

Hydropower Sustainability Assessment Protocol

**Operation
Draft3 Final
28th June 2010**

About this Document

This document is one of a consecutive series of documents that has been developed through the Hydropower Sustainability Assessment Forum process, in working towards a Recommended Final Draft Hydropower Sustainability Assessment Protocol to present to Forum member organisations to consider for adoption (in the case of IHA) and endorsement (in the case of all other Forum members).

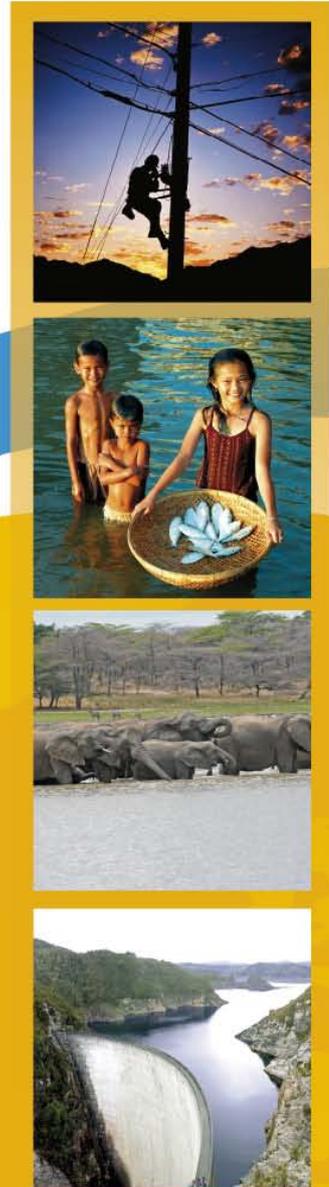
This document is one of a set of documents that comprise the HSAP Draft3 Final. This document provides the HSAP Draft3 Final Operation Assessment Tool with acceptance of proposed edits from Forum members to the HSAP Draft2 Final 24th May 2010, as well as acceptance of Forum Coordinator proposals for the way forward where there were conflicts or issues with proposed edits. There is a track changes version of this same document that has been distributed that shows all proposed edits and accompanying comments and proposals. Colour codes used in the track changes version have been retained in this document. Those items that are highlighted in blue have been identified by the IHA as high priority proposed edits, and those in yellow as second order priority proposed edits.

The intention is for Forum members and their reference groups to review the Operation documents (both track changes and changes accepted versions) and the other accompanying documents that comprise the HSAP Draft3 Final – Background, Early Stage, Preparation, and Implementation documents – in preparation for the Forum's final meeting via Webinar 6 on the 15th of July 2010. By viewing this version with all track changes and proposals accepted, the Forum members can read this cleaner version and consider if they have any issues with the acceptance of any of the proposed edits.

This and the preceding page would be deleted in the Hydropower Sustainability Assessment Protocol 2010 that is ultimately released as a public document, and the following represents what is proposed to be presented as the Forum's Recommended Final Draft Protocol – Operation Assessment Tool.

Final Draft Protocol recommended by the Hydropower Sustainability Assessment Forum to its member organisations for adoption and endorsement

Published by the International Hydropower Association



Recommended Final Draft Hydropower Sustainability Assessment Protocol

July 2010

Operation Assessment Tool

The following organisations endorse this Protocol



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The Hydropower Sustainability Assessment Protocol

The Hydropower Sustainability Assessment Protocol (the “Protocol”) is a sustainability assessment framework for hydropower projects and operations. It outlines the important sustainability considerations for a hydropower project, and enables production of a sustainability profile for that project. The four Protocol assessment tools – Early Stage, Preparation, Implementation, and Operation – are designed to be stand-alone assessments applied at particular stages of the project life cycle. An assessment with one tool does not depend on earlier stage assessments to have been undertaken. The assessment tools are designed to be applicable up to major decision points in the project life cycle, and are most effective where there are repeat applications to help guide continuous improvement measures. The assessment tools and associated decision points are shown in Figure 1.

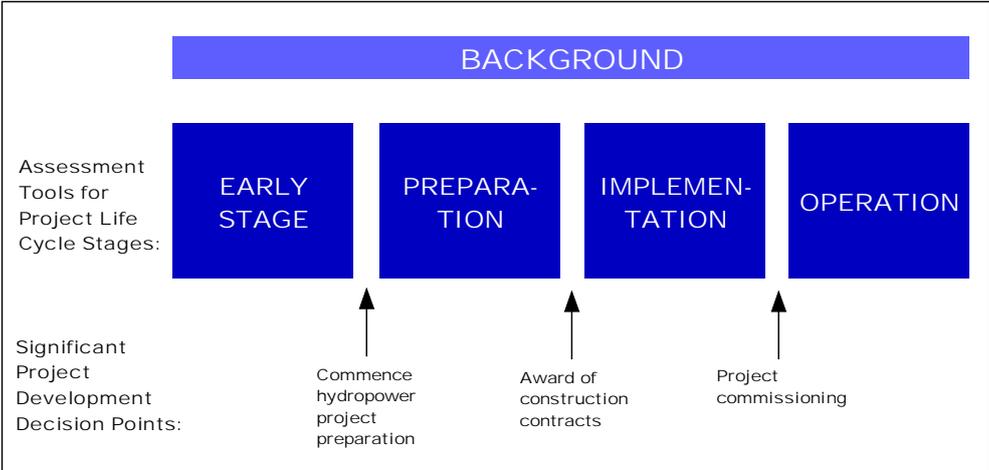


Figure 1 - Protocol Assessment Tools and Major Decision Points

Overview of the Operation Assessment Tool

This document provides the Operation assessment tool, and assumes that the user has already made him or herself familiar with the Protocol Background which describes the overall approach and use of the Protocol assessment tools. The Operation assessment tool assesses the operation of a hydropower facility. This Protocol assessment tool can be used to inform the view that the facility is operating on a sustainable basis with active measures in place towards monitoring, compliance and continuous improvement.

Recognising that hydropower facilities can be in operation for a period as long as a century, this section addresses quite a broad set of circumstances, ranging from newly commissioned projects to those that have been in operation for many decades. Many operational projects may have been prepared and commissioned prior to any legislative requirements for environmental impact assessments, and the systems they have in place are oriented around the conditions of their licence to operate. First and foremost, an operating hydropower facility is expected to comply with the laws and concessions/permits of the government. The Protocol offers a complementary tool, on a voluntary basis and in the spirit of continuous improvement, that identifies opportunities for improvement with respect to sustainability criteria relevant to an international context.

The approach of the Operations assessment tool is similar to that of ISO 14001, in that the existing condition is taken as the baseline, and risks are assessed against that condition. The Assessment criterion looks in many cases to see if any ongoing or emerging issues have been identified. Identification processes could take many forms, for example through field inspections, review of data collected in-house or by other agencies, national and international policy scans, mechanisms to be aware of stakeholder issues and concerns, etc. **The processes in place to identify issues may not be specific to that issue (e.g. not**

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necessarily dedicated monitoring programs for water quality, cultural heritage, etc) but may be general processes that enable issues to be identified (e.g. policy scans, visual inspections, meetings with regulators, and stakeholder issue raising mechanisms could all be processes which enable any specific type of issue to be identified). Ongoing issues refer to unresolved issues associated with the operation of the hydropower facility that have been of concern for a period of time. They could be legacy issues. Emerging issues could be those arising from changes to policies, legislation, standards, stakeholder expectations, or physical changes to the environment in which the facility operates.

If issues are identified, the Management criterion looks to see if measures have been put in place to manage these issues. Measures could take many forms; for example continued monitoring, more intensive monitoring, a risk assessment or scenario analyses, improvement to communications, negotiations, commissioning studies, implementation of management responses, development of plans for future implementation if the risks continue to emerge, etc.

The Operations assessment tool also refers to commitments, which would be with respect to those made by the present owner/operator or predecessor entity where those commitments are transferred to the new owner, or made by another agency with the primary responsibility for delivery. If there are no relevant commitments with respect to that topic, then references to commitments can be ignored. If there are disputes about the currency of historical commitments (i.e. legacy issues), these should be treated as an ongoing issue. In many cases changes incurred due to project development may not be able to be remediated, so measures to address legacy issues may need to take the form of new initiatives that recognise the importance of the changes that occurred in the past and make some other form of contribution or recognition of this.

Given the potential for a very long life for operating hydropower facilities, there is likely to be some completion, hand-over or other closure of management of issues at some point in time. At some point, delivery of commitments or management programs should be considered complete, ideally at a point at which the management measures are seen to be effective and self-sustaining. This would need to be understood in the assessment process. For example, in many cases a project may make commitments to public health issues around the time and for a period after project development and commissioning, but at some point responsibility for these issues would go to the appropriate government agency. The assessment is focussed on current issues and risks in relation to the operations of the hydropower facility, and how these are being addressed.

Monitoring to assess if management measures are effective could also take many forms, and must take into account that over the life of a project it cannot be assumed that issues will be monitored forever. If a condition such as water quality is shown by evidence to be in a sustainable good quality condition, then processes in place to identify any emerging issues may not need to be met by water quality monitoring conducted by the operating facility, but rather could be through visual inspections, data collected by other agencies, good stakeholder relations with community water watch groups, etc. Involvement of the facility in a catchment management committee or other such community groups can be a good way to keep abreast of any concerns or emerging issues.

Operation Topic Relevance Guide

Not all topics in the Operation assessment tool will be relevant for every operating hydropower facility. The representative of the hydropower facility would make a case for a topic to be not relevant and present evidence to support this. The assessor reviews the evidence and draws a conclusion, documenting the evidence cited, the quality of the evidence, and the basis for this conclusion. Some examples could be:

- No cultural heritage issues associated with the operating facility → Cultural Heritage topic is not relevant

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- No indigenous peoples in the area affected by the operating facility → Indigenous Peoples topic is not relevant

Three topics are included that have particular relevance only in the case that there were well-documented commitments made at the time of project approval, and data on the pre-project baseline against which to compare post-project. These are O-8 Project Benefits, O-9 Project-Affected Communities & Livelihoods, and O-10 Resettlement. In the case that there are issues for these topics but do not meet the relevance requirements under the Assessment Guidance for that topic, the issues are assessed in Topic O-3 Environmental & Social Issues Management.

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0-1: Communications & Consultation

This topic addresses ongoing 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 maintain good stakeholder relations throughout the project life.

Scoring:

- 1 - *There are significant gaps relative to basic good practice.*
- 2 - *Most relevant elements of basic good practice have been undertaken, but there is a significant gap.*
- 3 – **Assessment:** Ongoing or emerging issues relating to hydropower facility communications and consultation have been identified; requirements and approaches are determined through a periodically updated assessment process involving stakeholder mapping; and effectiveness is monitored.
 - **Management:** Communications and consultation plans and processes are in place to manage communications and engagement with stakeholders; these outline communication and consultation needs and approaches for various stakeholder groups and topics.
 - **Stakeholder Engagement:** The operation stage involves appropriately timed and scoped, and often two-way, engagement with directly affected stakeholders; ongoing processes are in place for stakeholders to raise issues and get feedback.
 - **Conformance/Compliance:** 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 communications related commitments have been or are on track to be met.
- 4 - *All relevant elements of basic good practice have been undertaken and in one or more cases exceeded, but there are one or more significant gaps in the requirements for proven best practice.*
- 5 – **Assessment:** In addition, the stakeholder mapping takes broad considerations into account.
 - **Management:** 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.
 - **Stakeholder Engagement:** In addition, engagement is inclusive and participatory, and feedback on how issues raised have been taken into consideration has been thorough and timely.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.

