

Hydropower Sustainability Assessment Protocol

Section IV Facility Operation

Draft1 Final
26 April 2010

Hydropower Sustainability Assessment Protocol

Section IV – Facility Operation - Draft1 Final - 26th April 2010

About this Document

This document is one of a progression of documents for review by the Hydropower Sustainability Assessment Forum members and their reference groups, in the process of moving towards a Final Protocol.

This document provides the Hydropower Sustainability Assessment Protocol (HSAP) Draft1 Final Section IV, and is distributed as one of the meeting papers for Forum Meeting 9. A summary of the issues arising and decision points required is provided below.

The intention is for Forum members and their reference groups to review this and the accompanying documents (HSAP Draft1 Final Introduction, Section I, Section II, Section III and Supplement) in the week prior to Forum Meeting 9. Forum Meeting 9 will be held from 3-6 May 2010 in Vientiane, Laos.

Forum member discussion and agreements on these HSAP Draft1 Final documents will guide production of a HSAP Draft2 Final at Forum Meeting 9.

Forum Discussion and Decision Points Specific to Section IV

A name change to Facility Operations or Operating Facility has been suggested, since at this stage there is no longer a "project". Not all considerations in this section relate to operations activities, so the name should not create this expectation; some topics have to do with delivery on commitments from project implementation (e.g. resettlement).

The main concern raised with the Draft Protocol Section IV was from industry, that it too closely resembled Section II and the requirements for project preparation. They posed that Section IV needed to be restructured to better reflect present business practice, and that the focus in Section IV should be on conformance and compliance with laws, regulations and licence conditions.

Another major issue was that Section IV needs to accommodate both old and new plants. In the case of old plants it cannot be assumed that baseline conditions and records for the pre-project situation will be available, whereas these should be available and referenced for newly commissioned plants.

The extent to which Stakeholder Engagement and Support feature as criteria for individual topics needs discussion. Feedback during Consultation Phase 2 was that these requirements should be significantly diminished for Section IV relative to Section II. Of concern was not only that it is impractical to assess this to such an extent, but that for an operating project they have received a licence and are operating on an understanding of what is permitted and expected, so the Protocol should not be prompting an expectation to open up a lot of issues and need for agreements.

In the Draft1 Protocol, Stakeholder Engagement features in the following topics, and Stakeholder Support does not feature at all. The emphasis of stakeholder engagement is much more focussed on processes in place for stakeholders to raise issues and to get feedback and advice on how these have been responded to. Topic IV-1 is more about appropriately timed and scoped two way engagement for the project as a whole.

- IV-1 Communications & Consultation (levels 3 and 5)
- IV-9 Governance (level 5)
- IV-10 Transboundary rivers (levels 3 and 5)
- IV-12 E&SIM (levels 3 and 5)
- IV-13 Project Affected Communities & Livelihoods (levels 3 and 5)
- IV-14 Indigenous Peoples (levels 3 and 5)
- IV-15 Resettlement (levels 3 and 5)

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- IV-16 Labour & Working Conditions (levels 3 and 5)
- IV-21 Downstream Flow Regimes (level 5)

References to commitments are a point of sensitivity for older projects. There may be no record of commitments made, or they were made by a previous developer, owner, operator or other agency and are not reaffirmed by the present owner, operator or agency with the primary responsibility. In the Draft1 Final, commitments are stated as pertaining to those of the present owner/operator or agency with the primary responsibility for delivery on those commitments; if historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Topic relevance needs to be checked, particularly on IV-7 Project Benefits, IV-13 Project Affected Communities, IV-15 Resettlement, and IV-18 Public Health where references are made to older projects.

With regard to specific topics, issues raised that are not already pertinent to Sections II and III are:

IV-2 Hydrological Resource. This seems to be sitting between hydrological resource assessment and generation operations. Is this a necessary shift for Section IV, or should it stay focussed on understanding water inflows? Re-name?

IV-3 Asset Reliability & Efficiency. The name “asset” was removed from the safety aspect because of translation issues, as it was associated with financial considerations. Should this name be changed, e.g. to Power Station Reliability & Efficiency?

IV-4 Markets, Innovation & Research. This topic has been troublesome for some hydropower companies, as it implies that R&D programs are required. It has been suggested that this topic is not necessary to a sustainability profile for an operating facility. The word “research” has been replaced in the scoring statements with “investigations”, and a name change to Market Position might further alleviate concerns.

IV-6 Financial Viability. Financial Viability should from an operational viewpoint reflect the situation that the investment costs are sunk. Financial records beyond legal requirements should not need to be disclosed. Is this appropriately tailored to the operating stage?

IV-7 Project Benefits. Topic relevance will need to be reviewed.

IV-8 Economic Viability. Not needed in Section IV?

IV-11 Procurement. Question about retaining this as its own topic in Section IV, given its relatively minor compared to Section III – could it go under Governance?

IV-13 Project Affected Communities. Topic relevance will need to be reviewed.

IV-14 Indigenous Peoples. .

IV-15 Resettlement. Omission of a Resettlement topic from Draft Protocol Section IV was seen as a major flaw, and this has been added. Topic relevance will need to be reviewed.

