi* households near the power station site, such as latrine construction and drinking-water facilities; a small-loan assistance programme will be developed, particularly for vulnerable indigenous community households in order to promote their income opportunities; and organizations of indigenous communities will be supported to protect and preserve their indigenous cultures, knowledge, oral literature, language and traditions based on their proposal.

In addition, in spite of the incomplete assessment of issues related to indigenous peoples (see above under Assessment), the IVCDP defines specific measures for *Majhi* (and other vulnerable groups) to ensure their

meaningful participation in the project and their ability to share effectively in the benefits realized from the project. These will be implemented through a three-component strategy: representation of affected indigenous people on SAP implementation structures; a grievance mechanism; and monitoring and evaluation mechanism.

Formal agreements with affected indigenous peoples on implementation of these plans and programmes have not been signed yet, but this is not a significant gap. Specific formal agreements at this point might be premature, given the uncertainty around the timing of the project commencement. KEL has disclosed the EIA, the SIA and the SAP, containing general formal commitments, on the project website. The executive summaries of the EIA and SAP are also available on the website in local languages; Nepali, Limbu, Bantawa Rai, Khaling Rai and Tamang. This and other project information is also available at the Project Information Centre (PIC) in Amarpur, Panchthar district.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans and processes have been developed with the free, prior and informed participation of indigenous peoples; processes are in place to anticipate and respond to emerging risks and opportunities; and plans are supported by commitments that are public, formal and legally enforceable.*

The SIA and SAP have been developed with the free, prior and informed participation of the community and as stated above, legally enforceable and publicly available.

The SAP includes processes to anticipate and respond to emerging risks and opportunities during the implementation, including four rounds of consultation for SAP implementation, monitoring and evaluation, and assigned social staff on site as well as a grievance mechanism (for details see topic P-1, Communications and Consultation).

In particular, the IVCDP stipulates that a detailed implementation plan will be developed jointly with the indigenous peoples. For household-specific schemes and activities, the project team will work with individual households to develop and implement their household-specific schemes. Specifically, KEL will use a range of communication and information-dissemination mechanisms to promote awareness of indigenous peoples' entitlement and impact mitigations, including written documents (information sheets and newsletters), FM radio broadcasts through local radio stations, community meetings, focus-group discussions, participatory appraisal techniques, household interviews and social-mobilisation techniques. These measures will enable indigenous peoples to be meaningfully consulted and make informed choices.

Beyond the disclosure of documents containing commitments mentioned above, these have also been disclosed in the World Bank's InfoShop, and on IFC's external website. IFC's Environmental and Social Review Summary has also been disclosed through IFC's external website and at the PIC.

Criteria met: Yes

15.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *Engagement with indigenous peoples has been appropriately timed, culturally appropriate and two-way with self-selected community representatives; and ongoing processes are in place for indigenous peoples to raise issues and get feedback.*

The assessment and planning process relating to indigenous peoples has been and will continue to be conducted through extensive consultations.

During the impact assessment, indigenous people have been identified and engaged in a culturally sensitive and appropriate fashion throughout the process. To ensure free, prior and informed consultation with indigenous peoples, the SIA and the development of the SAP utilized a highly participatory approach. The SIA team organized

community consultations and focus-group consultations with the indigenous groups. These consultations managed to reach all the different cultural and ethnic groups, enabled a free and transparent environment for meaningful consultations and precipitated a lot of feedback from various indigenous groups. Comments from indigenous peoples were discussed and fed into programme planning. The IDA and IFC project teams have paid particular attention to reaching out to all PAPs, including all indigenous groups.

At the implementation stage, a community needs assessment and four levels of consultation will be conducted prior to the commencement of the IVCDP (for more details, see topic P-1, s Communications and Consultation).

Ongoing processes in place for stakeholders to raise issues and get feedback include the PIC, resident social staff at the site, and routine and *ad hoc* meetings with the Kabeli-A Cooperation Concern Committee (KACCC). The KACCC is an important community-based organisation, made up of 151 self-selected community representatives from the four project-affected VDCs. The KACCC working committee has 17 representatives from indigenous peoples, out of 31 members. This representation ensures that rights and concerns of the indigenous peoples are discussed with KEL and that feedback is timely.

Interviewed indigenous peoples' representatives confirmed that engagement during the assessment process has been two-way and on topics of interest to the directly-affected people.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with indigenous peoples has been inclusive and participatory; feedback on how issues raised have been taken into consideration has been thorough and timely; and directly-affected indigenous peoples have been involved in the decision-making around relevant issues and options.*

Engagement with affected communities has been inclusive and participatory, through impact-focus group discussions and meetings with community organisation groups. These meetings gave the opportunity for affected indigenous peoples to raise issues and concerns on how the project may affect them, and propose ideas for how to mitigate those effects; many of those recommendations have been incorporated into the SAP. For example, during the meetings with Bijuli Bhanjyang-6 of Amarpur VDC, a Limbu-dominated settlement, they requested that the project respect their self-identify and provide special programmes for preservation and protection of their ethnic and cultural identify. In response to this, the project will support the conservation of local culture and lifestyle through the promotion of festivals, festivities and celebrations, conservation and protection of historic, religious and sacred sites, and through support to indigenous communities' organizations. This is included in the specific actions designed for indigenous people in the IVCDP.

Interviews with indigenous peoples' representatives suggest that KEL has provided feedback in a thorough and timely manner. Community comments and queries are addressed and responded to through the grievance redress mechanism.

Criteria met: Yes

15.2.4 Stakeholder Support

Analysis against basic good practice

Scoring statement: *Directly-affected indigenous groups generally support or have no major on-going opposition to the plans for issues that specifically affect their group.*

Verbal evidence indicates that the indigenous community have no major on-going opposition to the project at the time of the assessment, and they are willing to negotiate measures to mitigate and compensate potential impacts through the free, prior and informed consultation process. Community members interviewed are aware of the basic components and measures of the IVCDP, and they have their perception of how the project could affect them, e.g. impacts to fishing, impacts to cremation sites, impact to communal forest etc.

In general, the indigenous people support the project because they believe that the project will bring opportunities to the local residents, such as access to electricity, employment, business, and others. They demand that the project should respect their rights and mitigate impacts on their cultural life, archaeological sites, identity, right to land and natural resources. Those issues are well addressed by the development of the SAP through the thorough consultation process. The inclusive and development-orientated consultation and engagement process has allowed KEL to gain support from indigenous peoples.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, consent has been sought and gained by directly-affected indigenous groups for the project.*

Consent, in the form of an agreement, has not yet been gained, except for the benefit-sharing programmes. However, this is not considered a significant gap since there is plenty of time to reach a formal agreement with the community before construction begins. The signing of the benefit-sharing agreements and the lack of resistance to the project are indicators that a formal agreement can and will be reached.

Criteria met: Yes

15.2.5 Outcomes

Analysis against basic good practice

Scoring statement: *Plans provide for major negative impacts of the project to indigenous peoples and their associated culture, knowledge, access to land and resources, and practices to be avoided, minimized, mitigated or compensated with no significant gaps, and some practicable opportunities for positive impacts to be achieved.*

Major negative impacts on the community are related to land acquisition, loss of forest, loss of fishing, construction-related impacts, impact to cremation activities and cultural-heritage sites. Programmes described in the management section above will address these impacts (for more details see topics P-13, P-17 and P-18).

The IVCDP will promote employment and livelihoods of the affected indigenous peoples through various programmes. In addition, provision to and improvement of drinking water, access road, health care and schools is likely to improve the living standards of the indigenous communities in the project area. The IVCDP, together with the project benefit-sharing programme, is expected to achieve project opportunities for indigenous peoples in the project area.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, opportunities for positive impacts have been thoroughly identified and maximized as far as practicable.*

As discussed in the Assessment section, there is a lack of attention in assessing the socio-economic status of 10 affected indigenous households, in particular the three *Majhi* families near the powerhouse site. There are uncertainties about whether proposed mitigations can fully mitigate the impacts to their livelihood. This is a **significant gap** to best proven practice. It is, however, the same gap as described under topic P-13 and will not be double-counted.

The SAP programmes been identified in close cooperation with the project-affected indigenous communities and respond well to their concerns and priorities. The opportunities in training, employment and improvement of facilities, and in particular specific cultural-strengthening programmes, have a high probability of creating a net positive impact on the concerned communities. In the long term, the mitigation programmes are likely to help strengthening their culture, traditional knowledge and practices.

The opportunities-identification process has been very comprehensive, and the ongoing consultation and monitoring during the SAP implementation will assist in maximizing the positive benefits as far as is practicable.

Criteria met: No

15.2.6 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

The community characterisation and assessment of indigenous people do not take broad considerations into account (Assessment).

There are uncertainties regarding the long-term self-sufficiency of some groups (Outcomes). This is the same gap that is identified and scored under topic P-13, and it will not be double-counted here.

1 significant gap

15.3 Scoring Summary

The four project-affected VDCs comprise of an ethnically heterogeneous mix of people, including various indigenous-peoples groups. They share common approaches and patterns in their economic and livelihood activities, despite their ethnic differences. The indigenous peoples are expected to experience similar physical and economic impacts from the project, in spite of their caste and ethnicity differences.

The project has developed an Indigenous and Vulnerable Community Development Plan (IVCDP) to address socio-economic and cultural impacts on indigenous peoples, and to promote project benefits. The assessment and planning process relating to indigenous peoples has been and will continue to be conducted through free, prior and informed consultation.

There is no major on-going opposition, and engagement with the community has been inclusive and participatory and indigenous groups have opportunities to raise issues, be heard and received timely feedback.

There are a number of risks and vulnerabilities associated with indigenous people that have not been assessed, which is a gap against proven best practice.

There are uncertainties regarding the long-term self-sufficiency of some groups, but this gap has also been identified and scored under topic P-13, and will not be double-counted here.

There is one gap against proven best practice counted against this topic, resulting in a score of 4.

Topic Score: 4

15.4 Relevant Evidence

Interview:	8-10, 13-18, 34
Document:	2-4, 6-16, 24-25, 27, 34, 40, 61-63, 65
Photo:	1-4, 7, 8, 10, 37-38, 39

16 Labour and Working Conditions (P-16)

This topic addresses labour and working conditions, including employee and contractor opportunity, equity, diversity, health and safety. The intent is that workers are treated fairly and protected.

16.1 Background Information

At present, approximately 20 people are employed by the Kabeli-A Hydro-Electric Project (KAHEP) through the project-specific company Kabeli Energy Ltd (KEL). KEL will employ a number of contractors to undertake supervision, design, civil works, equipment supply, equipment installation, and environmental and social programmes. As such, this assessment has reviewed the requirements KEL makes of contractors, in addition to its internal human resource policy. This assessment has reviewed BPC's (as KEL's majority owners) policies and practices where KEL has not yet put such provisions in place. This topic has some overlap with the P-13 (Project-Affected Communities and Livelihoods) topic, which addresses KEL's commitment to hire local people. P-13 discusses the project's interaction with workers before they are hired, and this topic (P-16) will discuss the treatment of workers after they have been hired.

16.2 Detailed Topic Evaluation

16.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of human resource and labour management requirements for the project, including project occupational health and safety (OH&S) issues, risks, and management measures, with no significant gaps.*

The Environmental and Social Impact Assessment (EIA and SIA) studies include an assessment and evaluation of human-resource and labour requirements for project construction and operation. The project will require 600-800 people at the peak of the 4-year construction period, and will employ less than 50 people during operation.

The EIA and SIA studies assess occupational-health and safety (OHS) impacts associated with project construction and propose management measures. Major risks identified include accidents and injuries resulted from blasting, the use heavy equipment, tunnelling, working on slopes, traffic accidents, drowning etc. Other risks are assessed related to inappropriate application of Personal Protective Equipment (PPE), transmitted diseases, exposure to chemicals, workers' camp hygiene and sanitary, change of river flows etc. An Environmental Management Plan (EMP) and a Health and Safety Measure (a part of the SAP) are developed to mitigate identified OHS risks and issues.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The project assessment of human resources and labour management has to comply with the IFC Performance Standard 2 on Labour and Working Conditions.

KEL has developed an Employer's Risk Management Plan (EmRMP) as part of the negotiation document for the civil works contract. The EmRMP assesses construction-period risks related to human-resources and labour management, covering contractual risks (e.g. inconsistencies in tender documents, contractual issues, improper project management of contractors); construction-technology risks (e.g. camp design, operation and maintenance, construction power, access to workface and working area); political risks (strikes and Bandhs, a

form of protest similar to a strike) and other risks such as labour unavailability. The EmRMP has also been used as an opportunity to enhance the risk-management capabilities of the consultants and contractors, and to promote the risk-management approach of KEL in the development of other hydropower projects.

Criteria met: Yes

16.2.2 Management

Analysis against basic good practice

Scoring statement: *Human resource and labour-management policies, plans and processes have been developed for project implementation and operation that cover all labour-management planning components, including those of contractors, subcontractors, and intermediaries, with no significant gaps.*

KEL is in the process of developing their own project-level human-resource and labour-management policies, plans and processes, to be collated in the KEL Personnel Manual, based on BPC's systems. BPC is certified to OHSAS 18001:2007 for OHS management systems. BPC uses a personnel Manual that details human- and physical-resource requirements.

Specifications regarding working and living conditions and OHS requirements during project construction will be included in construction contracts. The EMP and the Health and Safety Measure from the SAP have been and will continue to be incorporated into all tender documents for all contractors, subcontractors and intermediaries. These include a comprehensive package of strategies and plans to manage OHS issues, e.g. Workers' Code of Conduct, a Construction Camps and Traffic Management Plan, a Communication and Social Awareness Programme to communicate and interact with the community, a Public Health and Occupational Safety Management Plan to manage health risks to the workforce and to the camp followers, and an Emergency Response Contingency Plan.

For example, the Public Health and Occupational Safety Management Plan shall include: OHS training to the construction workforce on a regular basis, depending on the nature of the job; emergency-preparedness training and drill operations on a regular basis for fire-fighting, chemical containment, or evacuation in response to emergencies; design and maintenance of living conditions of camps and working environment related to ventilation, noise, indoor-air pollution, light, sanitation facilities and first aid provisions; provision of a health-care facility with equipment, medication and health professional, to stabilize the injured in the event of accidents and to respond to an epidemic outbreak in the camp (or in the wider community); and provision of a stand-by ambulance on the active construction site.

