Section IV Key Components

Note that a number of aspects are repeated from previous sections. The purpose is to enable each section to be applied as a stand-alone assessment; and because some aspects are legitimately reassessed in more than one point in the project cycle.

Section IV Economic / Technical / Governance Aspects	Section IV Social Aspects	Section IV Environmental Aspects
Transboundary Issues	Social Management Plan	Environmental Management
Corporate Governance	Cultural Heritage	Catchment Management
Financial Viability	Indigenous Peoples	Reservoir Management
Markets, Innovation and Research	Public Health	Environmental Flows and Downstream Sustainability
Management of the Hydrological Resource	Labour and Working Conditions	Biodiversity, Habitats and Protected Areas
Asset Reliability and Efficiency	Suppliers and Service Providers	Pest and Invasive Species
	Communications	Sedimentation and Erosion
	Asset and Community Safety	Water Quality
	Project Benefits	

Working Set of Section IV Aspects

9.1 Transboundary Issues

DESCRIPTION: This aspect addresses the adequacy of the legal, judicial and institutional structures relevant to transboundary issues for those projects with shared catchments, reservoirs, assets and/or downstream river systems.

This aspect is important because it promotes regional cooperation and avoids conflict.

POLICY OBJECTIVE: The objective is to ensure that the project has been developed in an economically efficient and equitable manner, taking into account sustainable development objectives and priorities of all riparians as well as upstream and downstream impacts, and to ensure that conflict was avoided or minimised.

PROCESS ATTRIBUTES:

- Level of understanding of legal, judicial and institutional structures and capacity in each of the countries involved
- Level of understanding of transboundary risks
- Quality of transboundary agreements and frameworks
- Quality of institutions for ongoing operation

PERFORMANCE ATTRIBUTES:

- Degree of conformance with relevant regional and international protocols and conventions
- Degree to which conflict is avoided
- Degree to which agreements can be reached
- Level of stakeholder support
- Level of regulator support

EXAMPLES OF EVIDENCE:

- Transboundary agreements and frameworks

9.2 Corporate Governance

DESCRIPTION: This aspect addresses corporate governance of the operator with respect to ethical business practices; addressing corruption risks; management of risk; business administration, policies and processes; corporate social responsibility; stakeholder relations; and compliance.

This aspect is important to minimise corporate reputational risk and thereby facilitate multi-stakeholder support for the project and the developer going forward.

POLICY OBJECTIVE: The objective is to ensure that the operator has sound business structures, policies and practices and that every action of the operator that could affect the project is undertaken with due attention to transparency, integrity and accountability.

PROCESS ATTRIBUTES:

- Level of comprehensiveness of business policies and processes
- Quality of the corporate risk assessment and management processes
- Quality of systems to ensure compliance
- Degree to which accountability is defined at the executive and board level
- Quality of plans to identify and mitigate corruption risks, including relationships with external partners and country and project risk

PERFORMANCE ATTRIBUTES:

- Level of compliance
- Level of transparency
- Level of conformance with established policies and procedures, both internal and external
- Level of effectiveness of risk assessment and management processes
- Level of effectiveness of corporate anti-corruption program, including relationship with external partners and country and project risk

EXAMPLES OF EVIDENCE:

- Corporate policies and programs with particular attention to sustainability, corporate social responsibility and ethics
- Corporate annual reporting
- Auditing reports

- Document setting out operator's policy and detailed program to address bribery and other corrupt practices, including addressing relationships with external partners and country and project risk

9.3 Financial Viability

DESCRIPTION: This aspect addresses both access to finance, and the ability of the project to generate the required cash flow to meet project funding requirements and fund the obligations pertaining to profit and shareholders' return and sustainability.

This aspect is important because it ensures that the implementation and operation of the project and all the associated programmes and commitments are financially viable.

POLICY OBJECTIVE: The objective is to ensure that projects proceed with a sound financial basis that supports financing, covers all project costs and enables a return to shareholders/investors.

PROCESS ATTRIBUTES:

- Level of quality of project financial model (including all planned sustainability obligations / plans / commitments)
- Level of understanding of financial obligations arising from all programme streams
- Level of access to financial information
- Level of understanding of risks and opportunities relating to cash flow

PERFORMANCE ATTRIBUTES:

- Level of ability to attract finance
- Level of ability to meet financial obligations including return to shareholders
- Degree of financial risk mitigation

EXAMPLES OF EVIDENCE:

- Financial modeling reports
- Finance risk analysis
- Assessment of favorability of long and short-term conditions of finance

9.4 Markets, Innovation and Research

DESCRIPTION: This aspect addresses both the capacity of the operators to identify marketing opportunities and to innovate the hydropower facility in order to maintain financial and technological competitiveness.