IV-21 Downstream Flow Regimes. Needs a good check to consider how this will reflect reasonable expectations for older projects.

Assessment guidance gaps are noted for a number of topics, and will need to be filled in.

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Overview of Section IV

Section IV Facility Operation assesses the operation of a hydropower facility. This section of the protocol 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.

Summary of Section IV Topics

IV-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.

IV-2: 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 takes into account a good understanding of the hydrological resource availability and reliability in the short- and long-term, taking into account other needs, issues or requirements for the inflows and outflows as well as likely future trends (including climate change) that could affect the project.

IV-3: 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.

IV-4: Markets, Innovation & Research. This topic addresses the degree to which the hydropower facility owner/operator is aware of market trends which may influence the long-term viability of the hydropower facility, and the investment being made into investigation and innovative solutions to optimise strategic positioning of the facility into the future. The intent is that the facility is aware of and able to adapt to changes which will influence its market viability.

IV-5: 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.

IV-6: 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. The intent is that the facility is proceeding with a sound financial basis that covers all funding requirements including social and environmental measures and commitments.

IV-7: Project Benefits. This topic addresses the benefits associated with development of the hydropower facility. The intent is that any commitments to additional benefits and benefit sharing strategies made during development of the hydropower facility are delivered, and that communities affected by the development have benefitted.

IV-8: Economic Viability. This topic addresses the net economic viability of the hydropower facility from a regional perspective. The intent is that there is a net benefit from the development of the facility once all economic, social and environmental costs and benefits are factored in.

IV-9: Governance. This topic addresses key 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. capacity shortfalls, political and corruption risks); and can ensure compliance.

IV-10: Transboundary Rivers. This topic addresses management of transboundary issues when the hydropower facility either relies on or influences the upstream or downstream water resources that cross government jurisdictional boundaries. The intent is that water resource utilisation agreements are in place so that transboundary conflicts are avoided.

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IV-11: Procurement. This topic addresses all procurement undertaken by the operating hydropower facility, including works, goods and services. The intent is that procurement processes are equitable, transparent and accountable; support achievement of business timeline, quality and budgetary milestones; support owner/operator and contractor environmental, social and ethical performance; and promote opportunities for local industries.

IV-12: 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 delivered.

IV-13: Project-Affected Communities & Livelihoods. This topic addresses how impacts of the hydropower facility development on project affected communities have been addressed, including economic displacement, impacts on livelihoods and living standards, and impacts to rights, risks and opportunities of those affected by the project. The intent is that livelihoods impacted by the project have been rebuilt in a manner in which they become self-sustaining, that living conditions have been improved relative to pre-project conditions for project affected communities, and that commitments to project affected communities have been fully delivered.

IV-14: 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.

IV-15: Resettlement. This topic addresses the physical displacement arising from development of the hydropower facility. 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 delivered.

IV-16: 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.

IV-17: Cultural Heritage. This topic addresses the protection of physical cultural heritage associated with the hydropower facility. The intent is that physical cultural heritage is identified, recorded, and high value artefacts protected.

IV-18: Public Health. This topic addresses public health issues associated with the hydropower facility. The intent is that the 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 any commitments to implement measures to address public health are delivered.

IV-19: Project Catchment & Lands Management. This topic addresses the degree to which relevant catchment and land management issues are understood and managed by the operating facility. The intent is that project catchment and land management measures promote positive environmental, social and economic outcomes, taking into consideration the specific role and responsibility of the operator.

IV-20: 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.

IV-21: Downstream Flow Regimes. This topic addresses the flow regimes downstream of hydropower facility infrastructure in relation to environmental, social and economic objectives. The intent is that any issues with respect to facility's downstream flow regimes are identified and addressed, and any commitments with respect to downstream flow regimes are delivered.

IV-22: 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 hydropower facility. The intent is that there are healthy, functional and viable aquatic and terrestrial ecosystems in the region that are sustainable over the long-term; that biodiversity impacts

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arising from facility activities are managed responsibly; that ongoing or emerging biodiversity issues are identified and addressed as required; and that any commitments to implement biodiversity and invasive species measures are delivered.

IV-23: Erosion & Sedimentation. This topic addresses the management of erosion and sedimentation issues associated with the hydropower facility. The intent is that erosion and sedimentation caused by the facility is managed responsibly and does not present problems with respect to other social, environmental and economic objectives in the region; that external erosion or sedimentation occurrences which may have impacts on the facility are recognised and managed; and that any commitments to implement measures to address erosion and sedimentation are delivered.

IV-24: Water Quality. This topic addresses the management of water quality issues associated with the hydropower facility. The intent is that water quality in the vicinity of the 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 any commitments to implement measures to address water quality are delivered.