Assessment Guidance:

Stakeholders are those who are interested in, involved in or affected by the hydropower project and associated activities.

Stakeholder mapping refers to identification and grouping of stakeholders in a meaningful way, for example based on stakeholder rights, risks and responsibilities. An example of “rights” would be land rights.

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Directly Affected Stakeholders are those stakeholders with substantial rights, risks and responsibilities in relation to the issue. These may be inside the project affected area (e.g. project affected communities) or outside the project-affected area (e.g. government regulators, finance institution representatives, or investment partners).

Needs and approaches for stakeholder groups could be with respect to, for example: cultural norms, gender, literacy level, vulnerable social groups, disabilities, logistical constraints, etc.

Processes in place for stakeholders to raise issues could include, for example: a contact person on the company website, public meetings, periodic public briefings or question/answer opportunities, participation of company staff on stakeholder or catchment committees, etc.

Feedback on stakeholder issues could be demonstrated by means such as, for example: emails, records of telephone conversations, written correspondence, meeting minutes, media releases, provision of responses to frequently asked questions on company website, etc.

Broad considerations could be with respect to, for example: the geographic or compositional extent of stakeholder groups identified and considered, the interrelationships amongst stakeholder groups, the level of consideration of rights, risks and responsibilities, etc.

Processes to anticipate emerging risks and opportunities could include, for example, participation of project representatives in a catchment management committee.

Potential interviewees: power station or company communications or public relations staff; stakeholder representatives; project affected communities representatives

Examples of evidence: project stakeholder mapping document; project communications and/or consultation plans; communications protocols; grievance mechanisms; monitoring reports

0-2: Governance

This topic addresses corporate and external governance considerations for the operating hydropower facility. The intent is that the owner/operator 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, public sector corruption risks); and can ensure compliance.

Scoring:

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

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

- 3 – **Assessment:** Ongoing or emerging political and public sector governance issues, and corporate governance requirements and issues have been identified, and monitoring is being undertaken to assess if corporate governance measures are effective.
- **Management:** Processes are in place to manage corporate, political and public sector risks, compliance, social and environmental responsibility, procurement of goods and services, grievance mechanisms, ethical business practices, and transparency; policies and processes are communicated internally and externally as appropriate.
 - **Stakeholder Engagement:** 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.
 - **Outcomes:** There are no significant unresolved corporate and external governance issues identified.
 - **Conformance/Compliance:** The project has no significant non-compliances.

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

- 5 – **Assessment:** 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.
- **Management:** In addition, contractors are required to meet or have consistent policies as the developer; procurement processes include anti-corruption measures as well as sustainability and anti-corruption criteria specified in pre-qualification screening; and processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Stakeholder Engagement:** 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.
 - **Outcomes:** In addition, there are no unresolved corporate and external governance issues identified.
 - **Conformance/Compliance:** The project has no non-compliances.

Assessment Guidance:

Governance broadly refers to the combination of processes and structures that inform, direct, manage and monitor the activities of the project toward the achievement of its objectives.

Corporate governance is a term that refers broadly to the rules, processes, or laws by which businesses are operated, regulated, and controlled

Corporate governance requirements may include, for example: business administration, policies and processes, risk management, corporate social responsibility, ethical business practices, accountability and stakeholder relations, compliance, etc.

Corporate governance issues may relate to, for example: lack of capacity in key external institutional structures, policies and processes important to the project; public sector corruption risks; political risks; internal corruption risks; compliance; management of project risks; etc.

External governance considerations include legal, judicial, and institutional structures, processes and policies relevant to the project. Examples include: the executive, the legislature, political parties, anticorruption organizations, judiciary, grievance addressing mechanisms (e.g. the Ombudsman), specific civil service/public sector agencies, law enforcement agencies, Freedom of Information, media, local and national government, civil society, private sector, international institutions (e.g. some provide peer review of anti-corruption efforts), audit/oversight institutions, public contracting system, etc.

Political risk is a risk of financial loss or inability to conduct business faced by investors, corporations, and governments due to government policy changes, government action preventing entry of goods, expropriation or confiscation, currency inconvertibility, politically-motivated interference, government instability, or war.

Corruption risks may be within the business such as with how finances are managed, or within the public sector such as not addressing licence or permit violations. **Public sector corruption risks** during project preparation may include, for example, limited options considered, short-cutting of assessment / preparation requirements, or non-transparent approvals; and at the project implementation and operation may include, for example, a blind eye to licence and permit violations.

Processes to ensure ethical business practices could include, for example: a business Code of Ethics, an employee Code of Conduct, a business Integrity Pact, anti-bribery or anti-corruption policies and procedures for reporting and investigation, (such as Transparency International's Business Principles for Countering Bribery (BPCB), a whistle-blowing arrangement, etc.

Procurement plans and processes should address provision of a procurement policy, pre-qualification screening, bidding, awarding of contracts, anti-corruption measures, and mechanisms to respond to bidder complaints. Screening could be for, by way of example, quality, reputation, cost, contractor prior performance on meeting contractual obligations (time, cost, specifications), etc.

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Compliance is with respect to all relevant laws, policies, permits, agreements, codes of practice and publicly stated commitments.

Grievance mechanisms are processes by which stakeholders are able to raise concerns, grievances and legitimate complaints, and grievances are received and responded to.

Anti-corruption measures examples include: open bidding contracting processes to be above a low threshold, contracting authority and its employees commit to an anti-corruption policy, project integrity pacts, mechanisms to report corruption and protect whistleblowers, confidentiality limited to legally protected information, etc.

Screening based on sustainability criteria might encompass additional criteria which could include, by way of example, social, environmental, ethics, human rights, health and safety performance, preference and support to local suppliers where they meet other criteria, etc.

Screening to address anti-corruption might specify, by way of example, that companies tendering must have a code of conduct addressing anti-corruption.

Potential interviewees: a Board member; the operating facility manager; business managers for corporate governance, compliance, internal audit, business risk; experts on public sector governance; other relevant third parties such as anti-corruption civil society organisations

Examples of evidence: business internal website and external website for vision, values, policies, structure, procedures, annual reports; assessment of public sector governance issues; internal audit reports; project compliance plan; reports to Board on ethical business practices and compliance; log of ethical business practices grievance; third party review reports; relevant documentation on public sector governance issues such as reports of Transparency International on National Integrity Systems (NIS) and the Corruption Perceptions Index (CPI)

0-3: Environmental & Social Issues Management

This topic addresses the plans and processes for environmental and social issues management. The intent is that negative environmental and social impacts associated with the hydropower facility are managed; avoidance, minimisation, mitigation, compensation and enhancement measures are implemented; and environmental and social commitments are fulfilled.

Scoring:

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

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

- 3 – **Assessment:** Systematic processes are in place to identify any ongoing or emerging environmental and social issues associated with the operating hydropower facility, utilising appropriate expertise; and monitoring programs are in place for identified issues.
- **Management:** An environmental and social management system is in place to manage measures to address identified environmental and social issues.
 - **Stakeholder Engagement:** Ongoing processes are in place for stakeholders to raise issues and get feedback.
 - **Conformance/Compliance:** Processes and objectives in environmental and social management plans have been and are on track to be met with no major non-compliances or non-conformances, and environmental and social commitments have been or are on track to be met.
 - **Outcomes:** Negative environmental and social impacts associated with hydropower facility operations are minimised and mitigated; and land disturbance associated with development of the hydropower project is rehabilitated or mitigated.

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

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- 5 – **Assessment:** In addition, processes to identify ongoing and emerging environmental and social issues take broad considerations into account, and both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and plans and processes are embedded within an internationally recognised environmental management system which is third party verified, such as ISO 14001.
 - **Stakeholder Engagement:** In addition, feedback on how issues raised have been taken into consideration has been thorough and timely.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, negative environmental and social impacts associated with hydropower facility operations are avoided, minimised, mitigated and fully compensated.

Assessment Guidance:

Environmental and social issues may include, for example: aquatic and terrestrial biodiversity, threatened species, critical habitats, ecosystem integrity and connectivity issues, water quality, erosion and sedimentation, project-affected communities, indigenous peoples, ethnic minorities, resettlement, cultural heritage (both physical and non-physical), and public health. For operating hydropower facilities, the baseline is understood to be the existing condition and risks are assessed against this condition; exceptions may be for topics where there was very good documentation of the pre-project condition and commitments were made for changes that would be measured against this pre-project baseline (e.g. resettles experiencing improved living standards). **Environmental and social issues associated with the operating hydropower facility that extend beyond the jurisdictional boundaries in which the facility is located would need to have been identified and included in management plans.**

Ongoing issues are issues that have been of concern repeatedly for a given area over a longer period of time, and may relate to legacy issues.

Legacy issue refers to impacts of previous projects that are unmitigated or not compensated with a similar good or service, or long-standing issues with a present (existing) project, or pre-existing issues in the present location of a new project.

Emerging issues may relate to on-site changes (e.g. riverbank erosion exposing cultural heritage artefacts or impacting on land-use or livelihood activities) or to broader circumstances (e.g. policy changes, changes in relevant legislation or standards, trends in emerging practice, changing community expectations, etc).

Processes in place for stakeholders to raise issues could include, for example: a contact person on the company website, public meetings, periodic public briefings or question/answer opportunities, participation of company staff on stakeholder or catchment committees, etc.

Feedback on stakeholder issues could be demonstrated by means such as, for example: emails, records of telephone conversations, written correspondence, meeting minutes, media releases, provision of responses to frequently asked questions on company website, etc. Where identified or ongoing issues have been resolved through a mediation, legal, approval or licensing process, facility owner/operators would need to have some clear communication on the issue and the resolution so stakeholders understand the issue was recognised, evaluated and resolved.

Land rehabilitation is the process of returning project-affected land to some degree of its former state after disturbance or damage associated with project implementation.

Appropriate expertise refers to specialists with experience in the key identifiable topical areas of the assessment and management plans, giving particular attention to the differences between environmental areas and social impact areas.

Broad considerations might be exhibited by, for example: a broad view of the project affected area; a broad view of relevant issues; a broad interpretation of important concepts such as livelihoods or living standards; a broad range of approaches considered; a broad view of stakeholder perspectives on the various issues; a focus on interrelationships amongst issues; sustainable river basin development considerations; integrated water resource management considerations; legacy issues; cumulative impacts; etc.

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Commitments would be those of the present owner/operator (or predecessor entity where those commitments are transferred to the new owner), or other agency with the primary responsibility for delivery. If there are disputes about the currency of historical commitments, these should be treated as an ongoing issue and measures put in place to address the issue. In many cases changes incurred due to project development may not be able to be remediated, so measures may need to take the form of new initiatives that recognise the importance of the changes that occurred in the past and make some other form of contribution or recognition of this.