These plans will be prepared by the contractor at least one month before the start of the construction works, and will require approval from the project's Environmental Officer. This document will be disclosed at the Public Information Centre (PIC) at the site office, as a publicly available reference document for monitoring of the works.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

KEL will hire an external consulting firm as Owners' Engineer for on-site supervision and monitoring of the implementation and compliance with the EMP and SAP, and a KEL Resident Engineer will be responsible for managing and auditing contractor performance on a day-to-day basis. In addition to that, the project will be monitored and evaluated by repeated Panel of Expert (PoE) reviews and by World Bank review missions.

An emergency management plan will be prepared by the construction contractors to handle unforeseen events and emergencies, to be finalized no later than one month before the commencement of the construction. The emergency plan will define management processes relating to occupational health and safety, traffic-related

accidents and congestions, fire outbreak, leakage of chemicals, floods, earthquakes, and any other unexpected hazards.

The EmRMP developed a risk-management strategy covering the time from early design to the end of construction, with detailed mitigation measures to address each identified risk. For example, to mitigate the risk of labour unavailability, contractors are required to develop a detailed Risk Action Plan, provide reasonable salaries, benefits, insurance and assurance to labours, and maintain good relationship and communication with the public.

Criteria met: Yes

16.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *Ongoing processes are in place for employees and contractors to raise human resources and labour-management issues and get feedback.*

Ongoing processes are in place for KEL employees to raise human-resources and labour-management issues. Employees can elevate grievances to the project's management, normally through an administrative hierarchy starting with the immediate supervisor, via business-unit head, and to HR Manager; or through the labour-union representative. Employees can use the grievance procedure to raise any concerns they have about labour and working conditions.

The Communication and Social Awareness programme that contractors are required to develop will include grievance, conflict-resolution and feedback mechanisms.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, feedback on how issues raised have been taken into consideration has been thorough and timely.*

Interviews with current KEL employee representatives show that feedback on issues and grievances has been thorough and timely. At a corporate level, BPC reports that communications between workers and management is fluid, the labour union functions well (e.g. on grievance redressing), and responses to concerns are quick and thorough.

Criteria met: Yes

16.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *There are no identified inconsistencies of labour-management policies, plans and practices with internationally-recognized labour rights.*

BPC have no identified labour-management inconsistencies with internationally-recognized labour rights. The company's labour management policies are in line with Nepal's Labour Act and other labour regulations. Nepal has ratified 11 International Labour Organization (ILO) Conventions, including seven of the eight core Conventions (C.29, C.98, C.100, C.105, C.111, C.138 and C. 182). In addition, KEL is committed in the EIA to comply with all eight IFC Performance Standards (PS), including PS2: Labour and Working Conditions. As such, KEL policies, plans and practices are on track to be consistent with internationally-recognized labour rights.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, labour-management policies, plans and practices are demonstrated to be consistent with internationally-recognized labour rights.*

BPC are certified in accordance with OHSAS 18001, which demonstrates that policies, plans and practices are consistent with internationally-recognized rights concerning occupational health and safety. There is no such demonstration made by KEL as yet. However, it is not considered as a significant gap at this time, as KEL is fully legally compliant in a jurisdiction that has put into force relevant international conventions, and KEL is committed to complying with IFC PS2. Consistence will be demonstrated by the IFC PS2 audits through World Bank and IFC review, as long as policies and plans are well executed on the ground with contractors on a day-to-day basis. This will be the responsibility of Tata Consulting Engineers Ltd (TCE), the Owners' Engineers.

Criteria met: Yes

16.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against proven best practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

16.3 Scoring Summary

The EIA and SIA studies include assessment and evaluation of human-resource and labour requirements and assess occupational health and safety (OHS) impacts for project construction and operation. KEL has developed an Employer's Risk Management Plan (EmRMP) as part of the negotiation documents for the civil-works contract. The EmRMP assesses construction-period risks and opportunities related to human resources and labour management. Policies, plans and processes are in place or on track to be developed for project implementation and operation that cover all labour-management planning components.

Ongoing processes are in place for employees to raise human-resources and labour-management issues and get feedback through the grievance mechanism and the labour union. Contractors are required to develop a Communication and Social Awareness Programme to include grievance, conflict-resolution and feedback mechanisms.

Labour-management policies, plans and practices are on track to be consistent with internationally recognized labour rights. Consistency during construction and operation should be demonstrated by audited compliance with IFC PS2 on Labour and Working Conditions.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

16.4 Relevant Evidence

Interview:	11, 14, 18, 32, 35
Document:	2-4, 6, 25, 28, 29, 42, 48, 61-65
Photo:	1-4, 40

17 Cultural Heritage (P-17)

This topic addresses cultural heritage, with specific reference to physical cultural resources, at risk of damage or loss by the hydropower project and associated infrastructure impacts (e.g. new roads, transmission lines). The intent is that physical cultural resources are identified, their importance is understood, and measures are in place to address those identified to be of high importance.

17.1 Background Information

As a World Bank and IFC-funded project, Kabeli-A Hydro-Electric Project (KAHEP) triggers the World Bank's safeguards policy on Physical Cultural Resources (OP/BP 4.11) and IFC's Performance Standard 8, Cultural Heritage.

Although the EIA identifies no known or protected archaeological, other physical cultural heritage or historic sites within the project area, the following physical cultural-heritage sites are important to local communities: 1) Panchayan Shivalaya Kabeli Temple, located on the left bank of Kabeli River, some 2 km downstream of the dam site, along the 5.6 km reduced-flow zone; 2) Three cremation sites along the 5.6 km reduced-flow zone (namely *Kholakharka*, *Kabeli* and *Sirupa*); and 3) A rest house (*pati*) at Pinase Ghat, near the powerhouse site.

Hindu ritual practice requires water for bathing and funeral rites. The Kabeli River has significant cultural and spiritual value to local communities, and is regarded as the most holy river by the people of the region. Large numbers of worshippers visit the Panchayan Shivalaya Kabeli Temple, particularly during the festivals, such as *Shiva Ratri* and *Ekadashi* when bathing is an important ritual of purification. Hindu pilgrims from the surrounding Village Development Committees (VDCs) come to bathe in the Tamor and Kabeli Rivers on religious holidays. Hindus also perform cremations at the cremation sites. The *Majhi* community of the Pinasi village uses the rest house (*pati*) for funeral processions and to perform rituals.

Typically this topic only addresses issues related to physical cultural-heritage resources. Issues related to immaterial cultural heritage, e.g. cultural practices associated with the river, will normally be addressed under P-5, Environmental and Social Assessment and Management, and to some extent under P-13 (Project-Affected Communities and Livelihoods) or P-15 (Indigenous Peoples). However, cultural practices affected by KAHEP are so intricately related to the use of the physical cultural heritages (e.g. the temple, cremation sites and ritual sites), that they are all discussed under this topic. Impacts to the customary use of fish species which are of ritual and religious importance, such as Trout (*Schizothorax spp.*) and Stone carp (*Psilorhynchus pseudochenius*), are addressed as part of general aquatic-biodiversity impacts under topic P-19, Biodiversity and Invasive Species.

17.2 Detailed Topic Evaluation

17.2.1 Assessment

Analysis against basic good practice

Scoring statement: A cultural-heritage assessment has been undertaken with no significant gaps; the assessment includes identification and recording of physical cultural resources, evaluation of the relative levels of importance, and identification of any risks arising from the project.

A cultural-heritage impact assessment has been undertaken in the project area as part of the Social Impact Assessment (SIA) using senior anthropologists and indigenous-people specialists, in compliance with requirements of Nepal laws, World Bank safeguards and IFC Performance Standard. During the EIA scoping, the SIA team conducted a screening exercise to map out potential cultural and archaeological sites located in the project VDCs. No archaeological sites, evidence of prehistoric human habitation, stone implements, or indications of Palaeolithic or Neolithic habitation were identified within the project area. Five archaeological sites

associated with the ethnic-minority group *Limbu* were found in the near vicinity from the project area. Within the project area, however, some structures of cultural and religious sensitivity were identified, including the temple, cremation sites, rest houses and ritual sites as described above in the Background section.

The SIA evaluates the archaeological importance and cultural sensitivity of the identified sites, and assesses potential impacts to them resulting from project construction and operation. None of these sites will be directly affected (e.g. inundated or physically relocated); but the temple and cremation sites are likely to be affected due to a significantly reduced flow in the Kabeli River during parts of the year; the *pati* near the powerhouse site may be affected by construction activities; and the influx of construction workers may result in potential cultural conflicts. The SIA identifies and assesses impacts to customary use of fish species which are of ritual and religious importance, such as Trout (*Schizothorax* spp.) and Stone carp (*Psilorhynchus pseudochenius*), these are addressed under topic P-19 as indicated in the Background section.

The SIA provides recommendations to minimise impacts on these sites and associated cultural and religious practices.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The assessment takes a broad view of relevant issues. The SIA discusses impacts on physical cultural resources, cremation sites, religious practices, customary use of aquatic fauna and ritual practices, and develops a comprehensive management plan to mitigate all the socio-cultural impacts.

The assessment uses a participatory methodology to identify and assess impacts, through a rigorous and extensive community consultation process, see topic P-1, Communications and Consultation.

A Rapid Cumulative Impact Assessment (RCIA) was conducted as part of the EIA. The RCIA identifies adverse impacts on spiritual and religious sites and practices as one of the five major impacts to the Tamor-Kabeli basin.

Criteria met: Yes

17.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address physical cultural resources have been developed for project implementation and operation with no significant gaps; plans include arrangements for chance finds, and ensure that cultural-heritage expertise will be on site and regularly liaised with by the project-management team during construction.*

Plans and processes in place developed for project implementation and operation are specified in the Environmental Management Plan (EMP) and Social Action Plan (SAP), including:

At least 10% of the mean monthly flow of the driest month will always be released to address, among other issues, the cultural and religious values associated with the river, and more can be organized during cultural and religious festivals; the released environmental flows will be channelled to the stretch of cremation *Ghat* area and the Panchyan Shivalay Temple to provide sufficient water for the cremation and religious practices; construction of additional water-storage infrastructure to guarantee continuation of religious practices; maintenance of the affected cremation/customary sites; provision of, or improvement of, road access to cremation sites at the confluences of Tamor and Kabeli Rivers, or upstream of the dam, if relocation of the cremation sites is deemed necessary; and specific programmes with financial support will be developed for the preservation and protection of historical, archaeological, religious and cultural sites in the project areas, with the participation and consent of local people.

Management plans are in place to manage the conduct of workers in response to potential cultural conflicts as a result of the influx of construction labour: awareness programmes will be conducted among the project workers, helping them to respect to the cultural and traditional practices of local people; a Code of Conduct which will restrict workers from interrupting or interfering with cultural and other traditional activities of local people; and special consideration will be given to the local workers for leaves and holidays on local festivals and rituals.

In addition, the EMP describes the chance-find procedure, which is incorporated into the contractor bidding documents, and will be introduced to workers through special training programmes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and plans are supported by public, formal and legally enforceable commitments.*

The EMP and SAP have been developed with the free, prior and informed participation of the community (for details see topics P-1, Communications and Consultation, and P-15, Indigenous Peoples).

The SAP comprises processes to anticipate and respond to emerging risks and opportunities during both construction and operation, including four rounds of consultation for SAP implementation, a monitoring and evaluation mechanism, assigned social staff on site, as well as the grievance mechanism (for details, please see topic P-1).

The EMP and SAP are legally enforceable and publicly available. They are incorporated into the project's tender document, and will be annexed to formal commercial contracts with construction contractors. KEL has disclosed the EIA, EMP, SIA, and SAP through its public website and in the project locations. The EIA Summary and the SAP documents have been translated into Nepali and the local ethnic languages of the major indigenous groups in the project area. These documents have also been disclosed in the Bank's InfoShop in Washington D.C., the Project Information Centre (PIC) at the project site, and IFC's external website.

Criteria met: Yes

17.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning for cultural heritage issues have involved appropriately timed, and often two-way, engagement with directly-affected stakeholders; ongoing processes are in place for stakeholders to raise issues and get feedback.*

The cultural-heritage assessment and plans have involved participatory engagement with the communities directly affected by the project. Verbal evidence indicates that engagement has been appropriately timed and often two-way through impact focus-group discussions and institutional meetings, impacts to cultural-heritage sites and religious rituals being one of the focus topics. Suggestions and comments received from the affected communities are incorporated into the management planning.

Ongoing processes are in place for stakeholders to raise issues and get feedback. The PIC and resident social staff at the site allow the local community to raise issues and receive timely feedback. Grievance redress procedure and routine meetings with the affected community can collect and respond to community concerns on cultural heritage issues in a timely manner.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Engagement with directly affected stakeholders has been inclusive and participatory, as indicated by interviewees. For example, a suggestion was raised by community representatives in a meeting with the Kabeli-A Cooperation Concern Committee (KACCC). It was recommended that the project should release more than the established minimum water release when special needs are defined, such as during cremations (approximately twice a month). This is now included in the SAP.

Interviews with stakeholder representatives verify that KEL has provided thorough and timely feedback. Community comments and queries are addressed and responded to through the grievance redress mechanism.

Criteria met: Yes

17.2.4 Stakeholder Support

Analysis against basic good practice

Scoring statement: *There is general support or no major ongoing opposition amongst directly-affected stakeholder groups for the cultural-heritage assessment, planning or implementation measures.*

There is no evidence of major opposition from stakeholder groups or communities to the cultural-heritage assessment or to the management and compensation plans. Verbal evidence confirms stakeholders' participation in meetings and workshops, and their strong support for the implementation of the project.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, formal agreements with the directly-affected stakeholder groups have been reached for cultural-heritage management measures.*

Current general-level but legally enforceable management plans and recommendations for the cultural-heritage sites are supported by the local communities, including indigenous peoples. It is still early for the project to have specific formal cultural-heritage agreements in place with directly-affected stakeholder groups. The executive summary of the EMP and the SAP, including preliminary management plans, are distributed in the project area. Verbal evidence shows that affected people are familiar and satisfied with the cultural heritage management measures.