Section IV Topic Relevance Guide

Not all topics in Section IV will be relevant for every project assessment, and their relevance must be considered on a project-by-project basis. The project representative 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 of circumstances that might make topics not relevant, subject to presentation of credible evidence, could be:

- No reservoir storage → Reservoir Management topic is not relevant
- Another project reservoir immediately downstream, and only short dewatered reaches downstream of diversion dams with no particular values → Downstream Flows topic is not relevant
- No cultural heritage issues → Cultural Heritage topic is not relevant
- No indigenous peoples → Indigenous Peoples topic is not relevant

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IV-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:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging issues relating to hydropower facility communications and consultation; requirements and approaches are identified through a periodically updated assessment process involving stakeholder mapping; and effectiveness is monitored.
- **Management:** Processes are in place to manage communications and engagement with stakeholders.
 - **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 any 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, broad considerations are taken into account with stakeholder mapping.
- **Management:** In addition, measures 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 issues raised is 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

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rights.

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.

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

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

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

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

IV-2: 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 takes into account a good understanding of the hydrological resource availability and reliability in the short- and long-term, taking into account other needs, issues or requirements for the inflows and outflows as well as likely future trends (including climate change) that could affect the project.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

3 – **Assessment:** Processes are in place to monitor hydrological resource availability and reliability and to identify ongoing or emerging issues; 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, 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, can be publicly demonstrated to fully optimise and maximise efficiency of water use, and has the flexibility to adapt to anticipate and adapt to future changes.

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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 (e.g. agriculture, industry, population growth), catchment condition, climate change, negotiations over water allocation, etc.

Technical considerations for generation operations examples include:

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

IV-3: 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:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging asset maintenance and management issues and to monitor if management measures are effective.
- **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.

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, consideration 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:** In addition, asset reliability and efficiency is very high by international standards.

Asset refers to

Asset maintenance requirements would include, for example:

Asset reliability and efficiency issues would include, for example:

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Asset related opportunities would include, for example:

International standards relating to asset reliability and efficiency would be:

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

IV-4: Markets, Innovation & Research

This topic addresses the degree to which the hydropower facility owner/operator is aware of market trends which may influence the long-term viability of the hydropower facility, and the investment being made into investigation and innovative solutions to optimise strategic positioning of the facility into the future. The intent is that the facility is aware of and able to adapt to changes which will influence its market viability.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

3 – **Assessment:** The demand for the electricity, water and ancillary services provided by the hydropower facility, and factors and trends that might influence future demand for these services, are periodically assessed.

- **Outcomes:** The facility meets the present demand for electricity, water and ancillary services that it is capable of fulfilling, in line with the company's strategic plan.

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; the facility actively monitors trends, has undertaken investigations towards improving its market position, and routinely evaluates its position and options.
- **Outcomes:** In addition, the facility has optimised or is on target with plans to optimise its market position with respect to responding to supply and demand for electricity, water and ancillary services provided by the hydropower facility.

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.

Improving market position examples include: 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; etc.

Optimal means best fit, once all considerations have been factored in, based on the outcomes of a consultative process.

Interviewees: company representative from business development, marketing, consulting, trading, strategy, policy; company generation manager

Examples of evidence: 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.

IV-5: 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:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging dam and other infrastructure safety issues and to monitor if surveillance and management measures are effective.
- **Management:** Measures are in place to address identified dam and other infrastructure safety issues, and to meet any safety related commitments; measures include emergency response plans supported by awareness and training programs.
 - **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 any safety related commitments have been or are on track to be met.
 - **Outcomes:** Safety risks have been 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.*

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- 5 – **Assessment:** In addition, consideration of ongoing or emerging safety issues takes into account consideration of a broad range of scenarios and both risks and opportunities.
- **Management:** In addition, safety measures have been developed in conjunction with relevant regulatory authorities and directly affected stakeholders; processes are in place to anticipate and respond to emerging risks and opportunities; and 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 project itself.

Assessment Guidance:

Safety risks examples include: seismic, geotechnical, dam or generation unit failure, electric shock, 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.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

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

IV-6: 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. The intent is that the facility is proceeding with a sound financial basis that covers all funding requirements including social and environmental measures and commitments.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging financial management issues and if relevant to monitor if management measures are effective.
- **Management:** Measures are in place to manage finances.
 - **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 any funding commitments have been or are on track to be met.

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- **Outcomes:** The operating hydropower facility is commercially viable, 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, consideration of ongoing or emerging financial 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; 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 is commercially viable under a range of scenarios.

Assessment Guidance:

Project costs examples include: costs for construction, operations and maintenance, and includes equipment, supplies, labour, tax, land/water resource rights, and costs of environmental and social mitigation plans.

Revenue streams examples include: the electricity market, the Power Purchase Agreement, and revenue associated with investment drivers for new market entrants (e.g. access to carbon finance).

Financial models at a minimum have the project costs and revenue streams as inputs and financial returns as outputs; examples of uses include: examine implications of various market conditions, trends and risks on financial viability of the project through scenario testing, risk assessment, sensitivity analysis, etc.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Commercially viable at the project level may be difficult to assess for certain types of projects whose financial contribution is measured from the perspective of the system within which it operates; for example, pump storage projects 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.

Potential interviewees: power station or company financial officers; principal financing institution representative; independent financial expert

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)

IV-7: Project Benefits

This topic addresses the benefits associated with development of the hydropower facility. The intent is that any commitments to additional benefits and benefit sharing strategies made during development of the hydropower facility are delivered, and that communities affected by the development have benefitted.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging issues associated with benefits of the hydropower facility, and if relevant to monitor if management measures are effective.
- **Management:** Measures are in place to manage identified issues relating to project benefits, and to meet any relevant commitments.
 - **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 any commitments have been or are on track to be met.
 - **Outcomes:** Communities directly affected by the development of the hydropower 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, opportunities to further leverage off of the project with respect to regional benefits are taken into consideration.
- **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 self-sustaining.