Potential interviewees: power station or company managers responsible for environmental and social issues assessment and management; government representatives responsible for environmental and social issues; stakeholder representatives; project affected communities representatives; external experts

Examples of evidence: regulatory requirements for EIA / SIA; EIA / SIA and associated reports; environmental and social management plans; records of consultation and stakeholder involvement; records of response to stakeholder issues; third party review report; qualifications of experts utilised; evidence of appropriate separate expertise used for environmental and social issues recognising that in many cases single experts may not have sufficient breadth of expertise to cover both aspects

O-4: Hydrological Resource

This topic addresses the level of understanding of the hydrological resource availability and reliability to the operating hydropower facility. The intent is that power generation planning and operations take 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 facility.

Scoring:

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

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

3 – **Assessment:** Monitoring is being undertaken of hydrological resource availability and reliability, and ongoing or emerging issues have been identified; inputs include field measurements, appropriate statistical indicators, issues which may impact on water availability or reliability, and a hydrological model.

- **Management:** Measures are in place to guide generation operations that are 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.

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

5 – **Assessment:** In addition, issues that may impact on water availability or reliability have been comprehensively identified; and scenarios, uncertainties and risks are routinely and extensively evaluated over the short- and long-term.

- **Management:** In addition, generation operations planning has a long-term perspective; fully optimises and maximises efficiency of water use; and has the flexibility to adapt to anticipate and adapt to future changes.

Assessment Guidance:

Hydrological resource means water inflows to the project.

Issues which may impact on water availability and reliability examples include: upstream hydro operators, future water resource use developments, future development of water-reliant land uses

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(e.g. agriculture, industry, population growth), catchment condition, climate change, negotiations over water allocation, etc. **If the operating hydropower facility is reliant on water resources that extend beyond the jurisdictional boundaries in which the facility is located, the implications of this would need to be fully considered.**

Technical considerations for generation operations examples include: water inflow patterns; reservoir characteristics; gate and spillway design, turbine type, number and characteristics, safety issues etc

Power system opportunities and constraints examples include: patterns of demand for energy (e.g. base vs peak load), power prices, other generators and their capacities and constraints, transmission issues, etc.

Fully optimise and maximise efficiency of water use means the plan is the best use of the hydrological resource given the opportunities and constraints relating to technical, social, economic, environmental, financial considerations and is based on an iterative and consultative process.

Potential interviewees: company, government and/or independent hydrologists; power system planners; river basin authority representative; stakeholder representatives; project affected communities representatives; wetland, fisheries and ecosystem specialists; downstream authorities in a transboundary context; climatologist or climate scientist

Examples of evidence: inflow data; monitoring program and data sources; hydrological analyses; analyses of water resource demands affecting the project; analyses of power system and market opportunities; simulation and optimisation model scenarios and outputs; systems operations plan for the project; generation data

O-5: Asset Reliability & Efficiency

This topic addresses the reliability and efficiency of the hydropower facility and associated network assets. The intent is that assets are maintained to deliver optimal performance in the short- and long-term in accordance with the overall electricity generation and supply strategy of the owner/operator.

Scoring:

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

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

- 3 – **Assessment:** Routine monitoring of asset condition, availability and reliability is being undertaken to identify risks and assess the effectiveness of management measures; and ongoing or emerging asset maintenance and management issues have been identified.
- **Management:** Measures are in place to address routine monitoring and maintenance requirements of the operating facility in accordance with the overall electricity generation and supply strategy of the owner/operator.
 - **Conformance/Compliance:** Processes and objectives relating to asset maintenance and management have been and are on track to be met with no major non-compliances or non-conformances, and any asset related commitments have been or are on track to be met.
 - **Outcomes:** Asset reliability and efficiency performance is in line with the objectives of the owner/operator and any asset performance guarantees **with only minor gaps.**

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging asset maintenance and management issues takes into account both risks and opportunities.

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- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and asset maintenance management plans include a long-term program for efficiency improvements and asset upgrades.
- **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
- **Outcomes:** Asset reliability and efficiency performance is fully in line with the objectives of the owner/operator and any asset performance guarantees.

Asset refers to the infrastructure, plant and equipment on which the hydropower station generation operations are reliant

Asset maintenance requirements could include, for example: changing of lubricants or filters, replacement of parts, painting, cleaning, debris removal, etc.

Asset reliability and efficiency issues could include, for example: normal wear and tear, pitting or abrasion of parts, changes to machinery configuration over time which reduces efficiency, difficulties with valves due to lack of use, rust, corrosion, etc.

Asset related opportunities could include, for example: new technologies, market opportunities for replacement parts, R&D opportunities, partnerships with universities or research institutions for tests of trials, etc.

Potential interviewees: power station station manager; power station operator; generation manager; asset maintenance program manager

Examples of evidence: maintenance programs; record of asset performance; power station asset management strategies and program; asset performance guarantees; asset reliability assessment and monitoring program; program of asset upgrades; information on asset efficiency; information on comparative equipment and system performance; information on practicability of constraint removal; information on the operational efficiency of the individual power station or groups of power stations in the context of the broader system and relevant market arrangements; power station revenues for generation and for availability; operational efficiency identification, measurement and assessment process; machine specifications; monitoring data

0-6: Infrastructure Safety

This topic addresses management of dam and other infrastructure safety. The intent is that life, property and the environment are protected from the consequences of dam failure and other infrastructure safety risks.

Scoring:

- 1 - *There are significant gaps relative to basic good practice.*
- 2 - *Most relevant elements of basic good practice have been undertaken, but there is a significant gap.*
- 3 – **Assessment:** Routine monitoring of dam and infrastructure safety is being undertaken to identify risks and assess the effectiveness of management measures; and ongoing or emerging dam and other infrastructure safety issues have been identified.
 - **Management:** Dam and other infrastructure safety management plans and processes have been developed in conjunction with relevant regulatory and local authorities with no significant gaps, and provide for communication of public safety measures; emergency response plans and processes include awareness and training programs and emergency response simulations.
 - **Conformance/Compliance:** Processes and objectives relating to safety have been and are on track to be met with no major non-compliances or non-conformances, and safety related commitments have been or are on track to be met.
 - **Outcomes:** Safety risks have been minimised and mitigated.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging safety issues takes into account consideration of a broad range of scenarios and both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and **public** safety measures are widely communicated in a timely and accessible manner.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, safety risks have been avoided, minimised and mitigated; and safety issues have been addressed beyond those risks caused by the operating facility itself.

Assessment Guidance:

Safety risks examples include: seismic, geotechnical, dam or generation unit failure, electric shock, hydrological risk, drowning, road accidents, accidents arising from community interactions with project activities, etc.

Safety management measures examples include: signage, exclusion zones, emergency preparedness, monitoring, inspections, training, incident response, communication, allocation of responsibilities, etc.

Emergency response simulations may be undertaken, for example, through training or workshop exercises for company staff, regional authorities, etc.

Contributions to safety issues beyond project risks might include, for example, improving the safety of some existing roads or traffic infrastructure, signage in public places about speeding or drowning risks, etc.

Potential interviewees: power station or company safety manager; local authorities; stakeholder representatives; project affected community representatives

Examples of evidence: safety risk assessments; safety management plans; emergency preparedness plans; monitoring reports; independent reviews

0-7: Financial Viability

This topic addresses financial management of the operating hydropower facility, including funding of measures aimed at ensuring project sustainability, and the ability of the project to generate the required financial returns to meet funding requirements as well as to optimise its financial opportunities. The intent is that the operations of the hydropower facility are proceeding on a sound financial basis that covers all funding requirements including social and environmental measures and commitments, and that it is aware of and responding to market trends which may influence its long-term viability .

Scoring:

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

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

- 3 – **Assessment:** Routine monitoring of the operating hydropower facility's finances is being undertaken to identify risks and assess the effectiveness of management measures; and ongoing or emerging financial management issues have been identified.

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- **Management:** Measures are in place for financial management of the operating hydropower facility.
- **Conformance/Compliance:** Processes and objectives relating to financial management have been and are on track to be met with no major non-compliances or non-conformances, and funding commitments have been or are on track to be met.
- **Outcomes:** The operating hydropower facility or the corporate entity to which it belongs can manage financial issues under a range of scenarios, can service its debt, and can pay for all social and environmental plans and commitments.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging financial management issues takes into account both risks and opportunities including factors and trends that might influence future demand for electricity, water and ancillary services.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities; and financial contingency measures can be implemented for environmental and social management plans if required.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, the operating hydropower facility or the corporate entity to which it belongs can manage financial issues under a range of scenarios, and has optimised or is on track to optimise its market position with respect to supply and demand for electricity, water and ancillary services.

Assessment Guidance:

Financial issues and risks examples include: very high operating costs; inability to meet required costs; uncertainties with respect to revenue streams; currency exchange instability; difficulties in access to finance; access to renewable incentive schemes; regional pricing; market stability; market access; likelihood of major inflation or depreciation; financial viability of the principal power off-takers etc.

Financial viability at the level of an operating hydropower facility may be difficult to assess for certain types of facilities whose financial contribution is measured from the perspective of the system within which it operates; for example, pump storage facilities may run at a loss but enable a greater profit to be made from other power stations within the system because of the greater efficiencies gained.

Market refers to the situation of supply and demand for electricity, water and ancillary services in which the hydropower project operates.

Ancillary services refers to operations provided by hydroelectric plants that ensure stable electricity delivery and optimize transmission system efficiency, including the provision of reactive power, frequency control and load following.

Opportunities may include, for example: development or upgrade of transmission lines to enter new markets; changing customer, pricing and contract strategies; refurbishments and upgrades; changing operational patterns to meet higher priced electricity demand, renewable developments in synergy with hydropower to provide grid stability and attract renewable energy certificates; enhancement of social and environmental benefit linked to corporate reputation and brand linked to customer attraction strategies; etc.

Optimises in this context means best market position that the facility is able to achieve, once all considerations have been factored in.

Some financial information may have a high degree of commercial sensitivity, and evidence for this topic may need to be viewed under a confidentiality agreement.

Potential interviewees: power station or company financial officers; principal financing institution representative; independent financial expert; company representative from business development, marketing, consulting, trading, strategy, policy; company generation manager

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Examples of evidence: analysis of financing options; financial modelling reports; financial risk analysis; financial plans; financial status reports; third party review reports; annual financial reports for company, project, and principal off-taker(s); market research; research and development program; evidence of application of new solutions; awards and external recognition for innovation and/or research and development program; examples of new products; examples of expansion into new markets; examples of response to market demands

0-8: Project Benefits

This topic addresses the benefits that were committed to alongside development of the hydropower facility, in cases where these commitments are well-documented against a pre-project baseline. The intent is that commitments to additional benefits and benefit sharing strategies made during development of the hydropower facility are fulfilled, and that communities affected by the hydropower development have benefitted. In the case of older projects where there is an absence of well-documented commitments to project benefits made at the time of project approval or an absence of data on the pre-project baseline against which to compare post-project, this topic is not relevant; in this case, issues in relation to project benefits should be taken into consideration under topic O-3 Environmental & Social Issues Management.