Criteria met: Yes

17.2.5 Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimize, mitigate, and compensate negative impacts on cultural heritage arising from project activities with no significant gaps.*

The management plans for mitigating cultural-heritage impacts, including the chance-find procedure, aim to avoid, minimize, mitigate or compensate impacts on cultural-heritage resources, as described under the management criterion, with no identified gaps. The implementation will be monitored by an external engineering-supervision consultant, plus company-internal monitoring, third-party external monitoring, Panel of Expert (PoE) evaluation, and World Bank monitoring missions.

Plans and programmes outline impacts to be addressed, responsibilities, activities, allocated resources and costs. For example, the programme for the channelling of the environmental flows released in the stretch of affected

cremation sites is estimated to cost NRs 4 500 000 (app. USD 52 000) and the programme for improvement of existing physical-cultural heritage sites is NRs 1 350 000 (USD 15 500).

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimize, mitigate and compensate negative cultural-heritage impacts with no identified gaps; and contribute to addressing cultural-heritage issues beyond those impacts caused by the project.*

Cultural-heritage impacts will be avoided, minimized, mitigated or compensated with no identified gaps if the management plans and programmes are implemented adequately. Proposed compensation measures contribute to address cultural-heritage issues beyond the project’s impacts to some extent, for example, the project will carry out specific programmes with financial support for the preservation and protection of historical, archaeological, religious and cultural sites in the project areas, with the participation and consent of local people.

Criteria met: Yes

17.2.6 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

17.3 Scoring Summary

The cultural-heritage assessment for the Kabeli-A Hydroelectric Project is comprehensive, and meets the requirements of national laws, the World Bank safeguards and the IFC Performance Standards. In addition, affected communities have been engaged in the process and are supportive of the outcomes. Comprehensive recommendations have been provided to minimize and mitigate impacts on sites of cultural significance as well as associated cultural and religious practices. These have been incorporated into management plans for the construction phase.

The assessment and planning process relating to cultural heritage has been, and will continue to be, conducted through a free, prior and informed consultation process. There is no on-going opposition to the assessment and plans for cultural-heritage management, and engagement with the community has been inclusive and participatory. There are no significant gaps at the level of proven best practice, resulting in a score of 5.

Topic Score: 5

17.4 Relevant Evidence

Interview:	8, 13-16
Document:	2-4, 6-16, 24-25, 27, 34, 61-63, 65
Photo:	1-4, 7-10, 39-43

18 Public Health (P-18)

This topic addresses public-health issues associated with the hydropower project. The intent is that the 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.

18.1 Background Information

The project area covers Amarapur and Panchami Village Development Committees (VDCs) in Panchthar District and Thechambu and Nangkholyang VDCs in Taplejung District of Eastern Development Region (EDR), populated by various ethnic groups living in a scattered and mixed fashion in hilly, often inaccessible, terrain. Villagers have limited access to basic civic amenities, including rural electrification, trunk roads, safe drinking water, sanitary facilities and primary-health services. The Kabele River is not used for either drinking water or as a source of irrigation water by local communities.

Health facilities in the project area consist of health posts in the VDCs and district hospitals in the district capitals. The health posts are characterized by insufficient staffing and inadequate stocks of medicine. All health facilities are currently under pressure. The nearest well-equipped hospitals are Eastern Region Hospital and BP Koirala Health Science Foundation, located approximately 250 km away by road in Biratnagar and Dharan respectively. There are spiritual healers (*Dhami Jhakri*), midwives (*Sudeni*) and traditional healers (*Baidya*) in local villages. Many people have a preference for spiritual healers during the initial treatment phase, followed by consultation at health posts. Midwives are normally elderly women, and cannot deal with serious or complicated cases.

All health issues relevant to the construction workforce are covered under topic P-16, Labour and Working Conditions. Many closely-related social aspects relevant for the general well-being of the project-affected communities are dealt with under topic P-13, Project Affected Communities and Livelihoods. Public-safety issues arising from the operation of the Kabele-A Hydro-Electric Project (KAHEP) are dealt with under topics P-8, Infrastructure Safety and P-23, Downstream Flow Regimes.

This topic is also related to the topic P-5, Environmental and Social Impact Assessment and Management, regarding air quality and noise). Potential nuisance and public-health impacts of air and water pollution and noise are assessed under this topic.

18.2 Detailed Topic Evaluation

18.2.1 Assessment

Analysis against basic good practice

Scoring statement: *A public-health issues assessment has been undertaken with no significant gaps; the assessment includes public-health system capacities and access to health services, and has considered health needs, issues and risks for different community groups.*

The assessment of public health is included in the Environmental Impact Assessment (EIA) and the Social Impact Assessment (SIA). It identified key potential project-induced health impacts for the two project stages, construction and operation. The baseline included a preliminary description of health status of different groups affected by the project (directly and indirectly), access to, utilisation of and capacity of the existing healthcare services. In addition, a health-check campaign will be launched before the start of construction activities in the project area, to collect community baseline information on Sexually Transmitted Diseases (STDs), Human Immunodeficiency Virus (HIV)/Acquired Immuno-Deficiency Syndrome (AIDS) and other communicable and infectious diseases.

The most common non-infectious diseases in the project area include diarrhoea, typhoid, asthma, anaemia, high blood-pressure, sugar, lung-related diseases and intestinal worms, owing to poor sanitary conditions and unprotected sources of potable-water.

The anticipated influx of workers, their families and camp followers is expected to represent only a small increase in the population of the project areas. The predicted construction-period impacts include: environmental-health impacts from noise, dust and vehicle emissions; risk of accidents and injuries; pressure on local services such as water supply, healthcare, and sanitation facilities; potential conflicts; and spread of communicable diseases such as STDs and HIV/AIDS. Lack of proper sanitary measures and increases in water pollution and in the generation of solid waste will potentially lead to public-health issues. The predicted operations-period public-health impacts are assessed as negligible. These latter impacts are assessed based on the experiences of experts and lessons learned from other construction projects.

The assessment engaged project-affected communities and other stakeholders in discussions regarding mitigation of negative effects on public health and the strengthening of local health facilities. These studies and consultations provided a basis for the development of mitigation programmes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

Broad considerations, risks and opportunities are taken into account during the assessment. Kabeli Energy Ltd (KEL) looked into strengthening health facilities of each affected VDC, so that the wider project-affected communities (and not just those people compensated or employed as a result of the project) can enjoy improved health-care services. The assessment attended to interrelationships amongst issues. For example, the EIA concludes that the influx of workers will stress already-pressured local services, which will lead to further deterioration in local capacity to address existing public-health issues; local sanitation facilities could lead to water-quality issues in the reservoir and river; support to drinking-water supply will benefit the community through direct positive impacts on general health, and also make water collection easier for women and children who are generally in charge of it, and who often spend considerable time and effort on this task.

Criteria met: Yes

18.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified public-health issues have been developed for project implementation and operation with no significant gaps.*

Public-health measures are mainly defined in the SAP under Health and Safety Measures, supplemented by the Environmental Management Plan (EMP), including: support provided to each affected VDC to improve health facilities to benefit local communities; a health centre will be operated to cater to the needs of workers and the local population during the construction phase, two health clinics will be run throughout the construction phase, and one clinic will continue to function permanently; assistance will be provided to local communities to build new drinking-water and sanitation schemes and repair existing ones; health-awareness programs will be organized on a regular basis to provide instructions to local population on public-health matters, including the dangers and consequences of STDs and HIV/AIDS, and to increase awareness of the problem of human trafficking; in addition to drinking-water and sanitation facilities to be provided for the construction workers, the project will help local communities build new drinking-water and sanitation schemes and repair existing ones; health and sanitation training will also be provided to the local communities., the project will provide material support for construction of household toilets for selected vulnerable communities; contractors are required to develop a

Public Health Action Plan and a Traffic Management Plan to manage health risks to local communities, to the workforce and to the camp followers; and contractors are required to develop a Pollution Abatement Plan to mitigate air and noise emissions and nuisances.

These mitigations are budgeted as part of the basic project costs. Monitoring of the implementation of public-health programmes will be conducted by KEL and an external third-party expert twice a year.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

The SAP comprises processes to anticipate and respond to emerging risks and opportunities, including four rounds of consultation for SAP implementation, the monitoring and evaluation mechanism, and assigned social staff on site, as well as the grievance mechanism (for details, see topic P-1, Communications and Consultation).

Criteria met: Yes

18.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning for public health has involved appropriately timed, and often two-way, engagement with directly affected stakeholders, including health officials and project-affected communities; ongoing processes are in place for stakeholders to raise issues and get feedback.*

The public-health assessment and plans have involved participatory engagement with directly-affected communities. Verbal evidence indicates that engagement has been appropriately timed and often two-way through impact focus-group discussions and institutional meetings. The deficiency of local health facilities and the need to strengthen local healthcare services were among the major topics of discussion. Suggestions and comments received from the affected communities are incorporated into the project planning (e.g. provision of health clinic). In response to local demand for dental treatment, KEL initiated a five-day Free Dental Campaign at Amarpur VDC of Panchthar District in September 2011, using budget from the company's Corporate Social Responsibilities (CSR) programme. In total over 600 local residents visited the camp and 500 received treatment.

Ongoing processes are in place for stakeholders to raise issues and get feedback. The project information centre (PIC) and resident social staff at the site allow the local community to raise issues and receive timely feedback. Grievance redress procedure and routine meetings with the affected community can collect and respond to community concerns on public health issues in a timely fashion.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly-affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Engagement with directly affected stakeholders has been inclusive and participatory, as indicated by interviewees. For example, during the focus-group discussions, many community representatives requested that the project should assist with improvements to the water supply and sanitation in local VDCs, and project health centres should be open to the local population. These suggestions are included in the SAP.

Interviews with stakeholder representatives suggest that KEL has provided feedback in a thorough and timely manner. Community comments and queries are addressed and responded to effectively through the grievance-redress mechanism.

Criteria met: Yes

18.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimize and mitigate negative public health impacts arising from project activities with no significant gaps.*

The management plans for mitigating public-health impacts aim to avoid, minimize, mitigate or compensate impacts as described under the management criterion with no identified gaps. The implementation will be monitored by an external engineering-supervision consultant, company-internal monitoring, third-party external monitoring, Panel of Expert (PoE) evaluation, and World Bank monitoring missions. Air pollution and noise nuisance will be avoided, minimized and mitigated through air-quality and noise management measures accompanied by monitoring programmes.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimize, mitigate and compensate negative public health impacts with no identified gaps; and provide for enhancements to pre-project public health conditions or contribute to addressing public health issues beyond those impacts caused by the project.*

Public-health impacts will be avoided, minimized, mitigated or compensated with no identified gaps, if designed management interventions are implemented adequately. Proposed mitigation and enhancement measures contribute to address public-health issues beyond the project's own impacts to some extent, for example, provision of health services to the broader indirectly-affected community in the project area, support to the improvement of local health facilities and contribution to drinking-water and sanitation schemes etc.

Criteria met: Yes

18.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

18.3 Scoring Summary

The public-health assessment for Kabeli-A Hydroelectric Project is comprehensive and meets requirements of national laws, World Bank safeguards and IFC Performance Standards. In addition, affected communities have been engaged in the process and are supportive of the outcomes. Comprehensive recommendations have been provided, partly by local communities, to minimize and mitigate impacts on public health, and these have been incorporated into management plans for the construction and operation phases. In addition, the project will

provide public-health benefits to the local community through various programmes, including the availability of a health clinic at the construction site, support to improve local health facilities, contribution to drinking-water and sanitation schemes etc.

There are no significant gaps at the level of proven best practice, resulting in a score of 5.

Topic Score: 5

18.4 Relevant Evidence

Interview:	8, 13, 15
Document:	2-4, 6-16, 24, 27, 29, 37, 43, 61-63, 65
Photo:	1-4, 20-21, 24-25, 35, 36

19 Biodiversity and Invasive Species (P-19)

This topic addresses ecosystem values, habitat and specific issues such as threatened species and fish passage in the catchment, reservoir and downstream areas, as well as potential impacts arising from pest and invasive species associated with the planned project. The intent is that there are 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 responsibly.

19.1 Background Information

The Kabeli-A Hydro-Electric Project's (KAHEP) impact area does not fall within any protected area, critical natural habitat or biodiversity conservation area. The nearest conservation area is the Kanchanjunga Conservation Area (KCA), whose southern border is about 25 km north of the project site, as the crow flies. The nearest boundary of the Tinjure Milke Jaljale forest, which is proposed for protected-forest status, is located about 10 km from the project. These areas are both a few days hiking across steep mountainous terrain from the project site, hence very inaccessible to the local community, the future construction workers and potential camp followers moving into the area during the construction of the KAHEP.

All aspects of the specific management of fish and aquatic connectivity are dealt with under this topic, while aspects of flow releases past the intake are dealt with under topic P-23, Downstream Flow Regimes.

Cumulative impacts on fish are dealt with under this topic, while broader cumulative impacts of KAHEP are dealt with under topic P-5, Environmental and Social Impact Assessment and Management.

19.2 Detailed Topic Evaluation

19.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of terrestrial biodiversity; aquatic biodiversity including passage of aquatic species and loss of connectivity to significant habitat; and risks of invasive species has been undertaken with no significant gaps.*

Biodiversity has been assessed at various levels of detail in many studies throughout the development of the project; the most relevant to today's situation being the Initial Environmental Examination (IEE, see topic P-5, Environmental and Social Impact Assessment and Management), the required socio-environmental assessment according to Nepali legislation for projects as small as Kabeli, and the World Bank/IFC-supported EIA, which was also produced in 2011. This EIA has later been updated in steps, following enhanced baseline and impact studies, with a final version published in 2013. This work has been undertaken with appropriate assessment methodologies and with qualified staff, mainly from the consultant Hydro-Consult Engineering Ltd.