Assessment Guidance:

Topic relevance: This topic is not relevant for older projects that do not have data on the pre-project condition against which to compare present benefits, or records of assessments or commitments made to project benefits. In the case of older projects who identify and implement benefits through new commitments made during the operational stage and not through commitments made through during project preparation or implementation, these are considered “enhancements” or “opportunities”, and would be relevant to IV-12 Environmental & Social Issues Management or to the topic most relevant to the types of commitments made.

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

Additional benefits refers to benefits for the region 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-off 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 project developer.

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

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Examples of evidence: analysis of regional development indicators; analysis of potential project benefits; analysis of benefit sharing options and opportunities; meeting minutes or reports demonstrating stakeholder input and involvement; benefit sharing plan; monitoring

IV-8: Economic Viability

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

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** An assessment of economic viability has been undertaken, involving identification of costs and benefits of the hydropower facility and either valuation in monetary terms or documentation in qualitative or quantitative dimensions.
- **Outcomes:** The development of the hydropower facility shows a high rate of return compared to other energy sector investment options in the economy.

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 assessment takes broad considerations into account, and includes sensitivity analyses.
- **Outcomes:** In addition, the benefits outweigh the costs under a wide range of circumstances.

Assessment Guidance:

Topic relevance: This topic will only be able to be assessed if good baseline information is available, and costs and benefits of the hydropower facility relative to this baseline are able to be identified.

Cost-benefit analysis seeks to quantify all of the costs and benefits of a proposal in monetary terms, including items for which the market does not provide a satisfactory measure of economic value.

Water services examples include: water for energy generation, fisheries, floodplain agriculture, food supply, water storage capacity, drinking water supply, sanitation, water for business and industry, irrigation water supply, flood management, navigation, recreation, domestic needs of riparian dwellers, tourist opportunities, vehicle for transboundary cooperation, ecosystem services (e.g. floodplain maintenance, connectivity for migratory species, maintenance of off-river wetlands, nutrient and sediment balance, delta sediment replenishment, estuarine flushing, spawning ground access and maintenance), etc.

Rate of return data may need to be disclosed in the assessment under a confidentiality agreement as it may be commercially sensitive.

Broad considerations might be exhibited by, for example: a broad view on relevant issues requiring costs and benefits; a broad view of stakeholder perspectives on what is a cost or a benefit; a recognition and method of addressing interrelationships amongst issues; a broad analysis of approaches to economic viability analyses as a foundation to the approach taken; etc.

Potential interviewees: relevant power station or company manager; government representative (e.g. department of economic development); funding agency economist; independent experts

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Examples of evidence: analysis of regional economic context; analysis, quantification and valuation of project costs and benefits; loan appraisal reports; economic analyses of natural resources and riparian linked livelihoods

IV-9: Governance

This topic addresses key 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. capacity shortfalls, political and corruption risks); and can ensure compliance.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging corporate governance requirements and issues, and to monitor if corporate governance measures are effective.
- **Management:** Processes are in place to ensure risk management, compliance, social and environmental responsibility, ethical business practices, and transparency; policies and processes are communicated internally and externally as appropriate.
 - **Outcomes:** The business has had no corporate governance issues identified.
 - **Conformance/Compliance:** The project has no significant non-compliances.
 - **Disclosure:** The business makes significant project reports publicly available, and publicly reports on project performance, in some sustainability areas.

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, consideration of ongoing or emerging corporate governance 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:** The business interacts with a range of directly affected stakeholders to understand matters of high interest to its stakeholders.
 - **Outcomes:** The business has had no corporate governance issues identified.
 - **Conformance/Compliance:** The project has no non-compliances.
 - **Disclosure:** The business makes significant project reports publicly available, and publicly reports on project performance, in sustainability areas of high interest to its stakeholders.

Assessment Guidance:

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.

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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 legal, judicial, and institutional structures, processes and policies 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 regional 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, a whistle-blowing arrangement, etc.

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

Sustainable performance indicators for corporate annual reporting are found, for example, in the Global Reporting Initiative.

Potential interviewees: 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)

IV-10: Transboundary Rivers

This topic addresses management of transboundary issues when the hydropower facility either relies on or influences the upstream or downstream water resources that cross government jurisdictional boundaries. The intent is that water resource utilisation agreements are in place so that transboundary conflicts are avoided.

Scoring:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

3 – Assessment: Processes are in place to identify any ongoing or emerging transboundary issues and if relevant to monitor if management measures are effective, taking into account the degree of the hydropower facility's influence, impact and vulnerability on the water resources in multiple government jurisdictions both upstream and downstream of the project.