Scoring:

- 1 - *There are significant gaps relative to basic good practice.*
- 2 - *Most relevant elements of basic good practice have been undertaken, but there is a significant gap.*
- 3 – **Assessment:** Monitoring is being undertaken to assess if commitments to project benefits have been delivered and if management measures are effective; and ongoing or emerging issues relating to delivery of project benefits have been identified.
 - **Management:** Measures are in place to deliver commitments to project benefits, and to manage any identified issues relating to these commitments; and commitments to project benefits are publicly disclosed.
 - **Conformance/Compliance:** Processes and objectives in place to manage project benefits have been and are on track to be met with no significant non-compliances or non-conformances, and commitments have been or are on track to be met.
 - **Outcomes:** Communities directly affected by the development of the hydropower facility and any other identified beneficiary of the facility have received or are on track to receive benefits.
- 4 - *All relevant elements of basic good practice have been undertaken and in one or more cases exceeded, but there are one or more significant gaps in the requirements for proven best practice.*
- 5 – **Assessment:** In addition, identification of ongoing or emerging issues relating to project benefits takes into account both risks and opportunities.
 - **Management:** In addition, processes are in place to anticipate and respond to risks and opportunities.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, benefits are significant and sustained for communities affected by the project.

Assessment Guidance:

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Topic relevance: This topic is not relevant for operating hydropower facilities that do not have well-documented commitments to delivery of project benefits made at the time of project approval, or data on the pre-project baseline against which to compare delivery of benefits. In the case of older projects where there are issues in relation to project benefits but this topic is not relevant, this should be taken into consideration under topic O-3 Environmental & Social Issues Management.

Benefits may take the form of additional benefits, or benefit-sharing strategies.

Additional benefits refers to benefits that can be leveraged from the project; examples include: capacity building, training and local employment; infrastructure such as bridges, access roads, boat ramps; improved services such as for health and education; support for other water usages such as irrigation, navigation, flood/drought control, aquaculture, leisure; increased water availability for industrial and municipal water supply; benefits through integrated water resource management; etc.

Benefit sharing is distinct from one-time compensation payments or resettlement support; examples include:

- equitable access to electricity services – project affected communities are among the first to be able to access the benefits of electricity services from the project, subject to contextual constraints (e.g. power safety, preference);
- non-monetary entitlements to enhance resource access – project affected communities receive enhanced local access to natural resources;
- revenue sharing – project affected communities share the direct monetary benefits of hydropower according to a formula and approach defined in regulations; this goes beyond a one-time compensation payment or short-term resettlement support; and trust funds.

Commitments to additional benefits or benefit sharing may be the responsibility of other agencies and not the owner/operator.

Some information on project benefits may have a high degree of commercial sensitivity, and evidence for this topic may need to be viewed under a confidentiality agreement.

Potential interviewees: relevant power station or company manager; government representative (e.g. department of economic development); stakeholder representatives; project affected communities representatives

Examples of evidence: pre-project analysis of relevant development indicators; pre-project analysis of potential project benefits; pre-project analysis of benefit sharing options and opportunities; pre-project meeting minutes or reports demonstrating stakeholder input and involvement; benefit sharing plan; commitments to project benefits; monitoring reports on delivery and status of project benefits

O-9: Project-Affected Communities & Livelihoods

This topic addresses how impacts of development of the hydropower facility on project affected communities have been addressed, in cases where these commitments are well-documented against a pre-project baseline. The intent is that livelihoods impacted by the project have been restored with the aim of self-sufficiency in the long-term, that living standards have been improved relative to pre-project conditions for project affected communities, and that commitments to project affected communities have been fully fulfilled. In the case of older projects where there is an absence of well-documented commitments to project-affected communities made at the time of project approval or an absence of data on the pre-project baseline against which to compare post-project, this topic is not relevant; in this case, issues in relation to project affected communities should be taken into consideration under topic O-3 Environmental & Social Issues Management.

Scoring:

- 1 - *There are significant gaps relative to basic good practice.*
- 2 - *Most relevant elements of basic good practice have been undertaken, but there is a significant gap.*
- 3 – **Assessment:** Monitoring is being undertaken to assess if commitments to project affected communities have been delivered and if management measures are

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effective; and ongoing or emerging issues that affect project affected communities have been identified.

- **Management:** Measures are in place to deliver commitments to project affected communities, and to manage any identified issues relating to these commitments; and if there are any formal agreements with project affected communities these are publicly disclosed.
- **Stakeholder Engagement:** Ongoing processes are in place for project affected communities to raise issues and get feedback, where necessary, stakeholder engagements have been implemented.
- **Conformance/Compliance:** Processes and objectives in place to manage delivery of commitments to project affected communities have been and are on track to be met with no significant non-compliances or non-conformances, and commitments have been or are on track to be met.
- **Outcomes:** Livelihoods that are impacted by the project have been or are on track to be restored; living standards impacted by the project have been or are on track to be improved; and economic displacement has been fairly compensated.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging issues for project affected communities takes into consideration both risks and opportunities, and interrelationships amongst issues.
- **Management:** In addition, processes are in place to anticipate and respond to risks and opportunities.
 - **Stakeholder Engagement:** In addition, feedback on how issues raised are taken into consideration is thorough and timely, and project affected communities have been involved in decision-making around relevant issues and options.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, the improvement in living standards and measures put in place to restore livelihoods are on track to become self sustaining in the long-term.

Assessment Guidance:

Topic relevance: This topic is not relevant for operating hydropower facilities that do not have well-documented commitments to project-affected communities made at the time of project approval, or data on the pre-project baseline against which to compare post-project. In the case of older projects where there are issues in relation to project affected communities but this topic is not relevant, this should be taken into consideration under topic O-3 Environmental & Social Issues Management.

Project affected communities are the interacting population of various kinds of individuals in the area surrounding the hydropower project who have been affected either positively or negatively by the hydropower facility development and its associated infrastructure.

Issues that affect project affected communities may include, for example: loss or constraints on livelihoods, lowering of living standards, or economic displacement brought about due to changes associated with the project such as changes to river management and flow regimes. Specific examples could include: impacts on health or safety; impacts on cultural practices; impacts on lands, forest and riverbanks; loss of paddy lands, of home gardens, of riverbank gardens; loss of access to sacred sites, to community forest etc. In cases the impacts may result in project affected communities needing to move, but they may not be considered part of the resettlement community because the physical resettlement was a secondary impact and not a primary impact of the project.

Livelihood refers to the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. **Restoration of livelihoods** refers to compensatory measures taken to address impacts of the project on pre-project livelihoods so that those affected are able to move

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forward with viable livelihoods; for example supporting farmers to continue to be able to farm or to pursue alternatives, accompanied by sufficient support mechanisms to enable any changes to livelihoods to be well-established for those affected.

Living standards refer to the level of material comfort as measured by the goods, services, and luxuries available to an individual, group, or nation; indicators of household well-being examples include: consumption, income, savings, employment, health, education, nutrition, housing, and access to electricity, clean water, sanitation, health services, educational services, transport, etc.

Improvement in living standards would be demonstrated by improvement in the indicators of the level of material comfort.

Economic displacement refers to the loss of assets, access to assets, or income sources or means of livelihoods as a result of (i) acquisition of land, (ii) changes in land use or access to land, (iii) restriction on land use or access to natural resources including water resources, legally designated parks, protected areas or restricted access areas such as reservoir catchments and (iv) changes in environment leading to health concerns or impacts on livelihoods. Economic displacement applies whether such losses and restrictions are full or partial, and permanent or temporary.

Measures to address project affected communities issues may include, for example: works to protect downstream riparian lands; downstream flow regime agreements to enable sustained livelihoods for downstream communities; access agreements to project lands to enable continued access to sacred sites, community forest, traditional medicinal plants; support for new industries; protection of sacred sites; etc.

Opportunities for project-affected communities may include, for example: training and capacity building; education; health services; employment; transportation; contributions to provide for cultural traditions or events, etc.

Interrelationships amongst issues may include, for example: erosion of riverbanks downstream of the project causing incremental and long-term loss of land essential to sustain livelihoods, or safety concerns due to rapidly fluctuating river flows downstream of the project causing riparian communities to feel unsafe and eventually having to relocate.

Potential interviewees: representatives of project affected communities; power station or company social issues manager; government expert; independent experts

Examples of evidence: assessment report on project affected communities and livelihoods; gender analysis; human rights issues analysis; records of consultation and project affected community involvement; records of response to project affected community issues; third party review report; report on compensation measures; agreements on compensation measures; assessments and agreements on cultural sensitive areas and customs

O-10: Resettlement

This topic addresses how the physical displacement arising from development of the hydropower facility has been addressed, in cases where resettlement occurred and commitments are well-documented against a pre-project baseline. The intent is that the dignity and human rights of those physically displaced have been respected; that these matters have been dealt with in a fair and equitable manner; that standards of living for resettles and host communities have been improved; and that commitments made to resettles and host communities have been fully fulfilled. In the case of older projects where there is an absence of well-documented commitments in relation to resettlement made at the time of project approval or an absence of data on the pre-project baseline against which to compare post-project, this topic is not relevant; in this case, issues in relation to resettlement should be taken into consideration under topic O-3 Environmental & Social Issues Management.

Scoring:

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

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

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- 3 – **Assessment:** Monitoring is being undertaken to assess if commitments made to resettles and host communities have been delivered and if management measures are effective; and ongoing or emerging issues relating to resettlement have been identified.
- **Management:** Measures to address resettlement are documented in a Resettlement Action Plan; measures are in place to deliver commitments to resettles and host communities, and to manage any issues relating to resettlement, including provision of grievance mechanisms; and formal agreements with resettles and host communities are publicly disclosed.
 - **Stakeholder Engagement:** Ongoing processes are in place for resettles and host communities to raise issues and get feedback.
 - **Conformance/Compliance:** Processes and objectives in the Resettlement Action Plan have been and are on track to be met with no major non-compliances or non-conformances, and any resettlement related commitments have been or are on track to be met.
 - **Outcomes:** Resettlement has been and is being treated in a fair and equitable manner, and resettles and host communities have experienced or are on track to experience a timely improvement in living standards relative to the pre-project baseline.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging resettlement issues takes into account both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Stakeholder Engagement:** In addition, feedback on how issues raised have been taken into consideration has been thorough and timely, and resettles and host communities have been involved in decision-making around relevant issues and options.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, the measures put in place to improve living standards are on track to become self-sustaining in the long-term.

Assessment Guidance:

Topic relevance: This topic will not be relevant if there was no requirement for resettlement arising from the project development, or for operating hydropower facilities that do not have well-documented commitments to resettlement made at the time of project approval, or for operating hydropower facilities that do not have data on the pre-project baseline against which to compare post-project. In the case of older projects where there are issues in relation to resettlement but this topic is not relevant, this should be taken into consideration under topic O-3 Environmental & Social Issues Management.

Resettlement is the process of moving people to a different place to live, because due to the project they are no longer allowed to stay in the area where they used to live.

Living standards refer to the level of material comfort as measured by the goods, services, and luxuries available to an individual, group, or nation; indicators of household well-being examples include: consumption, income, savings, employment, health, education, nutrition, housing, and access to electricity, clean water, sanitation, health services, educational services, transport, etc.

Resettles are those people who are required to be resettled, and including those who have formal legal rights, customary or traditional rights, as well as those who have no recognizable rights to the land.

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Host communities refers to the communities to which resettles are relocated.

Resettlement Action Plan refers to a document or set of documents specifically developed to identify the actions that will be taken to address resettlement. It would typically include identification of those being resettled; the socio-economic baseline for the resettles; the measures to be implemented as part of the resettlement process including those relating to resettlement assistance and livelihood support; the legal and compensation frameworks; organisational roles and responsibilities; budget allocation and financial management; the timeframe, objectives and targets; grievance redress mechanisms; monitoring, reporting and review provisions; and understandings around consultation, participation and information exchange.