There are some terrestrial species found in the Kabeli region which are either IUCN/Cites-listed, or are protected by Nepali legislation. They are: a species of yam (*Dioscorea deltoidea*), which is both IUCN- and Cites II-listed; two orchids (*Coelogyne sp.* and *Oberonia sp.*), both Cites II listed; the Sal tree (*Shorea robusta*); the Silk Cotton Tree (*Bombax ceiba*); and two lichen species (*Parmelia sp.* and *Ramalina sp.*), all nationally protected for their economic value. All of these species are, however, common in the region and no threat to them from the project has been identified in the assessment. Farming in the Kabeli area is generally a mixed system with livestock, crops and private as well as community forests. Most of the natural forest areas are degraded and do not support suitable habitats for larger animals, nor do they constitute migration routes for any animals with known conservation value. The land take of the project will be about 22.5 ha, out of which more than 13 ha is river bed, almost 8 ha is river banks and the river's established flooding zone and the remaining 1.6 ha consist of community

or leasehold forest land. Of this, 0.6 ha is taken up by the reservoir and the remainder by other project infrastructure, mainly roads and camps. The loss of forest is assessed down to individual trees, to function as a basis for compensation planting. The total loss of woody plants is expected to be around 200 trees and 150 other plants suitable as pole wood.

The Kabeli River is reportedly home to 31 fish species, but only a total of 12 of those were encountered during the field studies conducted in 2011 and again in 2013. Of the 31 species, five are long-distance migrants, four are medium-distance migrants and the remainder are resident species. Five species are IUCN red-listed, out of which three are long-distance migrants, *Bagarius yarrelli*, *Tor putitora*, and *Tor* and two are medium-distance migrants, *Schizothorax richardsoni* and *Neolissochilus hexagonolepis*. Only *Tor putitora* is listed as an endangered species, while the *Schizothorax richardsoni* is listed as vulnerable, and the rest are reported as near-threatened species. All species are found throughout the Tamor basin (of which the Kabeli is a tributary) and are reportedly common throughout Nepal.

Trout (*Schizothorax sps.*) and Stone carp (*Psilorhynchus pseudochenius*) are used by the Limbu, Rai and Majhi ethnic groups for ritual purposes. Both of these species' populations will be affected by the reduced flow in the 5.6-km stretch between intake and the Tamor confluence during the dry season, but both are also present and common in the Tamor River and upstream of the dam throughout the year, so the impacts on the ritual use of fish fauna will be negligible. Suggested mitigation for fish in general will benefit also these species.

The Kabeli dam and intake would, if unmitigated, cut the migration route past the intake site for the medium- and long-distance migrants. The assessment clearly identified the need to address fish migration past the intake structure, and mitigation has been identified, see below under Management. In assessing impacts and preparing mitigation measures, the focus has been on the species that migrate and use sections of the Kabeli River upstream of the KAHEP, as the downstream sections will be in contact with the entire Tamor River basin. As part of the work on assessing project impacts on aquatic biodiversity, a detailed special-purpose downstream-flow study was undertaken to address issues of in-stream releases of water to the reduced-flow section below the intake. This work is described in detail below under topic P-23, Downstream Flow Regimes.

Biodiversity impacts from the reservoir are expected to be minimal given the short residence time (see Topics P-21, Water Quality and P-22, Reservoir Planning). Eutrophication has been observed in natural pools of the Kabeli River but the risks associated with the KAHEP reservoir are considered negligible.

The cumulative impacts of KAHEP and the many other hydropower projects planned for the Kabeli River, and also for the greater Tamor basin, have been studied in a special-purpose "Rapid Cumulative Impact Assessment" (RCIA), which has informed the mitigation identification for aquatic biodiversity.

There are two plant species identified as high-risk invasives by IUCN: *Ageratina adenophora* (Crofton Weed in English) and *Lantana camara* (Lantana in English). The Scoping report for the environmental-assessment procedure identified the Lantana but not the Crofton Weed. It also identified *Eupatorium adenophorum* (Banmara), as a potential "nuisance" plant. The issue was scoped out of the full assessment studies as having very low importance (a decision supported by experts from the financiers) but the risk is included in the management plans prepared, see below. No invasive aquatic species have been identified and verbal evidence indicates that even if common invasives such as African Cat Fish, Carp and Rainbow Trout were to occur in the river, their impact would not be exacerbated by the KAHEP. None of the invasive species identified in the region are associated with the KAHEP or likely to thrive because of it. Monitoring is described below under Management.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: In addition, the assessment takes broad considerations into account, and both risks and opportunities.

The assessment takes broad considerations as well as risks and opportunities into account through detailed inventories and well-defined and funded additional baseline studies for key biodiversity aspects where the knowledge and understanding was regarded as unsatisfactory during the assessment process. The understanding that impacts will go beyond those caused by the KAHEP itself, and the resulting implementation of the RCIA and the commissioning and funding by the World Bank of the full cumulative impact assessment for the Tamor basin will contribute to the identification of both risks and opportunities at a catchment level.

Criteria met: Yes

19.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified biodiversity issues have been developed for project implementation and operation with no significant gaps.*

The Environmental Management Plan (EMP), and more specifically the framework for the Terrestrial Ecology Management Plan and the Aquatic Ecology Management Plan, are produced in accordance with international standards with support from the World Bank and IFC. The EMP outlines management interventions and identified mitigation measures for key biodiversity-related issues such as the fish passage and a fish hatchery, the maintenance of a minimum release past the intake and forest compensation and planting. All permits relating to forest clearing are secured. It also specifies the topic-specific management plans that shall be developed by the Contractor (and approved by the supervisory engineer and Kabeli Energy Ltd.'s (KEL's) special-purpose management unit, the Kabeli-A Environment and Community Development Unit or KAECDU, prior to the start of any construction work). These include a Terrestrial Ecology Management Plan and an Aquatic Ecology Management Plan. Indicative content (key aspects) of these plans is provided in the EMP and includes measures such as provision of fuel for cooking to construction labour in order to avoid additional pressure being put on locally sourced wood fuel; prohibition on sales of Non-Timber Forest Products (NTFP) and fish in the camps; 25 trees to be planted for each one felled, which shall be cared for during a minimum of five years; and technical and financial assistance to the affected community forest and leasehold forest user groups; restriction on fishing activities by construction workers; restriction on illegal and damaging fishing methods; design and construction of a fish passage; establishment of a fish hatchery for target red-listed species and planned releases of fingerlings in upstream sections of the Kabeli River as well as the Inwa Khola tributary; complete prohibition of muck disposal into the river; prohibition of aggregate mining in the wetted river channel; and prohibition of fishing in certain locations and restrictions in others. The monitoring programme addresses the potential risk of the identified invasive plant species becoming more prevalent in the area, necessitating management response.

It is recognized in the EIA that the knowledge of aquatic biodiversity in general and fish diversity in particular is quite weak for the Kabeli River. A comprehensive monitoring programme is designed to address this and was put into place as of the monsoon season of 2013. This insufficient knowledge has resulted in a focus on adaptive management strategies as a mean to address impacts. The fish passage is built into the dam/intake design, but its effectiveness is largely unproven in the context of Nepalese rivers and fish species. To deal with potentially poor effectiveness of the fish passage, the cold-water fish hatchery has been included as additional mitigation, in order to breed fingerlings of the target species for release upstream of the KAHEP. Provision for a detailed study to prepare for this hatchery is included in the project-development budget. The 10 target species were identified on the basis of the following three criteria (in order of importance): IUCN red-listing; migratory species; and locally valuable species. This resulted in the five species listed under assessment above plus *Schizothorax progastus*, *Anguilla bengalensis*, *Clupisoma garua*, *Labeo dero* and *Pseudecheneis sulcatus*. The World Bank has dedicated money to the Government of Nepal (GoN) in order to provide capacity building in the area of cumulative impacts, as well as the mitigation of hydropower impacts on fish migration and ecological connectivity. This input will also be used to address potential future issues with additional projects constructed upstream of Kabeli, possibly rendering the fish passage less effective, and/or effective for a much shorter stretch

of river than intended. The monitoring programme will also reveal future occurrences of invasive aquatic species, if any.

The reservoir has dedicated management interventions planned, especially for algal removal in order to avoid algal blooms. The water-quality monitoring, which is part of the EMP, will also function as a risk identification tool for any eutrophication and algal proliferation issues.

KEL has studied the different option for where and how to design the fish passage in order to optimize the migration conditions for fish through the intake and dam infrastructure. Water velocities at the intake will be kept at less than 1 m/s to avoid entrapment of upstream-migrating fish when they enter the reservoir from the downstream.

A more comprehensive Cumulative Impact Assessment (CIA), strongly focussed on basin-wide impacts on aquatic biodiversity, is planned for the Tamor River catchment. This is budgeted for as part of the World Bank's programme financing. During construction and (early) operation, regular socio-environmental monitoring, including biodiversity aspects, will be carried out by the KAECU on a quarterly basis and by an independent external firm every 6 months.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and commitments in plans are public, formal and legally enforceable.*

The management plans in place anticipate emerging risks and opportunities through regular monitoring and analysis of conditions. The clearly-defined adapted-management approach will provide managerial and budgetary capacity to respond to any such emerging issues. All the plans prepared as part of the EIA/EMP are publicly disclosed on both the KAHEP web site and the World Banks web site. In Nepal, it is the less stringent IEE that is the legally enforceable document, but given the continuous follow-up of the EMP and related plans which will be in place through the independent monitoring consultants for the financiers, the fact that these documents are not legally binding (but they are contractually binding for the project's financing) is regarded as a non-significant gap.

Criteria met: Yes

19.2.3 Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimize, mitigate, and compensate negative biodiversity impacts arising from project activities with no significant gaps.*

The assessment of terrestrial biodiversity has not identified any significant negative impacts. The minor impact to forest cover, most of it planted, will be more than compensated for in accordance with Nepalese regulation, with 25 trees planted for each one felled. Comprehensive management intervention in order to avoid increased pressure on local forest resources (timber, fuel wood and NTFPs) should secure satisfactory avoidance, minimization, mitigation or compensation of impacts on terrestrial biodiversity.

Aquatic biodiversity requires significantly more and more complicated interventions, partly because of the admittedly weak knowledge of species, threats and potential solutions. Adaptive management has, therefore, been adopted as a key approach, but significant resources are also devoted to potentially successful mitigation such as a fish passage being built into the dam. The passage will have a guaranteed flow release through the provision of the "environmental flow", see topic 23. In case the fish passage does not perform as expected, funds are also dedicated to study and construct a fish hatchery in order to mitigate and compensate the impacts from reduced natural migration.

A major uncertainty concerns upstream migration, as another dam is planned close to the KAHEP, but likely without fish passage in its design. KAHEP’s management response to this is described above under Management.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: In addition, plans avoid, minimize, mitigate and compensate negative biodiversity impacts due to project activities with no identified gaps; and plans provide for enhancements to pre-project biodiversity conditions or contribute to addressing biodiversity issues beyond those impacts caused by the project.

An important aspect of design for best possible outcomes is the movement of the fish passage away from the intake in order to avoid fish entrapment.

The plans to address the impacts on fish migration are ambitious and well-funded. There are, however, significant uncertainties regarding the possible success of a fish ladder such as the chosen mitigation option, as opposed to a more “natural” fish passage with a nature-like aquatic environment and lower gradient. Furthermore, the difficult-to-manage impacts commonly found in other Nepali rivers, such as poisoning of fish or a generally intensified fishery in reduced-flow, shallow stretches of river will require long-term major efforts with training and awareness-raising in the project area.

No significant enhancements to pre-project biodiversity conditions or contributions to addressing biodiversity issues beyond the project’s own impacts have been identified. This is a **significant gap**.

Criteria met: No

19.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

No significant enhancements to pre-project biodiversity conditions or contributions to addressing biodiversity issues beyond the project’s own impacts have been identified (Outcomes).

1 significant gap

19.3 Scoring Summary

Detailed terrestrial and aquatic biodiversity inventories have been undertaken as part of the environmental assessments during the period 2010-2013. The terrestrial environment in the project area harbours no protected species nor does it function as a migration route for any such species. The vegetative cover is dominated by mixed farming and planted trees. The aquatic environment has been shown to be similar to other parts of the greater Tamor catchment and many of Nepal’s rivers. All identified species are common in the country, but five species are, nevertheless, listed on the IUCN red list, out of which one is listed as endangered.

Cumulative impacts have been screened in a rapid assessment, and funds have been earmarked for a comprehensive cumulative impact assessment for the entire Tamor basin. The environmental management plan contains specific terrestrial and aquatic biodiversity management plans with strong components for the monitoring and strengthening of the baseline understanding of the area’s biodiversity. Monitoring will be undertaken by a project-internal team, by the contractor, by the owner’s engineer and, every six months, by an independent monitoring consultant working for the World Bank and the IFC.

The weak knowledge regarding, primarily, the aquatic biodiversity has led to a focus on adaptive management approaches in order to meet the challenges of the project. A fish ladder has been included in the design, and

studies for a possible fish hatchery are funded as part of the management plans. Breeding and releasing fish has been identified as mitigation in case the fish passage does not meet expectations, or if future dams constructed upstream from the Kabeli-A project cut migration routes.

The project will not enhance pre-project biodiversity conditions or contribute to addressing biodiversity issues beyond its own impacts, which is a significant gap at the level of proven best practice.

There is one significant gap against proven best practice, resulting in a score of 4.

Topic Score: 4

19.4 Relevant Evidence

Interview:	5, 6, 10, 15, 19, 26, 28, 31, 43, 51, 53
Document:	2, 6, 25, 38, 61-63, 65-67
Photo:	31, 32, 44, 45

20 Erosion and Sedimentation (P-20)

This topic addresses the management of erosion and sedimentation issues associated with the project. The intent is that 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.

20.1 Background Information

Kabeli-A Hydro-Electric Project (KAHEP) is located in the tectonically very active Himalayan Mountains with an associated high incidence of land slides in the catchment. In combination with the monsoonal climate with very heavy rainfall during the months of, primarily, June-September, this provides a potential source of severe sediment transport-related problems for hydropower projects. There are documented cases from Nepal of both rapid sedimentation of reservoirs and/or intake ponds as well as severe turbine-runner damage with high maintenance costs resulting from the impacts of large amounts of angular hard minerals. However, in spite of the climate and geomorphological conditions of the catchment, the general erosion situation is not severe, with comparatively good land cover and suitable agricultural practices with well-maintained terracing dominating the croplands.