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- **Management:** Measures are in place to address identified transboundary issues.
- **Stakeholder Engagement:** Ongoing processes are in place for directly affected stakeholders to raise issues and get feedback that have been agreed by all jurisdictions involved.
- **Conformance/Compliance:** Processes and objectives relating to transboundary issues have been and are on track to be met with no significant non-compliances or non-conformances, and any transboundary related commitments have been or are on track to be met.
- **Outcomes:** The project is causing no significant harm to any affected riparian country.

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, consideration of ongoing or emerging transboundary issues takes into account both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities; arrangements are supported by formal and long-term institutional structures and processes.
 - **Stakeholder Engagement:** In addition, feedback on how issues raised are taken into consideration is thorough and timely.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** The project is causing no harm to any affected riparian country, and project benefits are shared.

Assessment Guidance:

Topic relevance: This topic will not be relevant if evidence provided shows that the catchment area into the project and the rivers downstream of the project over the distance subject to project influence are all found within a single governmental jurisdiction.

Transboundary issues may include, for example:

Measures to address transboundary issues may include, for example: cross-jurisdictional monitoring, information sharing, public access to information, independent review

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), this should be reviewed and fresh commitments made on the issue.

Transboundary opportunities include

Potential interviewees: relevant power station or company managers, government representatives from the affected jurisdictions, key stakeholders, NGOs or independent third parties with expressed interest or concerns; representatives of river basin organisations or catchment management authorities

Examples of evidence: assessment of transboundary project issues; jurisdictional maps; hydrological data showing extent of project downstream influence; records of meetings with relevant jurisdictional representatives; transboundary agreements; monitoring reports

IV-11: Procurement

This topic addresses all procurement undertaken by the operating hydropower facility, including works, goods and services. The intent is that procurement processes are equitable, transparent and accountable; support achievement of business timeline, quality and budgetary milestones; support owner/operator and contractor environmental, social and ethical performance; and promote opportunities for local industries.

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Scoring:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging procurement issues and to monitor if procurement measures are effective.
- **Management:** Measures are in place to manage procurement of goods, works and services and address identified issues, and to meet any procurement related commitments.
 - **Conformance/Compliance:** Processes and objectives in place for procurement have been and are on track to be met with no significant non-compliances or non-conformances, and if relevant any procurement related commitments made by the operator have been or are on track to be met.
 - **Outcomes:** Procurement of works, goods and services is equitable, efficient, transparent, accountable, ethical and timely, and contracts are progressing and have been concluded within budget.

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, consideration of ongoing or emerging procurement issues takes into account both risks and opportunities.
- **Management:** In addition, processes are in place to anticipate and respond to emerging risks and opportunities; sustainability and anti-corruption criteria are specified in the pre-qualification screening; anti-corruption measures are strongly emphasised in procurement planning processes; and opportunities for local suppliers and local capacity development are provided for.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** In addition, opportunities for local suppliers including initiatives for local capacity development have been delivered or are on track to be delivered.

Assessment Guidance:

Major supply needs examples include: financial, technical, environmental and social consultancies for implementation of plans and monitoring programs; contractors for operational works; supply of goods and services, etc.

Procurement issues include corruption risks and supply chain risks.

Supply chain risks relate to inability to meet the contract provisions (e.g. with respect to cost, time, quality, specifications), corruption, transport impediments, human rights (e.g. child labour, forced labour used by suppliers of suppliers), etc.

Corruption risks examples include: non-transparent prequalification, confusing tender documents, non-transparent or non-objective selection procedures, bid clarifications not shared with other bidders, award decisions not made public, or not justified, **deception (needs definition)** and collusion, agents' fees, etc.

Measures to manage procurement should include 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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Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), this should be reviewed and fresh commitments made on the issue.

Procurement opportunities may relate to new suppliers, new technologies, capacity development opportunities through liaising with government economic development initiatives, grants, R&D initiatives, contractual arrangements, etc.

Local suppliers are those within the project region who can or have the potential to meet the need to deliver required good and services; the definition of 'local' will be context specific (e.g. those in the project affected area or local government district).

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.

Anti-corruption measures examples include: contracts 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.

Local capacity development refers to assistance that is provided to entities in the region of the project which have an identified need to develop a certain skill or competence or general upgrading of performance ability in order to meet or deliver a desired service.

Potential interviewees: relevant power station or company managers; power station or company procurement officer; representative of an anti-corruption NGO, power station suppliers

Examples of evidence: relevant purchasing policy and procedures; project procurement plan; analysis of local supply sources and capacities; tender requirements / specifications; bidding documents; supplier screening criteria; evaluation of supplier performance; bidder grievance log; record of compliance with relevant legislation and guidelines including those of financing agencies; monitoring or third party review reports

IV-12: 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 delivered.

Scoring:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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 hydropower facility, utilising appropriate expertise.
- **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 issues management plans have been and are on track to be met with no major non-

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compliances or non-conformances, and any 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.

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 environmental and social issues takes into account 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 the management system is independently reviewed and certified to ISO 14001.
 - **Stakeholder Engagement:** The management process for environmental and social issues involves appropriately timed and two-way engagement with directly affected stakeholders; ongoing processes are in place for stakeholders to raise issues and get thorough and timely feedback on how these are taken into consideration.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** Negative environmental and social impacts are avoided, minimised, mitigated and fully compensated; and enhancements to pre-project environmental or social conditions and/or contributions to addressing issues beyond those impacts caused by the project have been or are on track to be achieved.