Grievance mechanisms refer to the processes by which stakeholders are able to raise concerns, grievances and legitimate complaints, as well as the project procedures to track and respond to any grievances.

Potential interviewees: community representatives affected by resettlement and land acquisition; representatives from resettlement host communities; power station or company social issues manager; representative from the responsible governmental authority, independent reviewer.

Examples of evidence: assessment report on resettlement and land acquisition; records of consultation and affected stakeholder involvement; records of response to resettlement and land acquisition issues; third party review report; resettlement action plans; land acquisition plans; compensation agreements; agreements on resettlement action plan; baseline social conditions report; livelihood analysis; impoverishment risk analysis; mitigation, resettlement and development action plans, including project benefit sharing mechanisms; NGO reports; monitoring reports.

0-11: Indigenous Peoples

This topic addresses the rights, risks and opportunities of indigenous peoples with respect to the hydropower facility, 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 operating facility 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.

Scoring:

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

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

- 3 – **Assessment:** Ongoing or emerging issues relating to the operating hydropower facility that may affect indigenous peoples have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
- **Management:** Measures are in place to manage identified issues; and formal agreements with indigenous peoples are publicly disclosed.
 - **Stakeholder Engagement:** Ongoing and mutually agreed processes are in place for indigenous peoples to raise issues and get feedback.
 - **Conformance/Compliance:** Processes and objectives in place to manage issues that may affect indigenous peoples have been and are on track to be met with no significant non-compliances or non-conformances, and commitments made to indigenous peoples have been or are on track to be met.
 - **Outcomes:** The rights of indigenous peoples affected by the operating hydropower facility are respected in an ongoing manner.

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

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- 5 – **Assessment:** In addition, identification of issues that may affect indigenous peoples is undertaken with the free, prior and informed participation of indigenous peoples; and takes into account both risks and opportunities.
- **Management:** In addition, measures to address ongoing or emerging issues that may affect indigenous peoples have been developed with the free, prior and informed participation of indigenous peoples; and processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Stakeholder Engagement:** In addition, feedback on how issues raised have been taken into consideration has been thorough and timely; and directly affected indigenous peoples have been involved in decision-making around relevant issues and options.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, where opportunities have been identified, measures to address issues that may affect indigenous peoples beyond those impacts caused by the operating hydropower facility have been or are on track to be achieved.

Assessment Guidance:

Topic relevance: This topic will not be relevant if credible evidence provided shows that there are no indigenous peoples in the area affected by the operating hydropower facility.

Indigenous peoples refers to a distinct social and cultural group possessing the following characteristics in varying degrees: self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories; customary cultural, economic, social or political institutions that are separate from those of the dominant society or culture; an indigenous language, often different from the official language of the country or part of the country in which they reside. **Individual countries may have laws regarding indigenous peoples which must be complied with.**

Issues that may affect indigenous peoples are ideally self-identified, and may include, for example: impacts of the operating hydropower facility activities and infrastructure on cultural practices, direct or indirect impacts to traditional lands, impacts to community cohesion, public health risks, disturbance of customary practices, and impeded access to natural resource-based livelihoods, potential land use conflicts.

Measures to address issues that may affect indigenous peoples are ideally self-identified, and may include, for example: avoidance measures, protection of cultural practices, land entitlement and protection, health assistance, scheduling of activities of the operating hydropower facility to not disturb customary practices, support for festivals or traditions, improved or more secure access to natural resource-based livelihoods, etc.

Potential interviewees: representatives of project affected indigenous communities; power station or company social issues manager; **representative from the responsible governmental authority**, independent reviewer

Examples of evidence: assessment report on indigenous peoples; records of consultation and project affected community involvement; records of response to issues that may affect indigenous peoples; third party review report; indigenous peoples management plans; agreements on measures for indigenous peoples; monitoring reports

0-12: Labour & Working Conditions

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.

Scoring:

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

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

- 3 – **Assessment:** A periodically updated assessment has been undertaken of human resource and labour management requirements for the operating facility, including occupational health and safety (OH&S) issues, risks, and management measures, with no significant gaps; monitoring is being undertaken to assess if management measures are effective; and ongoing or emerging labour management issues have been identified.
- **Management:** Human resource and labour management policies, plans and processes are in place to address all labour management planning components, including those of contractors, subcontractors, and intermediaries, with no significant gaps.
 - **Stakeholder Engagement:** Ongoing processes are in place for employees and contractors to raise human resources and labour management issues and get feedback.
 - **Conformance/Compliance:** Processes and objectives relating to human resource and labour management have been and are on track to be met with no major non-compliances or non-conformances, and any labour related commitments have been or are on track to be met.
 - **Outcomes:** The project can demonstrate fair treatment of workers, equal opportunity, fair and just compensation, staff development and training, and a safe workplace.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging labour management issues takes broad considerations into account, and both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Stakeholder Engagement:** In addition, feedback on how issues raised have been taken into consideration has been thorough and timely.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, there are no identified inconsistencies of labour management policies and practices with internationally recognised labour rights.

Assessment Guidance:

Labour management planning components include: human resources policies, staff and workforce planning, occupational health and safety, equal opportunity, staff development and training, grievance mechanisms, and (where appropriate) collective bargaining mechanisms

Occupational health and safety is about protecting the safety, health and welfare of people engaged in work or employment, for example through preventing disease or injury that might arise as a direct result of the workplace activities.

Broad considerations might be exhibited by, for example: a broad view of relevant issues; a broad approach to types of data collection and important indicators; a focus on interrelationships amongst issues; a broad analysis of trends, approaches and existing and emerging standards relating to labour and working conditions; understanding of relevant human rights; etc.

Internationally recognised labour rights include freedom of association, right to equal pay for equal work, right to organize and participate in collective bargaining, right to equality at work, right to non-discrimination, right to just and favourable remuneration, abolition of slavery and forced labour, right to a safe work environment, abolition of child labour, right to rest and leisure, right to work, right to family life. Evidence would be no policies or practices that show workers are prevented from the ability to exercise these rights.

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Potential interviewees: power station or company human resources staff; contracted workforce manager, power station or company safety officer; staff or contractor representatives; external experts; unions and shop stewards; female workers

Examples of evidence: policies, plans and programs relating to human resources, employees, contractors, equity, occupational health & safety, workforce planning, and grievance mechanisms; national and international standards for labour and OH&S

0-13: Cultural Heritage

This topic addresses cultural heritage, with specific reference to physical cultural resources, associated with the hydropower facility. 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.

Scoring:

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

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

3 – **Assessment:** Ongoing or emerging cultural heritage issues with respect to physical cultural resources have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.

- **Management:** Measures are in place to manage identified cultural heritage issues.

- **Conformance/Compliance:** Processes and objectives in place to manage cultural heritage issues have been and are on track to be met with no significant non-compliances or non-conformances, and cultural heritage related commitments have been or are on track to be met.

- **Outcomes:** Negative cultural heritage impacts arising from activities of the operating hydropower facility are minimised, mitigated and compensated.

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

5 – **Assessment:** In addition, identification of ongoing or emerging cultural heritage issues takes broad considerations into account, and both risks and opportunities.

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

- **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.

- **Outcomes:** In addition, where opportunities have been identified, measures to address cultural heritage issues beyond those impacts caused by the facility have been or are on track to be achieved.

Assessment Guidance:

Topic relevance: This topic will not be relevant if credible evidence provided shows that there were no physical cultural resources identified in the project-affected area, and that there are no physical cultural resources identified in the area affected by the operating hydropower facility.

Cultural heritage refers to the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations.

Physical cultural resources refer to movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical,

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architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.

Non-physical cultural heritage examples include: traditions, festivals, rituals, folklore, storytelling, drama, etc. If of relevance, these should be addressed under Topic O-3 Environmental & Social Issues Management in this Protocol assessment.

Cultural heritage issues may be ongoing issues that arose during project development and have not been resolved, such as for example: inundation of important sites or artefacts under the new reservoir; damage or destruction to important sites or artefacts due to construction activities; loss of access to important sites due to changes to access routes (e.g. new canals or linear infrastructure with barrier fencing, major roads); disturbance of spirits associated with special sites; etc; or they may be emerging issues such as erosion of riverbanks exposing new artefacts, or developments in policies, legislation or standards changing expectations on how cultural heritage issues will be addressed.

Measures to address cultural heritage issues may include, for example: documentation and record-keeping; relocation; creation of protected areas; new access routes; appeasement ceremonies; etc.

Protection means to keep in safety and protect from harm, decay, loss, damage or destruction.

Broad considerations might be exhibited by, for example: a broad view of relevant issues; a broad approach to types of data collection; a focus on interrelationships amongst issues; a broad analysis of trends, approaches and existing and emerging standards relating to cultural heritage; a broad perspective with respect to the assessment of significance of heritage finds; etc.

Interrelationships amongst issues could include, for example, erosion and sedimentation effects on important heritage locations, risks of vandalism or theft by contractors or the public, etc.

Cultural heritage opportunities may include, for example: partnerships with heritage organisations; establishment of initiatives recognising heritage values such as festivals, museums or visiting experts; programmes to preserve traditional activities; access to special grants for heritage protection works; exhibits; educational initiatives; etc.

Potential interviewees: power station or company environmental and social issues manager, local cultural heritage expert, representative from relevant government department (e.g. heritage or environment); external experts; project affected community representatives

Examples of evidence: cultural heritage impact statements; conservation plans; records of consultation and response to stakeholder issues; heritage plans and agreements; national and international standards; monitoring and inspection reports

O-14: Public Health

This topic addresses public health issues associated with the operating hydropower facility. The intent is that the operating facility has not created or exacerbated any public health issues; that ongoing or emerging public health issues associated with the facility are identified and addressed as required; and commitments to implement measures to address public health are fulfilled.

Scoring:

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

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

- 3 – **Assessment:** Ongoing or emerging public health issues associated with the operating hydropower facility have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
- **Management:** Measures are in place to manage identified public health issues.
 - **Conformance/Compliance:** Processes and objectives in place to manage public health issues have been and are on track to be met with no significant non-compliances or non-conformances, and public health related commitments have been or are on track to be met.

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- **Outcomes:** Negative public health impacts arising from activities of the operating hydropower facility are minimised and mitigated.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging public health issues takes into account public health system capacities, access to health services, and health needs, risks and opportunities for different community groups.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, where opportunities have been identified, measures to address public health issues beyond those impacts caused by the operating hydropower facility have been or are on track to be achieved.

Assessment Guidance:

Topic relevance: This topic will always be relevant, because **it should be captured by processes** in place to identify any ongoing or emerging public health issues associated with the operating hydropower facility.

Public health issues include, for example: vector borne diseases (e.g. malaria, schistosomiasis); communicable and non-communicable diseases, malnutrition, psychological disorders, social well-being; loss or contamination of traditional resources; mercury or heavy metal bio-accumulation; etc.

Measures to address public health issues could include, for example: measures to reduce mosquito-borne disease risks; storing of medical supplies and immunisations; educational, awareness and disease prevention training; water quality testing; etc.

Health needs, issues and risks for different community groups could be with respect to, for example: gender, age, ethnicity, use of and access to traditional medicines, etc.