This aspect is important because a hydropower installation and its reservoir can provide many opportunities for multiple uses, such as irrigation, drought and flood management and recreation. If correctly identified these additional uses may prove beneficial for the surrounding environment and habitat and even provide additional income,

Furthermore by involving in research and innovation of the hydropower technologies and facilities, the operator can assure to stay financially competitive and to reduce potential negative impacts that an obsolete plant may induce. It is also possible to operate the hydropower project in cooperation with other renewable energies.

POLICY OBJECTIVE: The objectives are (i) to ensure that the operator explores potential marketing opportunities with regard to multiple purpose use and joint use of the facility with other renewable energy sources, and (ii) to ensure that the project is maintained at the state of the art by engaging in research and innovation in order to avoid negative impacts caused by obsolete facilities and equipment.

PROCESS ATTRIBUTES:

- Level to which business plan includes potential multiple uses
- Quality of plans to implement potential uses in project operation Quality of plans and documents to engage in research and innovation

PERFORMANCE ATTRIBUTES:

- Level of stakeholders and community involvement
- Level to which multiple uses are advertised and implemented
- Level to which the plant facilities and equipment are maintained at the state of the art

EXAMPLES OF EVIDENCE:

- Agreements with stakeholders for cooperation
- Existing business plan
- Existing multi-purpose installation
- Documents and plans for innovation of equipment and facilities or proof of conducted innovation

9.5 Management of the Hydrological Resource

DESCRIPTION: This aspect addresses the planning for short and long term management of the hydrological resource, with respect to understanding the water resource and efficiency of use in sustainable hydropower generation. This aspect must be considered in conjunction with other uses of the resource as covered in other operation activities, including downstream uses.

This aspect is important because it ensures efficient and sustainable use across water management objectives, through an understanding of the variability and longer term reliability of the hydrological resource. It also ensures the value of water allocated to power generation is maximized.

POLICY OBJECTIVE: The objectives are to understand (i) what water is available (in the short term and longer term) taking into account climate change, and (ii) to ensure efficiency of use in hydropower generation whilst meeting all environmental, social and multiple-use obligations.

PROCESS ATTRIBUTES:

- Level of understanding of hydrological resource (short and long term, variability, trends, reliability)
- Quality of hydrologic modeling and associated power system planning
- Level of integration with economic, social and environmental impact assessments

PERFORMANCE ATTRIBUTES:

- Level of efficiency of use of water resource for power generation (subject to other competing uses)
- Level of conformance to regulatory and policy requirements in relation to water use and quality (e.g., approval of conditional water rights)

- Level of longer term viability of hydropower generation in the face of water stress over time (including over a range of climate change scenarios)

EXAMPLES OF EVIDENCE:
- Analysis of long and short-term resource availability
- System modeling reports
- Analysis of efficiency constraints or opportunities arising from broader system configuration

9.6 Asset Reliability and Efficiency

DESCRIPTION: This aspect addresses the planning for short and long term management of the assets of the hydropower project with respect to maintaining their reliability and efficiency.

POLICY OBJECTIVE: The objective is to ensure the maintenance of project efficiency and security by regularly assuring that all assets of the hydropower project are kept at the state of the art and are maintained reliable and efficient.

PROCESS ATTRIBUTES:
- Quality of risk assessment
- Quality of maintenance report

PERFORMANCE ATTRIBUTES:
- A regular asset revision has been scheduled and is being implemented
- Obsolete assets are/have been repaired

EXAMPLES OF EVIDENCE:
- Reports on asset reliability and efficiency
- Proof of regular repairs and innovation

9.7 Social Management Plan

DESCRIPTION: This aspect addresses the planning for management of social impacts associated with the hydropower project operation.

This aspect is important because it identifies and assesses the social management measures to avoid, minimise, mitigate and compensate for social impacts and, where possible, enables enhancement of social benefits.

POLICY OBJECTIVE: The objective is to ensure that management measures comprehensively and effectively address social impacts for the operation stage of the project, and seek opportunities for positive impacts.