Assessment Guidance:

Key environmental issues examples include: aquatic and terrestrial biodiversity, threatened species, critical habitats, ecosystem integrity and connectivity issues, water quality, erosion and sedimentation, etc.

Key social issues examples include: project-affected communities, livelihoods, indigenous peoples, ethnic minorities, resettlement, cultural heritage (both physical and non-physical), public health, gender, etc.

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

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), this should be reviewed and fresh commitments made on the issue.

Broad considerations might be exhibited by, for example: a broad view of the project affected region; 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.

Environmental and social opportunities

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

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IV-13: Project-Affected Communities & Livelihoods

This topic addresses how impacts of the hydropower facility development on project affected communities have been addressed, including economic displacement, impacts on livelihoods and living standards, and impacts to rights, risks and opportunities of those affected by the project. The intent is that livelihoods impacted by the project have been rebuilt in a manner in which they become self-sustaining, that living conditions have been improved relative to pre-project conditions for project affected communities, and that commitments to project affected communities have been fully delivered.

Topics II-15 'Indigenous Peoples' and II-16 'Resettlement' that follow specifically address two sub-sets of project affected communities.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging issues relating to project affected communities impacts arising from development of the hydropower facility, and to monitor if management measures have been effective.
- **Management:** Measures are in place to manage identified issues relating to project affected communities, and to meet any relevant commitments.
 - **Stakeholder Engagement:** Ongoing processes are in place for directly affected stakeholders to raise issues and get feedback.
 - **Conformance/Compliance:** Processes and objectives in place to manage project affected communities issues have been and are on track to be met with no significant non-compliances or non-conformances, and any 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 rebuilt; living conditions 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, consideration of project affected communities issues takes into account 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 directly affected stakeholders 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 rebuild livelihoods are self-sustaining.

Assessment Guidance:

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Topic relevance: This topic is relevant to those hydropower facilities where impacts to project affected communities that arose from project development are identifiable against a pre-project baseline. In the case of older projects where there is an inadequate pre-project baseline or unclear commitments made to project affected communities, this should be addressed under IV-12 Environmental & Social Issues Management

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

Issues for 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.

The pre-project baseline for project affected communities should include their livelihoods, living standards, and socio-economic status.

Livelihoods refers to the capabilities, assets (stores, resources, claims and access) and activities required for a means of living.

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.

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, (IV) 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

IV-14: 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,

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human rights, aspirations, culture, lands, knowledge, practices and natural resource-based livelihoods of indigenous peoples in an ongoing manner throughout the project life.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 –
- **Assessment:** Processes are in place to identify any ongoing or emerging indigenous peoples issues and if relevant to monitor if management measures are effective.
 - **Management:** Measures are in place to manage identified indigenous peoples issues.
 - **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 indigenous peoples issues have been and are on track to be met with no significant non-compliances or non-conformances, and if relevant any indigenous peoples related commitments have been or are on track to be met.
 - **Outcomes:** Indigenous peoples rights 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.*

- 5 –
- **Assessment:** In addition, consideration of ongoing or emerging indigenous peoples 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, measures to address ongoing or emerging indigenous peoples issues have been developed with the free, prior and informed participation of indigenous peoples; feedback on how issues raised are taken into consideration is thorough and timely; and directly affected stakeholders 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 indigenous peoples 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 evidence provided shows that there are no indigenous peoples in the project affected area.

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 region.

Identification of indigenous peoples issues should utilise local knowledge and expertise; and should take into account indigenous peoples rights, risks, vulnerabilities, and any cultural sensitivities.

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Indigenous peoples issues may include, for example:

Measures to address indigenous peoples issues may include, for example:

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Indigenous peoples opportunities may include, for example:

Potential interviewees: representatives of project affected indigenous communities; power station or company social issues manager; independent reviewer

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

IV-15: Resettlement

This topic addresses the physical displacement arising from development of the hydropower facility. 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 delivered.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** If physical resettlement was required as part of project implementation, processes are in place to identify any emerging or ongoing issues, and to monitor if management measures have been effective.
- **Management:** A Resettlement Action Plan guides measures to address and follow up on resettlement caused by facility development.
 - **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, consideration 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.

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- **Stakeholder Engagement:** In addition, feedback on how issues raised are taken into consideration is thorough and timely, and directly affected stakeholders 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 is self-sustaining.

Assessment Guidance:

Topic relevance: This topic will not be relevant if there was no requirement for resettlement arising from the project activities. In the case of older projects where resettlement occurred but there is no active Resettlement Action Plan, or where historical commitments made to resettlement are in dispute, this should be addressed under IV-12 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.

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

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

The pre-project baseline for resettlement should identify the socio-economic status of the resettlees prior to project development, and should include analysis of community structures, gender, vulnerable social groups, living standards and economic valuation of livelihoods and asset loss. In cases where such a baseline does not exist, or is inadequate to make post-project evaluations of outcomes, this should be addressed under IV-12 Environmental & Social Issues Management.