Public health opportunities could include, for example: improved access to electricity, clean water and sanitation; development or upgrading of public health facilities; provision of equipment, training, health education, immunisations; new service providers; new medical technologies; new vaccinations or approaches to public health issues; increased access to low-cost, high-quality protein diet through increased availability of fish, etc.

Potential interviewees: power station or company social issues manager, independent public health expert, representative from government health department, project affected community representatives

Examples of evidence: public health issues and opportunities assessment; public health management plans; national and international standards; monitoring reports; regional statistics before and after the project;

0-15: Biodiversity & Invasive Species

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 operating hydropower facility. The intent is that there are healthy, functional and viable aquatic and terrestrial ecosystems in the area that are sustainable over the long-term; that biodiversity impacts arising from the operating hydropower facility are managed responsibly; that ongoing or emerging biodiversity issues are identified and addressed as required; and that commitments to implement biodiversity and invasive species measures are fulfilled.

Scoring:

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

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

- 3 – **Assessment:** Ongoing or emerging biodiversity issues have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
- **Management:** Measures are in place to manage identified biodiversity issues.
 - **Conformance/Compliance:** Processes and objectives in place to manage biodiversity issues have been and are on track to be met with no significant non-compliances or non-conformances, and biodiversity related commitments have been or are on track to be met.
 - **Outcomes:** Negative biodiversity impacts arising from activities of the operating facility are minimised, mitigated, and compensated or offset.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging biodiversity issues takes into account both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, there are healthy, functional and viable aquatic and terrestrial ecosystems in the area affected by the hydropower facility that are sustained over the long-term; or the facility has contributed or is on track to contribute to addressing biodiversity issues beyond those impacts caused by the operating hydropower facility.

Assessment Guidance:

Biodiversity issues may include, for example: loss of habitat; fish migration barriers; loss of spawning grounds; loss of habitat connectivity; loss or declines in important food chain species; loss of wetlands; poaching, hunting or over-exploitation of significant species; introduction of weed or pest species; etc.

Measures to address biodiversity may include, for example: catchment protection, creation of reserves, habitat conservation and improvement, species management plans, translocations, habitat rehabilitation, new habitat creation, managed flow releases, etc. Measures to address passage of aquatic species may include, for example: fish ladders, fish elevators, catch and release programs, fish hatcheries, re-stocking programs, mechanisms for diversion away from turbines for downstream passage, assisted cues (water chemistry, operational conditions), etc. Measures to address invasive species may include, for example: physical barriers to pest species passage, pollution control, physical removal or containment, chemical treatment, reservoir water residence times, managed flow releases, etc.

Biodiversity opportunities may include, for example, forming partnerships with wildlife protection groups; catchment management committees and projects; joint research ventures around fish passage or hatcheries; employing or working with local communities to act as wardens for protected areas; creation of business ventures from non-timber forest resources, capacity building and educational initiatives, eco-tourism ventures, creation of bird and waterfowl sanctuaries, fish protection zones, wetland protection, etc.

Potential interviewees: power station or company environmental manager; aquatic and terrestrial ecologists; design engineers (in relation to fish passage); representatives of relevant government departments (e.g. fisheries, wildlife, environment, forests); representatives of local communities; independent experts

Examples of evidence: assessment of terrestrial biodiversity; assessment of aquatic biodiversity; fish studies; fish passage technical feasibility assessments; third party review reports; biodiversity management plans; invasive species management plans; commitments and agreements; economic

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and livelihood valuation from fish catch and non-timber forest products baselines from local communities; monitoring reports

O-16: Erosion & Sedimentation

This topic addresses the management of erosion and sedimentation issues associated with the operating hydropower facility. The intent is that erosion and sedimentation caused by the operating hydropower facility is managed responsibly and does not present problems with respect to other social, environmental and economic objectives; that external erosion or sedimentation occurrences which may have impacts on the operating hydropower facility are recognised and managed; and that commitments to implement measures to address erosion and sedimentation are fulfilled.

Scoring:

- 1 - *There are significant gaps relative to basic good practice.*
- 2 - *Most relevant elements of basic good practice have been undertaken, but there is a significant gap.*
- 3 – **Assessment:** Ongoing or emerging erosion and sedimentation issues have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
 - **Management:** Measures are in place to manage identified erosion and sedimentation issues.
 - **Conformance/Compliance:** Processes and objectives in place to manage erosion and sedimentation issues have been and are on track to be met with no significant non-compliances or non-conformances, and erosion and sedimentation related commitments have been or are on track to be met.
 - **Outcomes:** Erosion and sedimentation issues are minimised and mitigated.
- 4 - *All relevant elements of basic good practice have been undertaken and in one or more cases exceeded, but there are one or more significant gaps in the requirements for proven best practice.*
- 5 – **Assessment:** In addition, identification of ongoing or emerging erosion and sedimentation issues takes into account both risks and opportunities.
 - **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, erosion and sedimentation associated with operating facility do not present ongoing problems for environmental, social and economic objectives of the facility or the project affected areas.

Assessment Guidance:

Erosion and sedimentation issues include impacts that may be caused by operation of the hydropower facility, and issues that may impact on the facility. Impacts that may be caused by project operation may include direct land disturbance due to maintenance works, or to reservoir shorelines due to fluctuating water levels; and indirect land disturbance due to changed river flows. Consideration of what is an issue needs to take into account that there will be landscape adjustments brought about by the hydropower project that continue for many years until a new equilibrium is reached, particularly in the downstream river channels; negative impacts would therefore be considered those erosion and sedimentation occurrences caused by the project that present problems with respect to other social, environmental and/or economic objectives, or externally caused occurrences of erosion or sedimentation that impact on the ability of the project to meet its own social, environmental or economic objectives.

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Issues that may impact on the operating hydropower facility might, for example, be naturally high sediment loads which may impact on the reservoir life, wear & tear of turbines, increased maintenance needs for tunnels, canals and other water conduits; or landslips or land disturbances due to other catchment activities or natural events that could increase sediment loads into the reservoir or adversely affect transport routes, etc.

Assessment processes for erosion and sedimentation may be built into other plans and processes, e.g. visual inspections undertaken for operational purposes.

Measures to address erosion and sedimentation issues might include, for example: catchment treatment works such as sediment check structures; water management measures such as to avoid turbidity or shoreline erosion; reforestation and re-vegetation activities; measures to address land use practices; etc.

Erosion and sedimentation opportunities may include, for example, forming partnerships with land-use protection or catchment management groups; joint research projects around erosion or sedimentation management; new technologies; carbon credits for reforestation with benefits of erosion and sedimentation risk reduction; etc.

Potential interviewees: power station or company environmental manager; government representative (e.g. from environment department), independent expert

Examples of evidence: erosion and sedimentation assessment reports; erosion and sedimentation management plans; monitoring reports

0-17: Water Quality

This topic addresses the management of water quality issues associated with the operating hydropower facility. The intent is that water quality in the vicinity of the operating hydropower facility is of a high quality and not adversely impacted by activities of the operator; that ongoing or emerging water quality issues are identified and addressed as required; and commitments to implement measures to address water quality are fulfilled.

Scoring:

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

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

- 3 – **Assessment:** Ongoing or emerging water quality issues have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
- **Management:** Measures are in place to manage identified water quality issues.
 - **Conformance/Compliance:** Processes and objectives in place to manage water quality issues have been and are on track to be met with no significant non-compliances or non-conformances, and water quality related commitments have been or are on track to be met.
 - **Outcomes:** Negative water quality impacts arising from activities of the operating hydropower facility are minimised and mitigated.

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

- 5 – **Assessment:** In addition, identification of ongoing or emerging water quality issues takes into account both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.

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- **Outcomes:** In addition, water quality in the area affected by the operating hydropower facility is of a high quality; or the facility has contributed or is on track to contribute to addressing water quality issues beyond those impacts caused by the operating hydropower facility.

Assessment Guidance:

Water quality issues examples at the operation stage include: reduced oxygenation, aseasonal temperatures, stratification potential, pollutant inflow, nutrient capture, algal bloom potential, release of toxicants from inundated sediments, chemical or waste spills, etc.

Assessment processes for water quality may be built into other plans and processes, e.g. visual inspections undertaken for operational purposes.

Measures to address water quality at the operation stage may include, for example: aeration features to address dissolved oxygen levels; water management measures such as to ensure adequate water circulation and through-flow; vegetation management to address organic decomposition; addressing pollutants from non-project activities such as sewage, wastes, contaminated sites, etc.

Water quality opportunities may include, for example: addressing pollutants from non-project activities such as sewage, wastes, contaminated sites; groundwater stabilisation, improved water quality through oxygenation or temperature dispersion; new technologies; new service providers; partnerships with community waterway health monitoring groups; participating in or forming catchment management groups to address water quality issues at the catchment level; etc.

Potential interviewees: power station or company environmental manager; government representative (e.g. from environment department), independent expert

Examples of evidence: water quality monitoring reports; water quality management plans

0-18: Reservoir Management

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

Scoring:

- 1 - *There are significant gaps relative to basic good practice.*
- 2 - *Most relevant elements of basic good practice have been undertaken, but there is a significant gap.*
- 3 – **Assessment:** Ongoing or emerging reservoir management issues have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
 - **Management:** Measures are in place to manage identified issues.
 - **Conformance/Compliance:** Processes and objectives in place for reservoir management have been and are on track to be met with no significant non-compliances or non-conformances, and reservoir management related commitments have been or are on track to be met.
- 4 - *All relevant elements of basic good practice have been undertaken and in one or more cases exceeded, but there are one or more significant gaps in the requirements for proven best practice.*
- 5 – **Assessment:** In addition, identification of ongoing or emerging reservoir management issues takes into account both risks and opportunities.
 - **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities.

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- **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.

Assessment Guidance:

Topic relevance: This topic is relevant if there is any storage of water.

Reservoir refers to any artificial pondage or lake used by the project for the storage and regulation of water.

Reservoir area refers to the area that is inundated when the reservoir is at its maximum expected level and the dry buffer zone above this level.

Reservoir management issues include, for example: optimising power generation, maintenance requirements, debris management (particularly an issue in monsoon prone parts of the world), multiple uses (e.g. commercial, recreational), safety, flood management, shoreline erosion, reservoir sedimentation, public access, water quality, biodiversity, invasive species, water-borne diseases, monitoring, etc.

Emerging risks or opportunities may be in relation to, for example, climate change related issues, multi-purpose considerations, leveraging of the reservoir for other industries (e.g. tourism, aquaculture, irrigation) or as a vehicle for development (e.g. source of clean water, fisheries and other livelihoods, improved water-based transport), etc.

Potential interviewees: relevant power station or company managers; power station or company environmental and social issues managers; local government representative

Examples of evidence: modelled and actual output for reservoir operations; relevant excerpts of environmental and social issues management plans; reservoir operating rules; time series plots of reservoir operations

0-19: Downstream Flow Regimes

This topic addresses the flow regimes downstream of the operating hydropower facility infrastructure in relation to environmental, social and economic objectives. The intent is that issues with respect to the operating hydropower facility's downstream flow regimes are identified and addressed, and commitments with respect to downstream flow regimes are fulfilled.