This topic covers erosion and sedimentation issues in general while the design-specific aspects of the sediment load in the Kabeli River are covered under topic P-4, Siting and Design.

20.2 Detailed Topic Evaluation

20.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An erosion and sedimentation issues assessment has been undertaken with no significant gaps; the assessment identifies impacts that may be caused by the project, issues that may impact on the project, and establishes an understanding of the sediment load and dynamics for the affected river system.*

Between 40 and 50 landslides have been identified in the project's catchment area, but few, if any, are considered active as sediment sources at the present time.

There are no official sediment-sampling stations in the Kabeli catchment. During project development, staff have estimated the expected sediment load in the Kabeli River using empirical sources from elsewhere in Nepal. There are several studies in the literature from other parts of the Tamor basin. Those studies indicated annual loads of between 2 000 and 9 000 tonnes/km²/year. This would result in approximate loads of between 1.7 x 10⁶ and 7.7 x 10⁶ tonnes at the Kabeli intake. Given that the intake pond for the project is just over 0.3 x 10⁶m³, it is clear that sediment has to be continuously managed in order to keep the peaking capacity of the project intact.

Therefore, in order to pinpoint the magnitude of the issue with higher accuracy, suspended-sediment sampling has been conducted at the project's hydrological gauging station for several seasons. The adopted methodology is best practice in high-mountain rivers, using a cableway with sliding carriage and an "Uppsala" sampler. Sampling frequency has been twice daily during a majority of the time, but additional samples were taken during high-magnitude events. The studies have shown conclusively that almost 100% of the suspended sediment load (and bedload) pass during the May to October period. During the remainder of the year, the river is almost clear of sediments. The results are loads at the project site in the order of 10⁵-10⁶ tonnes/year. The detailed sampling

has yielded figures between approximately 270 000 and 770 000 tonnes, including bedload. The correction figure for bedload has been set at 20% of suspended load, a normal figure internationally speaking. This is significantly lower than the previous estimates for the Kabeli and neighbouring river, but based on actual in-situ studies with a highly appropriate methodology. The assessors have no information on the methodological approach used in the previous studies, so it is impossible to compare.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

Broad considerations taken include: detailed mineralogical investigations to assess the share of the sediments that consist of hard minerals (mainly Quartz and Feldspar, but also Tourmaline, Garnet, Kyanite and Hornblende); and particle-size analysis to verify that the desander design is capable of dealing with the necessary amounts of sediment.

The sediment-transport expert in charge of the measurements has recommended Norwegian technology for the desander. This will allow frequent, almost continuous flushing of the desander (see Topic P-4, Siting and Design), something that will also benefit the geomorphological conditions in the downstream section of the Kabeli, especially the section down to the confluence with the Tamor River. The assessment and decision that a desander should be included in the design is a risk-averse mitigation to minimize “aggressive-river” impacts in the downstream stretch.

Criteria met: Yes

20.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified erosion and sedimentation issues have been developed for project implementation and operation with no significant gaps.*

The catchment erosion and associated sediment delivery, mainly a result of landslide activity, will be addressed through a Catchment Area Treatment Plan. The basic studies needed to prepare this plan are outlined in the Environmental Management Plan (EMP), and the preparation of the plan will be executed during the construction phase. The preliminary design of the plan focusses on landslide prevention and management of road construction, which has been identified as a problem area.

Erosion and sediment-related issues during the construction phase will be managed through an Erosion Abatement and Muck/Spoil Management plan outlined in the EMP and to be developed in detail by the contractor prior to the start of construction. Other mitigation and/or plans included as part of the EMP and the Social Action Plan (SAP) are measures to ascertain slope stability of all earth cuts and the Construction Camps and Traffic Management Plan.

The desander will, as described above under Assessment, be operated with a near-continuous flushing approach through the S4 technology, and during the monsoon season the gates will be opened in the dam, allowing the flushing-out of the sediments from the intake pond.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

The opportunity taken to use the S4 technology and also continuous flushing during the monsoon season aim at avoiding most problems with massive removal of sediments from the reduced-flow river stretch below the intake, and the concomitant “aggressive-river” syndrome causing riverbed erosion in that culturally-sensitive area.

The quarterly socio-environmental monitoring to be conducted during construction and (early) operation will be carried out by the Kabeli-A Environment and Community Development Unit on a quarterly basis and there will also be monitoring by an independent external firm every 6 months. Issues to be monitored include landslides and erosion in the construction area but the operation of the desander will also provide a continuous monitoring of sediment load in the river. The project will be audited after two years of operation, and the scheduled issues to be audited include change in river morphology, particularly downstream changes. These measures together will allow early identification of emerging risks such that corrective action can be taken.

Criteria met: Yes

20.2.3 Outcomes

Analysis against basic good practice

Scoring statement: Plans avoid, minimize and mitigate erosion and sedimentation issues arising from project activities and erosion and sedimentation issues that may impact on the project with no significant gaps.

The plans, interventions and design choices described above are likely to avoid, minimize or mitigate all erosion and sedimentation issues, both those resulting from the project’s activities and the ones affecting the project’s operations with no significant gaps.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: In addition, plans avoid, minimize, mitigate and compensate erosion and sedimentation issues due to project activities with no identified gaps; and plans provide for enhancements to pre-project erosion and sedimentation conditions or contribute to addressing erosion and sedimentation issues beyond those impacts caused by the project.

The plans, interventions and design choices described above are likely to avoid, minimize or mitigate all erosion and sedimentation issues, both those resulting from the project’s activities and the ones affecting the project’s operations with no gaps.

The Catchment Area Treatment Plan will address pre-existing erosion problems in the Kabeli catchment also upstream of the project, hence addressing also erosion and sediment-delivery aspects beyond the project’s own impacts.

The extensive tree-planting resulting from the compulsory compensation for trees cut will also enhance the pre-project vegetation cover in the area hence contributing to reduced erosion in the Kabeli catchment.

Criteria met: Yes

20.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

20.3 Scoring Summary

The Kabeli-A Hydro-Electric Project is located in young and highly active mountains with frequent landslide activity and heavy, erosive rainfall during the monsoon period. The project development has included several seasons of well-designed suspended-sediment sampling which has resulted in sediment-load estimates significantly lower than those estimated for the Kabeli and nearby rivers in previous studies. The project design team have, however, decided to include a desander in the design in order to be able to operate the turbines in almost any conceivable conditions, also during the monsoon.

Management plans will be prepared to address construction-related erosion issues, including attention to road cuts and control of induced landslides. A Catchment Area Treatment Plan will address erosion issues in the upstream catchment, contributing to minimize pre-existing erosion and also addressing issues beyond the project's own impacts. These measures together with appropriate technology selected for the desander will likely avoid and minimize the problems caused for the project by sediment delivery, and also to address the impacts potentially caused by the project in a successful manner.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

20.4 Relevant Evidence

Interview:	5-7, 10, 14, 15, 19, 29, 31, 41, 42, 44, 54
Document:	2, 5, 6, 25, 31-35, 61-63, 65, 68
Photo:	46, 47

21 Water Quality (P-21)

This topic addresses the management of water-quality issues associated with the project. The intent is that water quality in the vicinity of the project is not adversely impacted by project activities.

21.1 Background Information

The catchment area of the Kabeli River at the intake is 862 km². There are no direct industry effluents discharging into the river. Effluents from settlements and agricultural activities (e.g. open defecation, bathing and washing as well as recent use of chemical fertilizers and pesticide for farming) in the catchment influence the Kabeli River's water quality. During post and pre-monsoon season (October to May), the level of suspended sediment is low or negligible, while in the wet season (June to September), erosion and landslides associated with high monsoon precipitation add high levels of sediment load to the river. Overall, the chemical water quality of the Kabeli River is good.

Water in the downstream area of the dam site is not used for drinking, irrigation, or water-mill operation, but for occasional bathing, swimming and ritual purposes. In this assessment, water-quality issues are co-managed with topics: P-17, Cultural Heritage; P-19, Biodiversity; P-20, Erosion and Sedimentation; and P-23, Downstream Flow Regime. These issues are addressed under their respective topics. This topic focusses on bio-chemical water quality.

21.2 Detailed Topic Evaluation

21.2.1 Assessment

Analysis against basic good practice

Scoring statement: *A water-quality issues assessment has been undertaken with no significant gaps.*

Hydro-Consultant Engineering Ltd (HCEL) conducted an Environmental Impact Assessment (EIA, 2010) and EIA update (2013) to identify and assess water-quality issues during construction (e.g. runoff discharges from stockpiling and material-storage areas, quarries and borrow pits, river diversion, waste disposal, discharge of tunnel drainage, aggregate washing, wastewater discharge from concrete plant, chemical handling, wastewater discharge from camps) and operation (e.g. eutrophication in the reservoir). These impacts are all assessed as being of minor significance. In terms of the reservoir, this conclusion is mainly based on the very short residence time of water in the reservoir, which has a small volume in relation to the river's discharge.

The assessment has included analyses of physical and chemical parameters of samples taken from sampling points during the post-monsoon season (October 2010), and micro-biological parameters of samples taken from sampling points during the monsoon season (July 2013). The 2010 survey includes three sampling points, upstream of the dam, downstream of the dam and in the future reduced-flow zone. The 2013 survey includes four sampling points, the dam site, the Kabeli River's confluence with the Tamor River, upstream of the tailrace and downstream of the tailrace.

The water-quality monitoring during the baseline studies only covers one dry season in 2010 for physical and chemical parameters at three locations, without sampling anywhere in the Tamor River. In addition, no samples were taken during the wet season, when the turbidity and suspended-sediment level is highest. The EIA identifies the inadequacy of the baseline data and specifies additional baseline monitoring prior to construction. Sampling points include: upstream of the dam site, before the confluence with the Tamor River, in Tamor upstream of the Kabeli-Tamor confluence, in Tamor upstream of the powerhouse site and downstream of the tailrace. Parameters to be tested include those specified in the Tolerance Limits for Industrial Effluents to be Discharged

into Inland Surface Waters Nepal (2003) as there is no water-quality standard set for surface water. In addition, micro-biological parameters and temperature will be monitored.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment takes broad considerations into account, and both risks and opportunities.*

The EIA analyses inter-relationships between water quality and fish populations and between water quality and cremation activities in the local community (for details, see topic P-17, Cultural Heritage). The EIA also includes a Rapid Cumulative Impact Assessment (RCIA) of the Tamor-Kabeli catchment. The RCIA identifies that water quality is an important environmental component to manage ecosystem and the integrity of environmental services, and to satisfy consumptive human uses. It assesses that potential cumulative impacts on water quality and availability in the Tamor-Kabeli catchment may be significant, and further baseline-data collection, simulation models, integral flow measurements, and quality monitoring across the whole catchment should be conducted. The Kabeli-A Hydro-Electric Project (KAHEP) will conduct a comprehensive CIA to further assess these impacts next year.

The EIA considers opportunities to improve water quality through improvement of sanitation management and awareness training in the use of agrochemicals.

Criteria met: Yes

21.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes to address identified water-quality issues have been developed for project implementation and operation with no significant gaps.*

Although neither project construction nor operation are expected to have significant impacts on water quality, the EIA sets out a series of mitigation measures to manage water-quality impacts, including the following: a solid-waste disposal plan will be developed by the contractor and approved by the project's environmental officer prior to the beginning of construction; erosion and sedimentation protective measures will be installed, including adequate drainage, toe and slope protection against erosion, and bio-engineering measures; construction-disturbed surfaces will be rehabilitated; excavation of aggregates from the river's wet channel will be prohibited; wastewater discharge will be collected in settling tanks and ponds, for treatment prior to discharge; sanitary wastewater will be treated by a treatment facility in the camp prior to discharge; and open defecation will be prohibited in and around construction sites, camps and river-bank area.

The project will assist the local communities with the improvement of sanitation management and in the use of agrochemicals. A budget for 30 years is set aside for these activities.

The contractor will prepare an Environmental Management and Execution Plan (EMEP) detailing in a site-specific manner how to manage environmental impacts, including water quality. Specific plans to be developed include Pollution Abatement Plan, Erosion Abatement and Muck/Spoil Management Plan, and Rehabilitation Management Plan. The EMEP will be approved by the project-supervision team and the environmental officer prior to the construction.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities.*

The EIA sets out monitoring plans for water quality. Throughout the construction phase, water quality will be monitored monthly by the contractor, at three points: tunnel discharge after treatment, sanitary discharge of camps after treatment and aggregate-washing point discharge after treatment. Parameters to be monitored include those listed in Tolerance Limits for Industrial Effluents to be Discharged into Inland Surface Waters Nepal (2003). In addition, KAHEP will monitor the water quality bi-monthly at the same five sampling points identified for the additional baseline study prior to the construction describe above under Assessment, using the same parameters. During operation, KAHEP will continue monitoring water quality at the same five points using the same parameters. In addition, the project will be audited after two years of operation, and the scheduled issues to be audited include dissolved oxygen, pH, and BOD. These measures together will allow early identification of emerging risks and opportunities such that adaptive management measures and minor adjustment can be taken.

In addition to the internal monitoring arrangement, independent third-party monitoring, Panel of Experts (PoE) review and World Bank review missions are in place to enable KAHEP to anticipate and respond to emerging risks and opportunities. For example, the necessity for a more comprehensive baseline study prior to construction has been identified through the project assessment and evaluation process, and reflects the project’s adaptive-management approach on water-quality issues.

Criteria met: Yes

21.2.3 Outcomes

Analysis against basic good practice

Scoring statement: *Plans avoid, minimize and mitigate negative water-quality impacts arising from project activities with no significant gaps.*

Water-quality impacts from the project site, during construction and operation, can be expected to be minimized and mitigated if the plans set out in the EMP are followed.

The EIA concludes that, overall, impacts on water quality are of minor significance. HCEL experts interviewed during this assessment stated that they do not expect changes in water quality in the reservoir and downstream to have any implications for either ecological function or public health.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans avoid, minimize, mitigate and compensate negative water-quality impacts with no identified gaps; and plans provide for enhancements to pre-project water-quality conditions or contribute to addressing water-quality issues beyond those impacts caused by the project.*

Water-quality impacts from the project site, during construction and operation, can be expected to be fully mitigated without any requirement for compensation.