Resettlement related issues may include, for example:

A Resettlement Action Plan typically includes:

Potential interviewees: community representatives affected by resettlement and land acquisition; representatives from resettlement host communities; power station or company social issues manager; 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

IV-16: 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:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

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- 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; processes are in place to identify any emerging or ongoing issues, and to monitor if management measures are effective.
- **Management:** Human resource and labour management policies, plans and processes have been developed for that cover all labour management planning components 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.
 - **Outcomes:** Plans provide for 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, the assessment takes into account broader, external and/or regional considerations, 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 are taken into consideration is thorough and timely.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** The operating facility can demonstrate adherence with internationally recognised labour rights.

Assessment Guidance:

Labour management requirements 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.

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.

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

IV-17: Cultural Heritage

This topic addresses the protection of physical cultural heritage associated with the hydropower facility. The intent is that physical cultural heritage is identified, recorded, and high value artefacts protected.

Scoring:

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0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging cultural heritage issues and if relevant to monitor 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 if relevant any cultural heritage related commitments have been or are on track to be met.
 - **Outcomes:** Negative cultural heritage impacts arising from activities of the operating 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, consideration of ongoing or emerging cultural heritage 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, 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 evidence provided shows that there is no cultural heritage identified in the project affected area.

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 heritage examples include: monuments or buildings which are identified to be of value from the point of view of history, art or science, and sites which are identified to be of value from the historical, aesthetic, ethnological or anthropological point of view.

Non-physical cultural heritage examples include: traditions, festivals, rituals, etc. These should be addressed under Topic II-13 Environmental & Social Impact Assessment & Management in the Protocol assessment.

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

Cultural heritage issues could include, for example: erosion and sedimentation effects on important heritage locations, new finds, risks of vandalism by contractors, etc.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Cultural heritage opportunities could include, for example: protection works; support for museums, heritage festivals, 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

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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

IV-18: Public Health

This topic addresses public health issues associated with the hydropower facility. The intent is that the 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 any commitments to implement measures to address public health are delivered.

Scoring:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging public health issues associated with the facility, and if relevant to monitor 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 if relevant any public health related commitments have been or are on track to be met.
 - **Outcomes:** Negative public health impacts arising from activities of the operating 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, consideration 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 facility have been or are on track to be achieved.

Assessment Guidance:

Topic relevance: This topic will always be relevant, because even in a region with no individuals or communities living in the project affected area, there will be residents in the area due to the operating facility, and issues, risks and opportunities should be identified and planned for.

Public health issues include, for example: disease introduced by the construction workforce (e.g. HIV, Aids); 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.

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

Measures to address public health issues 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.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Public health opportunities 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, 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

IV-19: Project Catchment & Land Management

This topic addresses the degree to which relevant catchment and land management issues are understood and managed by the operating facility. The intent is that project catchment and land management measures promote positive environmental, social and economic outcomes, taking into consideration the specific role and responsibility of the operator.

Scoring:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging catchment or land issues relevant to the operating facility, and if relevant to monitor if management measures are effective.
- **Management:** Measures are in place to manage identified issues.
 - **Conformance/Compliance:** Processes and objectives relating to catchment and land management issues have been and are on track to be met with no major non-compliances or non-conformances, and if relevant any catchment and land related commitments have been or are on track to be met.
 - **Outcomes:** Catchment or land issues causing concerns to social, economic or environmental objectives in the region are minimised and mitigated in accordance with the degree of project influence; and sites disturbed by project construction activities are effectively rehabilitated.

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, consideration of ongoing or emerging catchment or land 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.
- **Outcomes:** In addition, where opportunities have been identified, measures to provide for positive enhancements in the catchment or river basin and on project lands beyond addressing impacts caused by the operating facility have been or are on track to be achieved.

Assessment Guidance:

Topic relevance: This topic will always be relevant; those projects with very small catchments may look for positive enhancements within the greater river basin.

River basin refers to the area drained by a river and all its tributaries.

Project catchment refers to 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 land means the land that is owned, utilised and/or affected by the project, including downstream riparian lands.

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

Project catchment or land issues could include those that impact on the project, for example: catchment erosion, poor water quality, access issues, future developments which might impinge directly on the project (e.g. through water diversion) or impact on the success of any project social and environmental initiatives and commitments (e.g. creation of biodiversity reserves). Alternatively they could be issues which may be impacted by the project, for example: the project interfering or not conforming with an existing catchment management plan, loss of access to and use of traditional resources by project-affected communities, etc.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Positive enhancements could include, for example: forming or participating in a catchment or river basin management committee, creation of protected areas, weed or invasive species management initiatives, creating rights of access to land and water resources for particular community groups, working with catchment residents to address land use practices, project revenue investment programs for the catchment, community development initiatives, capacity building programs such as through managing reserves, tourist facilities, side industries, projects, etc.

Potential interviewees: relevant power station or company managers; power station or company environmental and social issues managers, catchment community representatives, representatives of relevant government departments (e.g. lands, forestry, environment, wildlife), other land and catchment users, representatives of project affected communities.