Scoring:

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

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

- 3 – **Assessment:** Ongoing or emerging issues relating to the operating hydropower facility's downstream flow regimes have been identified, and if management measures are required then monitoring is being undertaken to assess if management measures are effective.
- **Management:** In the case of a need to address downstream flow regimes, measures are in place to address identified downstream flow issues; and where formal commitments have been made, these are publicly disclosed.
 - **Conformance/Compliance:** In the case of a need to address downstream flow regimes, processes and objectives in place to manage downstream flows have been and are on track to be met with no significant non-compliances or non-conformances, and downstream flow related commitments have been or are on track to be met.
 - **Outcomes:** In the case of a need to address downstream flow regimes and commitments to downstream flow regimes have been made, these take into account environmental, social and economic objectives **within the framework of legal requirements.**

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

- 5 – **Assessment:** In addition, issues identification takes into account both risks and opportunities. In the case of a need to address downstream flow regimes, an assessment has been undertaken that includes identification of the flow ranges and variability to achieve different environmental, social and economic objectives based on field studies as well as relevant scientific and other information.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities. In the case of a need to address downstream flow regimes, in addition commitments are made in relation to downstream flow regimes 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.
 - **Stakeholder Engagement:** In the case of a need to address downstream flow regimes, in addition the assessment and management process for downstream flow regimes has involved appropriately timed and two-way engagement with directly affected stakeholders, and ongoing processes are in place for stakeholders to raise issues with downstream flow regimes and get feedback.
 - **Conformance/Compliance:** In the case of a need to address downstream flow regimes, in addition there are no non-compliances or non-conformances.
 - **Outcomes:** In the case of a need to address downstream flow regimes and commitments to downstream flow regimes have been made, in addition these represent an optimal fit amongst environmental, social and economic objectives within practical constraints of the present circumstances.

Assessment Guidance:

Topic relevance: This topic will always be relevant, because it should be captured by processes in place to identify any ongoing or emerging issues relating to the operating hydropower facility's downstream flow regimes. If there are no issues identified, then the topic is scored on the first sentence in the Level 3 statement for the Assessment criterion, and the first sentence in the Level 5 statements for the Assessment and Management criteria. If issues are identified, then all other statements are relevant.

Flow regimes is with reference to the fact that there may be multiple sites at which flows are affected by project infrastructure, e.g. downstream of a diversion dam as well as downstream of the main dam or the turbines.

Ongoing or emerging issues might be with respect to concerns about downstream impacts arising from water discharge or management activities, or changing policies, legislation or community expectations, or changing community values or uses of the downstream waterways.

Downstream flow regimes might be specified for different components and stages of projects in a manner such as, for example: minimum flows in part of certain seasons, maximum flows in part of certain seasons. Individual countries may have laws regarding downstream flow regulation which must be complied with. In cases where the downstream impact of the operating hydropower facility on flow regimes extends beyond the jurisdiction in which the facility is found, any implications of this would need to be taken into consideration.

Optimal in this context means best fit once all identified environmental, social and economic considerations have been factored in, based on the outcomes of a consultative process; the best fit may in fact be no flow at all in a particular river reach because another river reach has objectives that are considered of higher priority.

Potential interviewees: relevant power station or company managers; hydrologist; power station or company environmental and social issues managers; aquatic ecologist; independent environmental flows expert; stakeholder representatives; project affected community representatives; downstream riparian community representatives; representative from the responsible governmental authority; downstream transboundary community representatives if relevant

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Examples of evidence: assessment of downstream flows in relation to flow-related objectives; downstream flow regime plans specifying range, variability and verification location; system operations plans; design documents in relation to release mechanisms; records of consultation and stakeholder involvement; records of response to stakeholder issues; third party review report; commitments and agreements; monitoring reports

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Glossary of Terms

Additional Benefits: Benefits for the region that can be leveraged from the project.

Accountability: Obligation of an individual, firm, or institution to account for its activities, accept responsibility for them, and to disclose the results in a transparent manner.

Accountable: Responsible to or liable to account for someone or for some activity.

Adequate: Sufficient or enough to satisfy a requirement or meet a need.

Agreement: A recorded understanding between individuals, groups or entities to follow a specific course of conduct or action. It may be incorporated into, for example, a memorandum of understanding, minutes of a meeting, a letter of intent, a joint statement of principles, a contract, an operating licence, etc.

Appropriate: Suitable for a particular person, condition, occasion, or place; fitting; meeting identified needs or requirements.

Baseline: A set of measurements, statistics, or conditions used as a basis for later comparison. The baseline refers to the pre-project conditions, prior to the initiation of the project, against which post-project changes can be compared. For operating hydropower facilities, if a pre-project baseline does not exist then the present condition is taken as the baseline.

Commitment: A binding pledge or promise to do, give, or refrain from doing something.

Community Groups: Groups of people with common characteristics or interests living together within the larger society. There are many different ways to view these groups, and these will need to be defined in meaningful ways for the project. These may include, by way of example, urban dwellers, rural dwellers, indigenous peoples, ethnic minorities, people of a common profession or religion, disabled, elderly, illiterate, women, men, children, etc.

Compliance: Adherence to legal requirements, policies and public commitments.

Comprehensive: All relevant components have been considered and addressed.

Conformance: Addresses the level of conformance of implementation measures with most up-to-date project-related plans.

Consent: Signed agreements with community leaders or representative bodies who have been authorised by the affected communities which they represent, through an independent and self-determined decision-making process undertaken with sufficient time and in accordance with cultural traditions, customs and practices.

Corruption: Lack of integrity or honesty (especially susceptibility to bribery); use of a position of trust for dishonest gain.

Credible: Capable of being believed; plausible; worthy of confidence; reliable.

Cultural Heritage: The legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations.

Cumulative Impacts: The phenomenon of changes that result from numerous human-induced alterations, either through persistent additions or losses of the same materials or resource, or through the compounding effects as a result of the coming together of two or more effects.

Deception: The fact or state of being deceived; to be given cause to believe what is not true; to be misled.

Developer: The lead entity or consortium of entities investing in the development of a hydropower project.

Directly Affected Stakeholder: Those stakeholders with substantial rights, risks and responsibilities in relation to the issue. These may be inside the project affected area (e.g.

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project affected communities) or outside the project-affected area (e.g. government regulators, finance institution representatives, or investment partners).

Disclosure: Made publicly available (see also “Publicly disclosed”).

Economic Displacement: Loss of assets, access to assets, or income sources or means of livelihoods as a result of (i) acquisition of land, (ii) changes in land use or access to land, (iii) restriction on land use or access to natural resources including water resources, legally designated parks, protected areas or restricted access areas such as reservoir catchments and (iv) changes in environment leading to health concerns or impacts on livelihoods. Economic displacement applies whether such losses and restrictions are full or partial, and permanent or temporary.

Effective: Producing or capable of producing an intended, expected and/or desired effect.

Engaged: Interacted with, often through consultation processes.

Equitable: Fair, just or impartial

Evidence: Evidence provided by an auditee and used by an assessor to verify whether and to what degree a criterion has been met. Evidence can be qualitative or quantitative information, records or statements of fact, either verbal or documented. It is retrievable or reproducible; not influenced by emotion or prejudice; based on facts obtained through observation, measurements, documentation, tests or other means; factual; reproducible; objective and verifiable.

Expert: A person with a high degree of skill in or knowledge of a certain subject, as a result of a high degree of experience or training in that subject.

Gender Analysis: The process of assessing the impact that an activity may have on females and males, and on gender relations. It can be used to ensure that men and women are not disadvantaged by development activities, to enhance the sustainability and effectiveness of activities, or to assess and build capacity and commitment to gender sensitive planning.

Governance: The combination of processes and structures that inform, direct, manage and monitor the activities of the project toward the achievement of its objectives.

Grievance Mechanisms: The processes by which stakeholders are able to raise concerns, grievances and legitimate complaints, as well as the project procedures to track and respond to any grievances.

Human Rights: The basic rights and freedoms to which all humans are entitled, encompassing civil, political, economic, social, and cultural rights, and enshrined in international declarations such as the Universal Declaration on Human Rights 1948.

Hydrological Resource: Water inflows to the project.

Impact: Effect or consequence of an action or event; the degree to which an impact is interpreted as negative or positive depends on context and perspective.

Independent Review: Expert review by someone not employed by the project and with no financial interest in profits made by the project.

Indigenous Peoples: A distinct social and cultural group possessing the following characteristics in varying degrees: self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories; customary cultural, economic, social or political institutions that are separate from those of the dominant society or culture; an indigenous language, often different from the official language of the country or region.

Integrated: Merged, interspersed, embedded into something.

Integrated Water Resources Management (IWRM): A process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

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Invasive Species: A species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Land Rehabilitation: The process of returning the land to some degree of its former state after disturbance or damage associated with project implementation.

Legacy Issues: Impacts of previous projects that are unmitigated or not compensated with a similar good or service, or long-standing issues with a present (existing) project, or pre-existing issues in the present location of a new project.

Livelihood: The capabilities, assets (stores, resources, claims and access) and activities required for a means of living.

Living Standards: The level of material comfort as measured by the goods, services, and luxuries available to an individual, group, or nation; indicators of household well-being; examples include: consumption, income, savings, employment, health, education, nutrition, housing, and access to electricity, clean water, sanitation, health services, educational services, transport, etc.

Local: Administrative subdivisions of a national territory (e.g. with reference to local land use plans)

Long-Term: The planned life of the hydropower project.

Maintenance: The work of keeping something in proper condition; upkeep.

Management Plan: A management plan is a tool used as a reference for managing a particular project issue, and establishes the why, what, how, who, how much, and when for that issue.

Management System: The framework of processes and procedures used to ensure that an organisation can fulfill all tasks required to achieve its objectives.

Maximised: Achieved to as great an extent practicable, taking into account all constraints.

Minimised: Achieved to as little an extent practicable, taking into account all constraints.

Mitigation: Moderation, alleviation, and/or relief of a negative impact

Non-Compliance: Not meeting legal, licence, contractual or permit obligations

Non-Conformance: Not meeting targets and objectives in the management plans; these may or may not be publicly stated commitments, but they are not legally binding and violation can not incur legal action.

Non-Critical: Not essential for something to be suitable, adequate and/or effective

Occupational Health and Safety: Protecting the safety, health and welfare of people engaged in work or employment, for example through preventing disease or injury that might arise as a direct result of the workplace activities.

Optimal: Best fit, once all considerations have been factored in, based on the outcomes of a consultative process

Optimisation Process: The process by which alternatives have been considered towards determining the best fit

Outstanding: Not settled or resolved.

Plans: Management measures to address an identified issue, that may or may not be formalised into business management plans. Plans can include documented planned arrangements, for example based on agreements for forward actions made at meetings. Plans may also be those of the developer, owner or operator, or plans of the relevant government agency or other institution which has the primary responsibility for that sustainability topic. Plans can also be those developed by the contractor responsible for implementation.

Political Risk: A risk of financial loss or inability to conduct business faced by investors, corporations, and governments due to government policy changes, government action

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preventing entry of goods, expropriation or confiscation, currency inconvertibility, politically-motivated interference, government instability, or war.

Practicable: Capable of being done with means at hand and circumstances as they are.

Process: A series of actions, changes, or functions bringing about a result.

Procurement: The acquisition of goods and/or services at the best possible cost, in the right quality and quantity, at the right time, in the right place and from the right source for the direct benefit or use of the hydropower project or operating facility, generally via a contract.