There are plans to address water-quality issues beyond the impacts caused by the project itself, through the provision of improved sanitation facilities and awareness training amongst local communities. Details of these programmes are provided under topics P-10, Project Benefits, and P-13, Project-Affected Communities and Livelihoods.

Criteria met: Yes

21.2.4 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

21.3 Scoring Summary

The water-quality impacts during project implementation and operation has been comprehensively assessed, with broad considerations taken into account through e.g. the Rapid Cumulative Impact Assessment. Management measures are developed in the EMP. A monitoring and evaluation mechanism is in place to anticipate and respond to emerging risks and opportunities. Water-quality impacts from the project site, assessed as being of minor significance, can be expected to be minimized and mitigated if the plans set out in the EMP are followed.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

21.4 Relevant Evidence

Interview:	8, 34, 45
Document:	2, 6-16, 24-25, 34, 38, 43, 61-63, 65
Photo:	1-4, 8-17

22 Reservoir Planning (P-22)

This topic addresses the planning for management of environmental, social and economic issues within the reservoir area during project implementation and operation. The intent is that the reservoir will be well managed taking into account power generation operations, environmental and social management requirements, and multi-purpose uses where relevant.

22.1 Background Information

According to the 2013 EIA, the reservoir will cover an area of 10 ha, out of which 9.1 is made up of the existing river or its flood zone. The total reservoir volume will be approximately 670 000 m³, and the live storage 335 000 m³, and it will extend approximately 1.4 km upstream from the dam. The full-supply level (FSL) will be 577.3 m.a.s.l. during the dry season and the minimum operation level (MOL) will be 572.5 m.a.s.l. (which will be the constant operating level during the monsoon period) for a maximum regulation amplitude of 4.8 metres.

The project is designed as a single-purpose hydropower project, and all other potential uses of the reservoir are attended to through mitigating measures. It will operate with a true run-of-river regime in the monsoon period, approximately mid-May through October. It will operate as a peaking run-of-river plant during the dry period from November through the middle of May. The peaking will focus on a 2+4 hour regime, 2 hours during the morning peak and 4 hours during the evening peak, 06:00 to 08:00 and 18:00 to 22:00. However, it is only in March that this is the only times that the plant will operate. During the rest of the dry season there will be some off-peak generation, ranging from 0.3 hours/24-hour period in February to over 13 hours in November.

This topic addresses only issues directly related to reservoir planning, prior to and during reservoir filling and operations. Issues dealing with specific aspects relevant to other topics are dealt with separately, e.g. ecology of the reservoir (Topic P-19, Biodiversity and Invasive Species), sediment (Topic P-20, Erosion and Sedimentation), P-21 (Water Quality) and the releases of a downstream flow (Topic P-23, Downstream Flow Regimes).

22.2 Detailed Topic Evaluation

22.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment has been undertaken of the important considerations prior to and during reservoir filling and during reservoir operations, with no significant gaps.*

The assessment in the EIA includes detailed calculations of the pre-project land use, identifying 0.6 ha of forest land and 0.3 ha of agricultural land in addition to the existing river area (including normal flood zone).

Depending on which time of the year the filling takes place, it will take between approximately 1 and 24 hours to fill the entire reservoir volume, based on average monthly discharges and allowing for a minimum downstream flow being provided during the filling.

The retention time of water in the reservoir will be very short, a few hours during the dry season, while, during the monsoon, the river will flow freely over the dam (a minor fraction of the discharge will be utilized for power generation). Such water-quality aspects of reservoir operations are dealt with under Topic P-21, Water Quality.

The variation in the water-surface level in the reservoir will be 0 during the monsoon season and a maximum of 4.81 metres during the dry season. The impacts caused by this dry-season peaking downstream of the tailrace is described under Topic P-23, Downstream Flow Regimes.

The sediment influx to the reservoir will be considerable. Details can be found under Topic P-20, Erosion and Sedimentation.

Analysis against proven best practice

Scoring statement: *In addition, the assessment is based on dialogue with local community representatives, and takes broad considerations, risks and opportunities into account.*

The community interviewees, including the leadership of the KACCC, confirm that all considerations of the plant's future operations have been discussed in detail in the consultations between the owners, the impact-assessment team and the community.

The risk of eutrophication, while small, is addressed through the inclusion of an ongoing water-quality monitoring programme and the stated intent to adopt adaptive management interventions if necessary.

The issue of sedimentation of the live reservoir volume, which would be a fact within only weeks during the monsoon, has been accounted for in the assessment, resulting in management responses described under Management below.

The opportunity to maximize energy generation while allowing for effective fish passage and sediment management is identified, and is described below under Management.

22.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes to manage reservoir preparation, filling and operations have been developed.*

The affected forest and agricultural areas have mitigation and management plans detailed in the EMP. For mitigation of lost forest, please see Topic P-19, Biodiversity and Invasive Species.

A detailed operational plan has been developed and is included as Annexes 2.1, 2.2 and 2.3 of the EIA. It details operational levels, available water, bed level, utilization degree and includes an allowance for sediments aggregating in the reservoir.

Analysis against proven best practice

Scoring statement: *In addition, reservoir plans are based on dialogue with local community and government representatives; and processes are in place to anticipate and respond to emerging risks and opportunities.*

In-depth consultations with the community and relevant authorities have taken place, and the reservoir and other structures at the dam/intake have been integral parts of these consultations. For more detail, see Topic P-1, Consultations and Communications.

The design includes a fish passage and operating instructions to avoid fish entrapment at the intake, one of the major risks identified during the assessment.

To address the significant risk of sediment accumulation in the reservoir, the dam will be operated at MOL during the rainy season (providing flushing down to gate-crest level, without loss of any generation), and the intake is designed for 120% of the basic design flow, in order to compensate for the reduced head.

Operating the dam as an "open" river during the monsoon season, with a small partial derivation of the flow for the intake, will also mitigate the impacts on migrating fish, whose movements up- and downstream peak during the monsoon period.

Monitoring of the fish-species composition during planning, construction and operation of the project provides a risk-identification tool for potential necessary additional mitigation measures to ascertain the successful passage of aquatic fauna through the reservoir in both directions.

Criteria met: Yes

22.2.3 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

22.3 Scoring Summary

The Kabeli reservoir is small and will affect less than 1 ha of land that is not part of the pre-existing river and flood zone. The reservoir level will not fluctuate during the monsoon season when the river will run freely through an open gate and only a part of the discharge will be diverted to the turbines. During the dry season the project will operate as a peaking plant, focussing on 4 hours in morning and 2 hours in the evening but also generate off-peak energy if the discharge allows.

The impacts of the land take have been addressed in the EMP with suitable compensation for the 0.3 ha of agricultural land which will be affected, and compensation plantation of trees to address the affected forest (see Topic P-19). The impacts caused by the up to 4.8 metres of reservoir-surface regulation during the dry season are expected to be small and emerging risks will be managed through the monitoring plans for e.g. water quality and fish fauna that are defined and included in the EMP.

During the monsoon, significantly more water will be available than the design flow of the plant. The opportunity to use this for effective flushing (and avoidance of sedimentation during the relevant period for sediment load delivery) of the reservoir is utilized by lowering the operating level and diverting an additional 20% water in order to compensate the energy generation for the lower head. Hence the plant capacity will remain the same throughout the year.

The community and relevant authorities have been consulted and state that their concerns have been adequately addressed in design and mitigation/management planning.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

22.4 Relevant Evidence

Interview:	5, 6, 14, 19, 29, 41, 44, 53
Document:	2, 5, 6, 25, 31, 33-35, 61-63, 65
Photo:	12, 15

23 Downstream Flow Regimes (P-23)

This topic addresses the flow regimes downstream of hydropower project infrastructure in relation to environmental, social and economic impacts and benefits. The intent is that 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.

23.1 Background Information

The project has a design flow higher than the long-term average discharge of the river during seven months of the year, November through May. During the June-October period, roughly one third of the average discharge will be diverted through the power plant. The diversion of water from the Kabeli River at the Kabeli-A Hydro-Electric Project's (KAHEP) intake affects 5.6 km of the Kabeli River above the confluence with the Tamor River, and a further 10 km of the Tamor River between the Kabeli-Tamor confluence and the tailrace of the KAHEP. Water-level fluctuations will affect the Tamor River downstream from the tailrace over a distance of approximately 2-3 km. Hence, a total of approximately 19 km of river will be affected, with the strongest impacts caused on the reaches immediately downstream of the intake and of the tailrace.

23.2 Detailed Topic Evaluation

23.2.1 Assessment

Analysis against basic good practice

Scoring statement: *An assessment of flow regimes downstream of project infrastructure over all potentially affected river reaches, including identification of the flow ranges and variability to achieve different environmental, social and economic objectives, has been undertaken based on relevant scientific and other information with no significant gaps.*

The assessment is based on a detailed analysis of the hydrology of the Kabeli and Tamor rivers, in order to identify potential flow-related impacts from the KAHEP. This included assessment of small tributaries to the Kabeli River on the reach between the KAHEP intake and the Kabeli-Tamor confluence. The assessment found no consumptive use of water (such as e.g. drinking water or irrigated agriculture) on the stretch between intake and confluence. The environmental and socio-economic studies, together with the consultations with the project-affected communities, have identified the following key objectives for maintaining a minimum flow past the intake for the KAHEP: to keep the ecological corridor open and secure the survival of substantial amounts of fry and fingerlings of targeted species in the reduced-flow zone; and to ensure the continuation of local people's traditional activities connected to the river (e.g. holy baths, cremations, see Topic P-13, Project-Affected Communities and Livelihoods). Following from this, the assessment of an appropriate downstream-flow regime focussed on the cultural/religious and aquatic ecology water requirements.

The work has followed a sequential approach, starting with the legal requirements put down in the Aquatic Animal Protection Act (1998) and the Hydropower Development Policy (2001) stipulating 5% of yearly minimum discharge and 10% of the minimum monthly average discharge respectively. Using these references, a modified Tenant approach was used, but this was later improved through the adoption of more advanced methods and through taking into consideration advice from international experts with significant experience from Nepali rivers. Flow ranges needed to satisfy the identified management priorities were defined and cross-checked against the habitat requirements of the target fish species in the river. The target species have been identified following sequential attention to three criteria: IUCN red-listed species; migratory species; and locally valuable species.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, the assessment is based on field studies, and takes broad considerations, risks and opportunities into account.*

The assessment of flow regimes is based on several existing field studies, such as habitat-suitability recommendations from both the Kabeli EIA and pre-existing fish-ecology assessments from comparable environments.

Broad considerations have included detailed analyses of social water-use requirements, detailed analysis of supplemental runoff contributions from groundwater and small tributaries along the Kabeli River down to the confluence with the Tamor River, and references made to monitoring results from existing hydropower projects in Nepal.

The hydrological changes on the Tamor River have been assessed. The impacts are considerably lower than on the Kabeli River as the discharge in the Tamor River is much higher. The change in average runoff in the section between the Kabeli/Tamor confluence and the KAHEP tailrace will vary between 5% and 160%. The water-level fluctuations below the tailrace resulting from peaking operations during the dry-season have been studied in detail by modelling. The results vary from 8 cm to 42 cm higher water level during operation, with the lowest difference occurring in August and the highest in March.

An important opportunity is the identification of a possibility to run the project without damming effects in the monsoon period, and risks are taken into account through the extensive monitoring programme put in place through the Aquatic Ecology Management Plan (AEMP). Risks are considered in detail through the references made to monitoring of existing hydropower projects in Nepal, learning from their experiences regarding potential emerging risks.

Criteria met: Yes

23.2.2 Management

Analysis against basic good practice

Scoring statement: *Plans and processes for delivery of downstream flow regimes have been developed that include the flow objectives; the magnitude, range and variability of the flow regimes; the locations at which flows will be verified; and ongoing monitoring; and where formal commitments have been made, these are publicly disclosed.*

The management plan for downstream flows specifies that 0.86 m³/s (which corresponds to the 10% of minimum monthly average discharge prescribed by the Hydropower Development Policy) will be released past the dam through the fish ladder during the November to May low-flow period. Together with groundwater contributions along the river of an estimated 0.3 m³/s and the small tributaries joining the Kabeli above the Tamor confluence, which will contribute a further 0.18 m³/s during the dry months, the total minimum in-stream flow, which will occur in April, will vary from the released 0.86 m³/s just below the dam to 1.34 m³/s just above the confluence with the Tamor River. During the remainder of the dry season, the flow will be marginally higher (<1.66 m³/s during the November-May period), while the flow will vary between on average 22 and 148 m³/s during the June-October period.

The flows will be verified at the fish ladder.

There are no management interventions foreseen for the Tamor River section between the Kabeli/Tamor confluence and the KAHEP tailrace. The impacts are considered small enough that none are needed. The EIA states that for the section downstream of the tailrace, monitoring will be in place to investigate potential impacts on fish from rapid changes in discharge at the start and close of generation. If such impacts are identified, experiments with reduced rates of change in the discharge through the turbines will be conducted in steps of 1, 2 and 3 hours of adaptation. The World Bank's Project Appraisal Document specifies that "gradual start up and

closing down of the plant operation” is a defined mitigation measure. A siren warning system will be put in place for a minimum of 5 km downstream from the tailrace to address public-safety issues arising from peaking operations in the dry season.

The AEMP will be a publicly disclosed document as part of the environmental-management documentation to be developed, and the basic content of this plan in reference to downstream-flow regimes is publicly disclosed as part of the Environmental Impact Assessment and the Environmental Management Plan (EMP).

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and commitments in plans are public, formal and legally enforceable.*

Anticipation/identification of, and response to, emerging opportunities and risks are managed through the adaptive-management approach and the extensive monitoring programme that is already in place through the AEMP, which will be a publicly disclosed and formal document as part of the World Bank/IFC management-plan package.

Local FM radio will be used to broadcast information on daily peaking operation to the project-affected communities and awareness programmes will be organized in the communities downstream of the tailrace

In Nepal, it is the less stringent Initial Environmental Examination that is the legally enforceable document, but given the continuous follow-up of the EMP and related plans which will be in place through the independent monitoring consultants for the financiers, the fact that these documents are not legally binding (but they are contractually binding for the project’s financing) is regarded as a non-significant gap.