Examples of evidence: construction management plans; catchment management plans; plans for project lands; land rehabilitation plans; plans for additional benefits; relevant excerpts of environmental and social impact assessments and management plans; records of stakeholder meetings; monitoring reports

IV-20: 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:

0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

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1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging reservoir management issues and if relevant to monitor 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 if relevant any water quality 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, consideration 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.
 - **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 full supply level.

Reservoir management issues include, for example: optimising power generation, maintenance requirements, debris management, multiple uses (e.g. commercial, recreational), safety, flood management, erosion/sedimentation, public access, water quality, biodiversity, invasive species, water-borne diseases, monitoring, etc.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

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

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

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

IV-21: Downstream Flow Regimes

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

Scoring:

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0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging issues relating to the operating facility's downstream flow regimes, and if relevant to monitor if management measures are effective.
- **Management:** Measures are in place to manage identified downstream flow issues.
 - **Conformance/Compliance:** 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 if relevant any downstream flow related commitments have been or are on track to be met.
 - **Outcomes:** Where commitments to downstream flow regimes have been made, these take into account environmental, social and economic objectives.

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, if a need to address downstream flow regimes has been identified, 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. If a need to address downstream flow regimes has been identified, any commitments in relation to downstream flow regimes 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:** If a need to address downstream flow regimes has been identified, the assessment and management process for downstream flow regimes has involved appropriately timed and two-way engagement with directly affected stakeholders.
 - **Conformance/Compliance:** In addition, there are no non-compliances or non-conformances.
 - **Outcomes:** Where commitments to downstream flow regimes have been made by the operator, these represent an optimal fit amongst environmental, social and economic objectives.

Assessment Guidance:

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.

Downstream flow regimes might be specified in a manner such as, for example: minimum flows in part of certain seasons, maximum flows in part of certain seasons.

If no need to address downstream flow regimes is identified, then a score of 5 would be for those projects with processes in place to anticipate and respond to emerging risks and opportunities.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

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

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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; downstream transboundary community representatives if relevant

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

IV-22: 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 hydropower facility. The intent is that there are healthy, functional and viable aquatic and terrestrial ecosystems in the region that are sustainable over the long-term; that biodiversity impacts arising from facility activities are managed responsibly; that ongoing or emerging biodiversity issues are identified and addressed as required; and that any commitments to implement biodiversity and invasive species measures are delivered.

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging biodiversity issues and if relevant to monitor 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 if relevant any 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 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, consideration 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:** There are healthy, functional and viable aquatic and terrestrial ecosystems in the region that are sustainable over the long-term.

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Assessment Guidance:

Biodiversity issues should include terrestrial biodiversity, aquatic biodiversity including passage of aquatic species and connectivity to significant habitat, and invasive species. **More detailed issues may include, for example:**

Measures to address biodiversity may include, for example: catchment protection, creation of reserves, habitat conservation, 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), choice of turbine design, etc.

Measures to address invasive species may include, for example: reservoir vegetation clearing prior to filling, 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:

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

IV-23: Erosion & Sedimentation

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

Scoring:

0 - *No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.*

1 - *A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.*

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging erosion and sedimentation issues and if relevant to monitor 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 if relevant any erosion and sedimentation related commitments have been or are on track to be met.

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- **Outcomes:** Negative erosion and sedimentation impacts arising from activities of the operating facility, and regional erosion and sedimentation issues that may impact on the 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, consideration 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 in the region.

Assessment Guidance:

Erosion and sedimentation issues must 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; 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 in the region.

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

Regional erosion and sedimentation issues that may impact on the project might, for example, be landslips or land disturbances due to other catchment activities that cause increased sediment loads into the project reservoir.

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

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Erosion and sedimentation opportunities may include, for example: addressing pollutants from non-project activities such as sewage, wastes, contaminated sites; new technologies; partnerships with research institutes or land-use groups; 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

IV-24: Water Quality

This topic addresses the management of water quality issues associated with the hydropower facility. The intent is that water quality in the vicinity of the 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 any commitments to implement measures to address water quality are delivered.

Scoring:

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0 - No relevant elements of basic good practice have been undertaken or are evident, or there are many significant gaps in the requirements for basic good practice, or there are issues of very poor quality in the efforts that have been made.

1 - A number of relevant elements of basic good practice have been undertaken, but there are several significant gaps, or issues of poor quality.

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

- 3 – **Assessment:** Processes are in place to identify any ongoing or emerging water quality issues and if relevant to monitor 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 if relevant any water quality related commitments have been or are on track to be met.
 - **Outcomes:** Negative water quality impacts arising from activities of the operating 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, consideration 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.
 - **Outcomes:** In addition, water quality in the area affected by the operating facility is of a high quality.

Assessment Guidance:

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

Assesment 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 may include, for example: design features built into the project such as a multi-level offtake; water management measures such as to ensure adequate water circulation and through-flow; vegetation management to address organic decomposition; oil and waste storage bunding or handling procedures; etc.

Commitments would be with respect to those made by the present owner/operator or other agency with the primary responsibility for delivery. If historical commitments are an issue (e.g. legacy issues), the issue should be reviewed and fresh commitments made.

Water quality opportunities may include, for example: addressing pollutants from non-project activities such as sewage, wastes, contaminated sites; new technologies; new service providers; partnerships with community waterway health monitoring groups; 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