Programme: Relates to the hydropower development programme, which encompasses all project components (construction, environmental, social, resettlement, finance and procurement, and communications, etc.).

Project-Affected Area: The catchment, reservoir, and downstream of the project site and associated dams, and the area affected by any associated developments (e.g. roads, transmissions lines, quarries, construction villages, relocation areas, etc).

Project Affected Communities: The interacting population of various kinds of individuals in the project affected area who are affected either positively or negatively by the hydropower project preparation, implementation and/or operation.

Project Catchment: The portion of the river basin that drains into the project reservoirs, either to pass ultimately through the generation turbines or to spill over the dams into the downstream rivers.

Project Components: Components of the overall hydropower development programme, including design, construction, environmental, social, resettlement, finance, communications and procurement.

Project Lands: The land that is owned, utilised and/or affected by the project.

Protection: To keep in safety and protect from harm, decay, loss, damage or destruction.

Publicly Disclosed: The public is informed that the agreement, commitment, assessment, management plan or significant report has been made or completed, and it is made publicly available either voluntarily (e.g. posted on a website) or on request in a timely manner.

Refurbishment: The state of being restored to its former good condition.

Regional: Refers to a supranational entity in an international context. To refer to administrative subdivisions of a national territory (e.g. with reference to local land use plans) this protocol uses the designation of local.

Relevant: Directly related, connected, applicable, current or pertinent to a topic. In the Protocol, relevance will be determined based on project-specific considerations and analyses. Project representatives make a case for what is relevant and provide evidence to support this, e.g. support of regulatory authorities; the assessor views and seeks evidence to affirm relevance.

Reservoir: Any artificial pondage or lake used by the project for the storage and regulation of water.

Reservoir Area: The area that is inundated when the reservoir is at its maximum expected level and the dry buffer zone above this level.

Resettlement: The process of moving people to a different place to live, because due to the project they are no longer allowed to stay in the area where they used to live.

Resettlees: Those people who are required to be resettled, including those who have formal legal rights, customary or traditional rights, as well as those who have no recognizable rights to the land.

River Basin: The area drained by a river and all its tributaries

Resettlement Action Plan: A document or set of documents specifically developed to identify the actions that will be taken to address resettlement. It would typically include identification of those being resettled; the socio-economic baseline for the resettlees; the measures to be implemented as part of the resettlement process including those relating to resettlement assistance and livelihood support; the legal and compensation frameworks;

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organisational roles and responsibilities; budget allocation and financial management; the timeframe, objectives and targets; grievance redress mechanisms; monitoring, reporting and review provisions; and understandings around consultation, participation and information exchange.

Sensitivity Analysis: Investigation into how projected performance varies along with changes in the key assumptions on which the projections are based

Short-Term: Covers day-to-day operations.

Significant: Important in effect or consequence, or relatively large.

Stakeholder: One who is interested in, involved in or affected by the hydropower project and associated activities.

Stakeholder Group: A set of stakeholders with common characteristics or interests.

Strategic Fit: The compatibility of the project with local, national and regional needs identified through the priorities and objectives put forth in options assessments and other relevant local, national and regional and multi-national policies and plans.

Suitable: Appropriate for the desired purpose, condition or occasion.

Timely: Occurring at a suitable or opportune time

Transboundary Agreements: Agreements made amongst riparian states about how shared water resources will be utilized by the parties involved, and the processes that will be followed to sustain these understandings.

Transparent / Transparency: Open to public scrutiny, publicly available, and/or able to be viewed or disclosed to the public on request.

Upgrade: To improve to a higher grade or standard.

Vulnerable Social Groups: Social groups who are marginalised or impoverished with very low capacity and means to absorb change.

Understanding the Protocol's Gradational Assessment Approach

The gradational approach undertaken in the Preparation, Implementation and Operation assessments tools can be understood by examination of Table 1. This table provides general guidance on characteristics that are likely to be exhibited for these different criteria at the five different scoring levels. The scoring statements found in the Preparation, Implementation and Operation assessment tools have been guided by the approach shown in Table 1. This table is not intended to be the basis for assigning of scores, as sufficient information should be provided on the topic pages. However, this table can be referred to during an assessment if there is insufficient information in the topic scoring statements and in the topic-specific assessment guidance to help the assessor to determine a score. If there are questions in the assessment process about whether the assessment, management and stakeholder engagement approaches are sufficient for basic good practice, Table 1 may be of assistance.

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Table 1 - Understanding the Protocol's Gradational Approach

This table captures characteristics that are likely to be exhibited at different scoring levels for each of the criteria used in the Hydropower Sustainability Assessment Protocol

Level	Assessment	Management	Stakeholder Engagement	Stakeholder Support	Outcomes	Conformance / Compliance
5	<ul style="list-style-type: none"> • Suitable, adequate and effective assessment with no significant opportunities for improvement; • In addition to basic good practice (Level 3), the assessment are likely to take a relatively broader, external or regional view or perspective; emphasise opportunities; and show a high level of examination of interrelationships amongst relevant sustainability issues 	<ul style="list-style-type: none"> • Suitable, adequate and effective management processes with no significant opportunities for improvement; • In addition to basic good practice (Level 3), management plans and processes are likely to show excellent anticipation of and response to emerging issues or opportunities; senior management and/or executive decisions are likely to be timely, efficient and effective in response to monitoring data, investigations and issues arising; and in cases commitments in plans are public, formal and legally enforceable. 	<ul style="list-style-type: none"> • Suitable, adequate and effective stakeholder engagement processes with no significant opportunities for improvement; • In addition to basic good practice (Level 3), the engagement is likely to be inclusive and participatory with the directly affected stakeholders; • thorough feedback is likely to be available on how directly affected stakeholder issues are taken into consideration; • In cases there is likely to be directly affected stakeholder involvement in decision-making; and • Information identified through engagement processes to be of high interest to stakeholders is released publicly in a timely and easily accessible manner 	<ul style="list-style-type: none"> • There is support of nearly all directly affected stakeholder groups for the assessment, planning or implementation measures for that topic, or no opposition by these stakeholders; • In cases formal agreements or consent with the directly affected stakeholder groups have been reached for management measures for that topic 	<ul style="list-style-type: none"> • In addition to basic good practice (Level 3), there may be exhibited enhancements to pre-project conditions; contributions to addressing issues beyond those impacts caused by the project; leveraging of opportunities; or significant contribution to capacity building 	<ul style="list-style-type: none"> • No non-compliances or non-conformances
4	<ul style="list-style-type: none"> • Suitable, adequate and effective assessment with only a few minor gaps; • In addition to basic good practice (Level 3), the assessment is likely to exhibit some recognition of broader, external or regional issues; opportunities; and interrelationships amongst relevant sustainability issues 	<ul style="list-style-type: none"> • Suitable, adequate and effective management processes with only a few minor gaps; • In addition to basic good practice (Level 3), management plans and processes are likely to exhibit good anticipation of and response to emerging issues or opportunities; and in cases commitments in plans are public and formal. 	<ul style="list-style-type: none"> • Suitable, adequate and effective stakeholder engagement processes with only a few minor gaps; • In addition to basic good practice (Level 3), there is likely to be good feedback on how directly affected stakeholder issues have taken into consideration; and information on sustainability topics understood to be of high interest to stakeholders is voluntarily released publicly 	<ul style="list-style-type: none"> • There is support of a large majority of directly affected stakeholder groups for the assessment, planning or implementation measures for that topic, or only very low opposition by these stakeholders 	<ul style="list-style-type: none"> • In addition to basic good practice (Level 3), there may be exhibited full compensation of negative impacts; some positive enhancements; or evidence of capacity building associated with the project 	<ul style="list-style-type: none"> • Very few minor non-compliances and non-conformances that can be readily remedied
3	<ul style="list-style-type: none"> • Suitable, adequate and effective assessment with no significant gaps. This would typically encompass (as appropriate to the topic and life cycle stage) identification of the baseline condition including relevant issues, appropriate geographic coverage, and appropriate data collection and analytical methodologies; identification of relevant organisational roles and responsibilities, and legal, policy and other requirements; appropriate utilisation of expertise and local knowledge; and appropriate budget and time span. At level 3 the assessment encompasses the considerations most relevant to that topic, but tends to have a predominantly project-focused view or perspective and to give stronger emphasis to impacts and risks than it does to opportunities 	<ul style="list-style-type: none"> • Suitable, adequate and effective management processes with no significant gaps. These would typically encompass (as appropriate to the topic and life cycle stage) development and implementation of plans that: • integrate relevant assessment or monitoring findings; • are underpinned by policies; • describe measures that will be taken to address the considerations most relevant to that topic; • establish objectives and targets ; • assign roles, responsibilities and accountabilities; • utilise expertise appropriate to that topic; • allocate finances to cover implementation requirements with some contingency; • outline processes for monitoring, review, and reporting; and • are periodically reviewed and improved as required. 	<ul style="list-style-type: none"> • Suitable, adequate and effective stakeholder engagement processes with no significant gaps. These would typically encompass (as appropriate to the topic and life cycle stage): • Identification of directly affected stakeholders; • Appropriate forms, timing, frequency and locations of stakeholder engagement, often two-way; • Freedom for affected stakeholders to participate; • Attention to special stakeholder engagement considerations relating to gender, minorities, cultural sensitivities, level of literacy, and those who might require particular assistance; • Mechanisms by which stakeholders can see that their issues are recognised and acknowledged, and how they have been or are being responded to; and • disclosure of information on significant sustainability topics (in cases this may be on request) 	<ul style="list-style-type: none"> • There is general support amongst directly affected stakeholder groups for the assessment, planning or implementation measures for that topic, or no significant ongoing opposition by these stakeholders 	<ul style="list-style-type: none"> • As appropriate to the topic and the life cycle stage, there may be exhibited avoidance of harm; minimisation and mitigation of negative impacts; fair and just compensation; fulfilment of obligations; or effectiveness of implementation of plans 	<ul style="list-style-type: none"> • No significant non-compliances and non-conformances
2	<ul style="list-style-type: none"> • A significant gap in assessment processes relative to basic good practice (Level 3). 	<ul style="list-style-type: none"> • A significant gap in management processes relative to basic good practice (Level 3). 	<ul style="list-style-type: none"> • A significant gap in stakeholder engagement processes relative to basic good practice (Level 3). 	<ul style="list-style-type: none"> • There is support amongst some directly affected stakeholder groups for the assessment, planning or implementation measures for that topic, with some opposition. 	<ul style="list-style-type: none"> • A significant gap relative to basic good practice (Level 3), for example some deterioration in baseline condition 	<ul style="list-style-type: none"> • A significant non-compliance or non-conformance
1	<ul style="list-style-type: none"> • Significant gaps in assessment processes relative to basic good practice (Level 3). 	<ul style="list-style-type: none"> • There are significant gaps in management processes relative to basic good practice (Level 3). 	<ul style="list-style-type: none"> • There are significant gaps in stakeholder engagement processes relative to basic good practice (Level 3). 	<ul style="list-style-type: none"> • There is low support amongst directly affected stakeholder groups for the assessment, planning or implementation measures for that topic, or a majority oppose 	<ul style="list-style-type: none"> • Significant gaps relative to basic good practice (Level 3), for example deterioration in baseline condition with delay or difficulties in addressing negative impacts 	<ul style="list-style-type: none"> • Significant non-compliances and non-conformances