Criteria met: Yes

23.2.3 Stakeholder Engagement

Analysis against basic good practice

Scoring statement: *The assessment and planning process for downstream flow regimes has involved appropriately timed, and often two-way, engagement with directly affected stakeholders; ongoing processes are in place for stakeholders to raise issues with downstream flow regimes and get feedback.*

Local community representatives, including the Kabeli-A Cooperation Concern Committee, verify unanimously that the consultations regarding downstream-flow releases have been comprehensive, timely and two-way. The focus has been on the stretch of river between the KAHEP intake and the Kabeli/Tamor confluence. The other project-affected river stretches, which are on the Tamor River, have not been a key concern for the directly-affected stakeholders.

The KAHEP’s general grievance procedures (described in detail under Topic P-1, Communication and Consultation) cover issues related to downstream flows as well. The Project Information Centre and KAHEP’s communication staff will provide feedback as necessary.

The siren warning system for the Tamor River section below the tailrace will be discussed with the concerned community during its construction in order to adopt the most suitable timing and frequency of the warning signals.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, engagement with directly affected stakeholders has been inclusive and participatory; and feedback on how issues raised have been taken into consideration has been thorough and timely.*

Engagement with stakeholders have included all groups directly-affected by the flow diversions. The focus-group discussions described in detail under Topic P-1 as well as ongoing exchanges during the impact-assessment studies have been highly participatory in nature. Stakeholders verify that feedback has been both thorough and timely.

Criteria met: Yes

23.2.4 Outcomes

Analysis against basic good practice

Scoring statement: *Plans for downstream flows take into account environmental, social and economic objectives, and where relevant, agreed transboundary objectives.*

The plans described in detail above under Management take into account all relevant sustainability objectives. No transboundary objectives have been identified, but the World Bank, in keeping with its OP 7.50 on International Waterways has twice served notifications to China (not a downstream country but with a share of the greater Ganges basin to which the Kabeli River’s runoff eventually flows), India and Bangladesh. No comments were received.

Criteria met: Yes

Analysis against proven best practice

Scoring statement: *In addition, plans for downstream flow regimes represent an optimal fit amongst environmental, social and economic objectives.*

Social and cultural objectives have been addressed through the flow provisions, and additional mitigation provided for the bathing and cremation uses on the reduced-flow stretch between the KAHEP intake and the Kabeli/Tamor confluence. Economic objectives have been addressed through various design and management decisions making it possible to optimize energy generation while attending to socio-environmental needs. Environmental objectives have been addressed through the minimum flow during the dry season in order to provide habitat and a migration route for fish and fry, and through the decision to allow the river to run close to its natural state during the monsoon season by lowering the gates.

Combining the measures described above, the downstream-flow regime can be considered an optimal sustainability fit.

Criteria met: Yes

23.2.5 Evaluation of Significant Gaps

Analysis of significant gaps against basic good practice

There are no significant gaps against basic good practice.

0 significant gaps

Analysis of significant gaps against proven best practice

There are no significant gaps against proven best practice.

0 significant gaps

23.3 Scoring Summary

The need for downstream-flow releases past the Kabeli-A intake has been comprehensively assessed by national and international expertise using well-known assessment methodologies and field studies, both on the Kabeli River and by using references from other Nepali rivers.

Management responses detailing a flow regime, its objectives, monitoring and evaluation are outlined in the EMP and will be included in the Aquatic Ecology Management Plan.

The relevant sustainability issues have been communicated and discussed with directly-affected stakeholders in a participative and inclusive manner.

There are no identified transboundary issues, but the World Bank has served notices to other riparian countries in the Ganges catchment in accordance with its Op 7.50, without receiving any comments. With the considerations given to economic, social and environmental aspects during the study and determination of downstream-flow regime, the adopted flow regime can be considered an optimal sustainability fit.

There are no significant gaps against proven best practice, resulting in a score of 5.

Topic Score: 5

23.4 Relevant Evidence

Interview:	5, 6, 9, 14, 19, 26, 28, 31, 43, 51, 53
Document:	2-4, 6, 25, 33, 34, 38, 61-63, 65
Photo:	8, 10, 11, 16, 17

Appendix A: Written Support of the Project Developer

काभ्रे एनर्जी लिमिटेड
काठमाडौं, नेपाल

काभ्रेली हाइड्रो लिमिटेड Kabeli Energy Limited

काठमाडौं, नेपाल

काठमाडौं, नेपाल

International Hydropower Association
20000
11th Street, NW
Washington, DC 20037
USA

Attn: Douglas Smith

Subject: Assessment of the Kabeli-A Hydroelectric Project (KAHEP) using operation tools of the Hydropower Sustainability Assessment Protocol

We, Kabeli Energy Limited (KEL), confirm the use of Hydropower Sustainability Assessment Protocol (HSAP) of International Hydropower Association (IHA) as an assessment tool to look at the Preparation of the Kabeli-A Hydroelectric Project as first sustainability Partner of IHA within Nepal as well as in South Asia.

Kabeli Energy Limited (KEL) is committed to using the Protocol. KEL believes that it will be able to improve its procedure and learn valuable lesson from the application of the Protocol. Moreover, KEL expects that its participation will increase the pragmatic adoption of the Protocol around the world.

You are well aware that we had provided full support during the HSAP Training that had been conducted in Kathmandu from 17-19 June, 2014. In addition we are committed to provide full support and coordination to the Assessment Team conducting this assessment of the Kabeli-A Hydroelectric Project (KAHEP) as per our previous communication and understanding.

We look forward to work with your team.

Yours Sincerely



Pratik Man Singh Pradhan
Director
Kabeli Energy Limited

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Appendix B: Verbal Evidence

Ref.	Interviewee/s, Position	Organization	Date	Location	Lead Interviewer	Topics
1	Ravi Kumar Gautam, Sr. Hydropower Engineer	KEL	31/08/2014	Kathmandu	Simon Howard	P-12, P-6
2	Uttar Kumar Shrestha, Partik Man Singh Pradhan	BPC/KEL	01/09/2014	Kathmandu	Simon Howard	P-2, P-6, P-12
3	Ganesh Khanal, Business Development Manager	BPC	01/09/2014	Kathmandu	Simon Howard	P-5, P-9, P-12
4	Prabesh Maharajan, Financial Analyst	BPC	01/09/2014	Kathmandu	Simon Howard	P-9
5	Pradip Raj Kandel, Chief District Officer	Panchther district	01/09/2014	Phidim	Bernt Rydgren	P-3, P-4, P-19, P-20, P-22, P-23
6	Mahendra Prasad Chaudhary, District Forest officer	Panchther district	01/09/2014	Phidim	Bernt Rydgren	P-19, P-20, P-22, P-23
7	Mr Dahal, District Soil Conservation officer	Panchther district	01/09/2014	Phidim	Bernt Rydgren	P-20
8	Prakash Poudel, Anthropologist/CSR & Mitigation Officer	KEL	01/09/2014	Phidim	Elisa Xiao	P-1, P-10, P-13, P-15, P-17, P-18, P-21
9	Sashi Prasad Yadav, VDC secretary	Amarpur VDC	01/09/2014	Amarpur	Elisa Xiao	P-1, P-4, P-10, P-13, P-15, P-23
10	Amrit Bahadur Basnet, CFUG President	Khohi Panchakanya Community Forest Users Group	02/09/2014	Amarpur	Elisa Xiao	P-1, P-4, P-10, P-13, P-15, P-19, P-20
11	Dak Prasad Poudel, Public Relation Assistant	KEL	02/09/2014	Amarpur	Elisa Xiao	P-1, P-16
12	Laxmi Hembya, President	Amarpur Single Women Group	02/09/2014	Amarpur	Elisa Xiao	P-1
13	Laxmi Prasad Hembya, NEFIN President	Nepal Federation of Indigenous Nationality Amarpur Section	02/09/2014	Amarpur	Elisa Xiao	P-1, P-13, P-15, P-17, P-18
14	Bhawani Prasad Limgden, KACCC President (with others members of KACCC)	Kabeli A Coordination and Concern Committee	02/09/2014	Amarpur	Bernt Rydgren	P-1, P-3, P-4, P-10, P-11, P-13, P-15, P-16, P-17, P-20, P-22, P-23
15	Bhim Wagle, CFUG President	Kabeli Gargite Community Forest Users Group	02/09/2014	Amarpur	Elisa Xiao	P-1, P-4, P-10, P-13, P-15, P-17, P-18, P-19, P-20
16	Khadga Prasad Tamang, Project Affected Person	N/A	02/09/2014	Amarpur	Elisa Xiao	P-10, P-13, P-17
17	Rama Wagle	Amarpur Women Group	02/09/2014	Amarpur	Elisa Xiao	P-1, P-13

Ref.	Interviewee/s, Position	Organization	Date	Location	Lead Interviewer	Topics
18	Rabindra Hamal, Civil Engineer	KEL	02/09/2014	Ilam	Elisa Xiao	P-1, P-13, P-16
19	Prakash Poudel, Anthropologist/CSR & Mitigation Officer	KEL	02/09/2014	Ilam	Bernt Rydgren	P-3, P-4, P-11, P-19, P-20, P-22, P-23
20	Shyam Prasad Bhusal, Sr. Contract Engineer	Hydro Consult Engineering Limited	02/09/2014	Kathmandu	Simon Howard	P-5, P-6, P-7, P-12
21	Pranav Achary, Chief Environmentalist	Hydro Consult Engineering Limited	02/09/2014	Kathmandu	Simon Howard	P-5
22	ICIMOD Team	ICIMODE	02/09/2014	Kathmandu	Simon Howard	P-5
23	Rabin Shrestha, Energy Specialist	The World Bank	03/09/2014	Kathmandu	Simon Howard	P-2, P-9, P-12
24	Dorna Raj Ghimere, Environmental Expert	The World Bank	03/09/2014	Kathmandu	Simon Howard	P-5
25	Kiran Bhattarai, Environmental Panel of Expert	N/A	03/09/2014	Kathmandu	Simon Howard	P-5
26	Dorna Raj Ghimere, Environmental Expert	The World Bank	03/09/2014	Kathmandu	Bernt Rydgren	P-19, P-23
27	Pratik Man Singh Pradhan, Vice President Business Development	BPC	04/09/2014	Kathmandu	Bernt Rydgren	P-3, P-11
28	Pranav Achary, Chief Environmentalist	Hydro Consult Engineering Limited	04/09/2014	Kathmandu	Bernt Rydgren	P-3, P-19, P-23
29	Diwash Lal Maskey, Team Leader KAHEP Design Team	Hydro Consult Engineering Limited	04/09/2014	Kathmandu	Bernt Rydgren	P-4, P-20, P-22
30	Madhu Prasad Bhattwal, Superintendent Engineer	Department of Electricity Development	04/09/2014	Kathmandu	Bernt Rydgren	P-3
31	Ishwori Poudel, Under Secretary	Department of Forest	04/09/2014	Kathmandu	Bernt Rydgren	P-3, P-19, P-20, P-23
32	Parbat Krishna Pokherel, Administration /Account Officer	KEL	04/09/2014	Kathmandu	Elisa Xiao	P-16
33	Nama Raj Thapa, Sr. Livelihood Officer	KEL	04/09/2014	Kathmandu	Elisa Xiao	P-13
34	Pranav Achary, Chief Environmentalist	Hydro Consult Engineering Limited	04/09/2014	Kathmandu	Elisa Xiao	P-10, P-13, P-15, P-21
35	Nirmal Shrestha, Human Resource Manager	BPC	04/09/2014	Kathmandu	Elisa Xiao	P-16
36	Dilli Ram Dahal, Social Panel Of Expert KAHEP	Panel of Expert	04/09/2014	Kathmandu	Elisa Xiao, Simon Howard	P-5
37	Deepak Rauniyar, CEO	Hydropower Investment Development Company Limited	04/09/2014	Kathmandu	Simon Howard	P-2, P-9
38	Ravi Shrestha, ISO officer	BPC	04/09/2014	Kathmandu	Simon Howard	P-5

Ref.	Interviewee/s, Position	Organization	Date	Location	Lead Interviewer	Topics
39	Diwash Lal Maskey ,Team Leader KAHEP Design Team	Hydro Consult Engineering Limited	04/09/2014	Kathmandu	Simon Howard	P-7, P-8
40	Ishwori Poudel, Under Secretary	Department of Forest	04/09/2014	Kathmandu	Simon Howard	P-5
41	Ravi Kumar Gautam, Sr. Hydropower Engineer	KEL	05/09/2014	Kathmandu	Bernt Rydgren	P-4, P-20, P-22
42	Mekh Bahadur Bishwokarma, CEO	Hydro Lab Company Limited	05/09/2014	Kathmandu	Bernt Rydgren	P-4, P-20
43	Rakesh Yadav , Fish Biologist	BPC	05/09/2014	Kathmandu	Bernt Rydgren	P-19, P-23
44	Shakti Dhar Suman , Project Lead	Gurans Energy Limited	05/09/2014	Kathmandu	Bernt Rydgren	P-4, P-20, P-22
45	Rakesh Yadav , Fish Biologist	BPC	05/09/2014	Kathmandu	Elisa Xiao	P-21
46	Rakesh Yadav , Fish Biologist	BPC	05/09/2014	Kathmandu	Simon Howard	P-5
47	M. Gopalakrishnan	PoE	04/09/2014	Telephone	Simon Howard	P-8
48	Pravin Karki, Senior Hydropower Specialist	World Bank	08/10/2014	Telephone	Simon Howard	P-2, P-7, P-8, P-12
49	Rabin Shrestha, Energy Specialist	The World Bank	03/09/2014	Kathmandu	Bernt Rydgren	P-3, P-11
50	Pravin Karki, Senior Hydropower Specialist	World Bank	01/10/2014	Telephone	Bernt Rydgren	P-4, P-11
51	Halvard Kaasa, Fisheries expert	Sweco	26/09/2014	Telephone	Bernt Rydgren	P-19, P-23
52	Andre van Hoeck, Economic Analyst	IFC	05/09/2014	E-mail	Bernt Rydgren	P-11
53	Pablo Cardinale, Principal Specialist, Infrastructure & Natural Resources	IFC	05/09/2014	E-mail	Bernt Rydgren	P-11, P-19, P-21, P-22, P-23
54	Sultan Alam, consultant, sediment expert	Panel of Expert member	09/09/2014	Telephone	Bernt Rydgren	P-4, P-20

Appendix C: Documentary Evidence

Ref	Author/ Organization	Title	Year	Language	Evidence for topics
1	KEL	Project Synopsis 20140224	2014	English	P-2, P-5
2	KEL	Environmental Impact Assessment Kabeli-A Hydroelectric Project with Annexes	2013	English	P-1, P-2, P-3, P-4, P-11, P-10, P-13, P-15, P-16, P-17, P-18, P-19, P-20, P-21, P-22, P-23
3	KEL	Social Assessment Kabeli-A Hydroelectric Project	2013	English	P-1, P-3, P-4, P-5, P-10, P-11, P-13, P-15, P-16, P-17, P-18, P-23
4	KEL	Social Action Plan Kabeli-A Hydroelectric Project	2013	English	P-1, P-3, P-4, P-5, P-10, P-11, P-13, P-15, P-16, P-17, P-18, P-23
5	KEL	Updated Feasibility Kabeli-A Hydroelectric Project	2011	English	P-2, P-4, P-5, P-9, P-11, P-20, P-22
6	World Bank	Project Appraisal Document Kabeli-A Hydroelectric Project	2014	English	P-1, P-2, P-3, P-4, P-5, P-10, P-11, P-13, P-15, P-16, P-17, P-18, P-19, P-20, P-21, P-22, P-23
7	KEL	Executive Summary of EIA Kabeli-A Hydroelectric Project in Nepali Language	2013	Nepali	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
8	KEL	Executive Summary of EIA Kabeli-A Hydroelectric Project in Limbu Language	2013	Limbu	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
9	KEL	Executive Summary of EIA Kabeli-A Hydroelectric Project in Tamang Language	2013	Tamang	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
10	KEL	Executive Summary of EIA Kabeli-A Hydroelectric Project in Bantawa Rai Language	2013	Bantawa Rai	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
11	KEL	Executive Summary of EIA Kabeli-A Hydroelectric Project in Khaling Rai Language	2013	Khaling Rai	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
12	KEL	Executive Summary of SAP Kabeli-A Hydroelectric Project in Nepali Language	2012	Nepali	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
13	KEL	Executive Summary of SAP Kabeli-A Hydroelectric Project in Limbu Language	2012	Limbu	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
14	KEL	Executive Summary of SAP Kabeli-A Hydroelectric Project in Tamang Language	2012	Tamang	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
15	KEL	Executive Summary of SAP Kabeli-A Hydroelectric Project in Bantawa Rai Language	2012	Bantawa Rai	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
16	KEL	Executive Summary of SAP Kabeli-A Hydroelectric Project in Khaling Rai Language	2012	Khaling Rai	P-1, P-2, P-5, P-10, P-13, P-15, P-17, P-18, P-21
17	KEL	Project information Brochure Kabeli-A Hydroelectric Project in Nepali Language	2011	Nepali	P-1, P-2, P-5
18	KEL	Project information Brochure Kabeli-A Hydroelectric Project in Limbu Language	2011	Limbu	P-1, P-2, P-5

Ref	Author/ Organization	Title	Year	Language	Evidence for topics
19	KEL	Project information Brochure Kabeli-A Hydroelectric Project in Tamang Language	2011	Tamang	P-1, P-2, P-5
20	KEL	Project information Brochure Kabeli-A Hydroelectric Project in Bantawa Rai Language	2011	Bantawa Rai	P-1, P-2, P-5
21	KEL	Project information Brochure Kabeli-A Hydroelectric Project in Khaling Rai Language	2011	Khaling Rai	P-1, P-2, P-5
22	KEL	3 rd AGM Report of Kabeli Energy Limited	2013	English	P-2
23	KEL	Organisation Chart	2014	English	P-1, P-2
24	KEL	List of the participant and Summary of Focused Group Discussion	2011	English	P-1, P-2, P-4, P-5, P-10, P-13, P-15, P-17, P-18, P-21
25	GoN	Plans and Policy of Government of Nepal	N/A	English	P-1, P-2, P-3, P-4, P-5, P-10, P-11, P-13, P-15, P-16, P-17, P-19, P-20, P-21, P-22, P-23
26	KEL	Dam Safety Plan (including Operation and Maintenance Manual (O&MM) Emergency Preparedness Plan (EPP) Instrumentation Plan (IP)	2011	English	P-4, P-8
27	KEL	CSR/Benefit Sharing Strategy	2011	English	P-1, P-5, P-10, P-13, P-15, P-17, P-18
28	DNV	Det Norske Veritas Business Assurance Management System Certificate	2013	English	P-2, P-16
29	KEL	Prequalification Process & Evaluation Report	2011	English	P-2, P-12, P-16, P-18
30	KEL	Geotechnical Baseline Report (GBR)	2014	English	P-4, P-8
31	KEL	Final Updated Feasibility Study Report	2011	English	P-4, P-5, P-7, P-8, P-20, P-22
32	KEL	Sediment sampling and laboratory analyses, Monsoon 2010 for Kabeli 'A' Hydropower Project	2011	English	P-4, P-7, P-8, P-20
33	KEL	Detailed Design Report Kabeli-A Hydroelectric Project	2012	English	P-4, P-6, P-7, P-8, P-11, P-20, P-22, P-23
34	KEL	Project Layout Map	2012	English	P-1, P-4, P-8, P-10, P-13, P-15, P-17, P-20, P-21, P-22, P-23
35	KEL	Physical Hydraulic Model Study of the Headwork of Kabeli 'A' HEP	2012	English	P-4, P-7, P-20, P-22
36	BPC	Corporate Governance Report	2013	English	P-2
37	KEL	Dental Health Camp and Teachers Training Report	2011	English	P-5, P-10, P-13, P-18

Ref	Author/ Organization	Title	Year	Language	Evidence for topics
38	KEL	Kabeli Fish Monitoring And Water Quality Report	2014	English	P-5, P-19, P-21, P-23
39	KEL	Mitigation, CSR and Benefit Sharing activities of KAHEP	2014	English	P-5, P-10
40	KEL	Agreement with Community (including Grievance address)	2014	Nepali	P-1, P-5, P-13, P-15
41	GoN	IEE Approval Letter	2011	Nepali	P-2, P-5, P-13
42	GoN	Labour Act, 2048 (1992)	1992	English	P-16
43	NESS	QS Test Report	2014	English	P-18, P-21
44	KEL	Public Consultation Report	2014	English	P-1, P-4, P-13
45	KEL	School Construction Report	2012	English	P-12, P-13
46	BPC	BPC HR Manual		English	P-16
47	KEL	KEL Communication Action Plan	2012	English	P-1, P-5
48	ILO	Nepal's ratification status for ILO's conventions, found at http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNT_RY_ID:103197 (accessed 02/11/2014)	2014	English	P-16
49	KEL	Interface Agreement Form	2013	English	P-6
50	KEL	KAHEP Negotiation Document	2014	English	P-2, P-5, P-6, P-8, P-12
51	BPC	Kabeli Financing Plan	2013	English	P-9
53	GoN	Medium Hydropower Study, screening and ranking study	1996	English	P-3, P-4
54	GoN	Medium Hydropower Study, fine screening and ranking	1996	English	P-3, P-4
55	GoN	Nepal Power Development Project, Sectoral Environmental Assessment			P-3, P-4
56	GoN	Water Resources Strategy, 2002			P-3
57	GoN	National Water Plan, 2005;			P-3
58	GoN	Irrigation Policy 2003;			P-3
59	GoN	Hydropower Development Policy 2001;			P-3

Ref	Author/ Organization	Title	Year	Language	Evidence for topics
60	GoN	Water and Energy Commission Secretariat web site found at: http://www.weecs.gov.np/ (accessed 02/11/2014)			P-3
61	World Bank	World Bank web site for the Kabeli-A project found at: http://www.worldbank.org/projects/P122406/kabeli-hydroelectric-project?lang=en (accessed 02/11/2014)			All topics
62	BPC/KEL	Kabeli-A project web site found at: http://www.bpc.com.np/index.php?option=com_page&task=details&id=26 (accessed 02/11/2014)			All topics
63	IFC	IFC web site for the Kabeli-A project found at: http://ifcext.ifc.org/ifcext/spiwebsite1.nsf/1ca07340e47a35cd85256efb00700cee/9B70784B4DE2327785257961004953E0 (accessed 02/11/2014)			All topics
64	KEL	Employer's Risk Management Plan	2014	English	P-4, P-6, P-8, P-12, P-16
65	Hydro-Consult	Scoping Document for Environmental Impact Assessment (EIA) of Kabeli-A Hydroelectric Project	2010	English	All topics
66	IUCN	An inventory and assessment of invasive alien plant species of Nepal	2005	English	P-19
67	IUCN	The Global Invasive Species Database web site found at: http://www.issg.org/ (accessed 02/11/2014)	2014	English	P-19
68	Hydro Lab	Sediment Sampling and Laboratory Analyses, 2013 for Kabeli-A Hydroelectric Project	2013	English	P-4, P-20

Appendix D: Visual Evidence




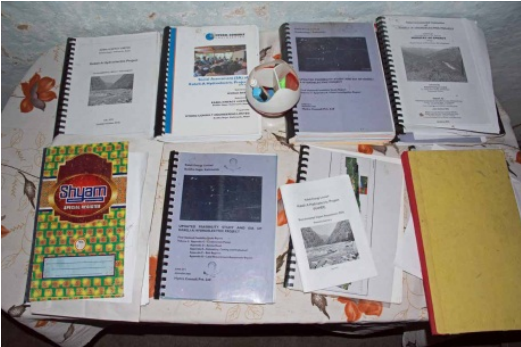


	
<p>Photo 1: Kabela-A Project Information Centre (PIC).</p>	<p>Photo 2: Banner displaying a consultation and training event.</p>
	
<p>Photo 3: Executive Summary of Kabela-A EIA available at the PIC in English, Nepali and several indigenous languages</p>	<p>Photo 4: Various reports available at the PIC.</p>
	
<p>Photo 5: Interview with women's group representative.</p>	<p>Photo 6: Interview with a woman representative in Amarpur VDC.</p>



Photo 7: Interview with indigenous people's group.



Photo 8: Footbridge and cremation site with shelters, Kabeli.



Photo 9: Footbridge, temple and cremation site in Kabeli.









Photo 10: Confluence of Kabeli and Tamor river with cremation site.






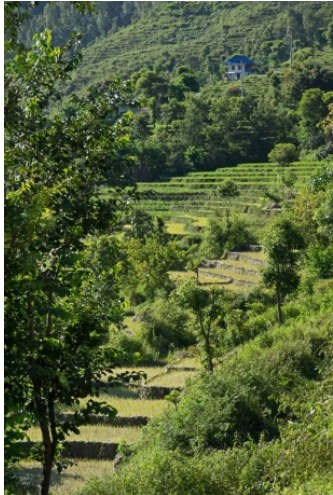


Photo 11: Powerhouse site and Tamor river from the air.



Photo 12: Intake site at low discharge.

	
<p>Photo 13: Powerhouse site close up.</p>	<p>Photo 14: Powerhouse site, overview.</p>
	
<p>Photo 15: Intake site at high discharge.</p>	<p>Photo 16: The intake and headworks area from the air.</p>
	
<p>Photo 17: The powerhouse site from the air.</p>	<p>Photo 18: Students after school in Amarpur VDC.</p>

	
<p>Photo 19: Students in Amarpur VDC, newly paved road to the power station site.</p>	<p>Photo 20: Houses in Phidim, Panchthar District Centre.</p>
	
<p>Photo 21: Phidim, Panchthar District Centre.</p>	<p>Photo 22: A restaurant in Amarpur VDC along Mechi High Way.</p>
	
<p>Photo 23: A convenience store in Amarpur VDC.</p>	<p>Photo 24: Settlements of Amarpur VDC along Mechi Highway.</p>

	
<p>Photo 25: Settlements of Amarpur VDC along Mechi Highway 2.</p>	<p>Photo 26: Backyard of a rural household in Amarpur VDC, Kabeli River down in the Valley.</p>
	
<p>Photo 27: Bee-keeping (apiculture).</p>	<p>Photo 28: Terraced rice cultivation, Kabeli.</p>
	
<p>Photo 29: Cardamom plantation.</p>	<p>Photo 30: Kabeli area.</p>






	
<p>Photo 31: Terrestrial mixed agriculture and forest plantations in the Kabeli area.</p>	<p>Photo 32: Mixed cultivation and forest plantations close to the Kabeli-Tamor confluence.</p>
	
<p>Photo 33: Settlements on the Kabeli River near the confluence point.</p>	<p>Photo 34: View of Kabeli, highway bridge and temple with footbridge at low centre-left.</p>
	
<p>Photo 35: Women and girls fetching drinking water at Kabeli Bazar.</p>	<p>Photo 36: A local woman carrying goods, Phidim, Panchthar District Centre.</p>



Photo 37: A bus stop at Amarpur VDC.



Photo 38: Indigenous People's houses along the Highway at Amarpur VDC.



Photo 39: Temple by the river in Kabeli.







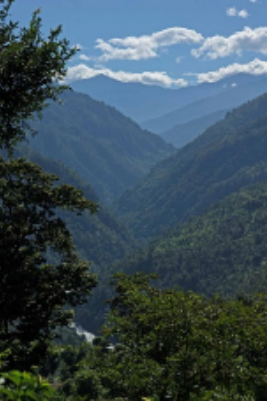
Photo 40: Overview of the PIC located in Kabeli Bazar.



Photo 41: Overview of the Temple in Kabeli.



Photo 42: Backyard of the Temple.

	
<p>Photo 43: The guesthouse in the Temple.</p>	<p>Photo 44: The snow-clad peaks of the Kanchenjunga conservation area in the distance.</p>
	
<p>Photo 45: View towards the Kanchenjunga conservation area.</p>	<p>Photo 46: Severe erosion and land-sliding as a result of road construction.</p>
	
<p>Photo 47: The well-forested upper Kabeli valley.</p>	