PROCESS ATTRIBUTES:
- Quality of social management planning
- Level of adequacy of capacity and resources to implement
- Degree of alignment with the social impact assessment
- Quality of participatory process (stakeholder engagement / regulator, variety of perspectives)

- Quality of mechanisms for monitoring and continual improvement throughout the life of the project

PERFORMANCE ATTRIBUTES:

- Level of well-being of groups directly and indirectly affected by the project
- Level of regulatory support for SMP
- Level of stakeholder support for SMP
- Degree to which the SMP has been integrated with project management plan
- Degree to which SMP has been costed and integrated within the overall project budget
- Degree to which the SMP has effective measures to comprehensively avoid, minimise, mitigate and compensate for social impacts and where possible enable social enhancement

EXAMPLES OF EVIDENCE:

- Existing SMP
- Agreements with stakeholders and/or regulators
- Independent expert testimony on SMP plans or contents

9.8 Cultural Heritage

DESCRIPTION: This aspect addresses the level of impact and management for protection and conservation of tangible and intangible forms cultural heritage.

This aspect is important because cultural heritage artifacts can be damaged or lost through the physical landscape changes brought about by hydropower project construction and operation, as well as through associated infrastructure impacts (e.g. new roads, transmission lines). Furthermore, non-physical cultural heritage such as traditions, festivals and rituals can also be impacted through hydropower project impacts to local communities.

POLICY OBJECTIVE: The objective is to ensure that cultural heritage has been identified, recognised and conserved.

PROCESS ATTRIBUTES:

- Comprehensiveness of the list of cultural heritage identified
- Quality of the cultural heritage management plans
- Degree to which local knowledge and expertise is utilised in assessment and development of management plans
- Quality of the consultative process

PERFORMANCE ATTRIBUTES:

- Level of stakeholder support/community acceptance
- Level of regulator support

EXAMPLES OF EVIDENCE:

- Heritage impact statements
- Conservation plans
- Heritage plans and agreements

9.9 Indigenous Peoples and Ethnic Minorities

DESCRIPTION: This aspect addresses the particular issues, risks and opportunities of the project with respect to indigenous people and ethnic minorities.

This aspect is important because indigenous peoples and ethnic minorities may be more vulnerable and face greater risks due to a hydropower development. They may need support to understand the project purpose and operation, what it means for them, what their options and rights are with respect to the project, and to not be disempowered by the project. Meaningful engagement with indigenous peoples and ethnic minorities might also help inform on other aspects (e.g. cultural heritage).

POLICY OBJECTIVE: The objective is to ensure that indigenous and ethnic minority communities affected either directly or indirectly by the project should have been specifically identified, adequately represented in any consultation process, and not adversely affected by the project.

PROCESS ATTRIBUTES:

- Quality of the identification process of indigenous people and ethnic minorities
- Understanding of legal rights as embedded in national and international law
- Quality of identification of special requirements of indigenous peoples and ethnic minorities
- Level of participation of indigenous peoples and ethnic minorities
- Comprehensiveness of the plan to address project-related issues for indigenous peoples and ethnic minorities
- Quality of the monitoring programme

PERFORMANCE ATTRIBUTES:

- Degree to which indigenous people's plan has been developed with comprehensive participation of indigenous peoples and ethnic minorities and mutually acceptable independent experts
- Level of integration of indigenous peoples and ethnic minorities issues, values and knowledge in other aspects of projectoperation
- Level of stakeholder support for project
- Level of support for project from indigenous peoples and ethnic minorities

EXAMPLES OF EVIDENCE:

- Assessment report of indigenous peoples and ethnic minorities
- Management plan
- Records of meetings and interviews

9.10 Public Health

DESCRIPTION: This aspect addresses public health risks and opportunities associated with the hydropower project throughout the project life cycle.

This aspect is important because hydropower projects can create public health risks through introduction of the construction workforce, impacts to local communities, and through creating conditions conducive to waterborne diseases (e.g. schistosomiasis). At the same time, through stimulating the local economy, developing new infrastructure and provision of electricity, water supply, and sanitation there is the potential to upgrade the existing public health facilities in the project affected area.

POLICY OBJECTIVE: The objective is to ensure that public health risks are and have been avoided and opportunities to enhance public health have been identified alongside other potential project benefits.

PROCESS ATTRIBUTES:

- Quality of assessment of public health risks and opportunities
- Quality of collection of public health baseline data
- Quality of public health management plan
- Thoroughness of identification of relevant public health standards
- Quality of the communications / engagement planning
- Degree to which an indigenous people's public health plan is developed with comprehensive participation of indigenous peoples and ethnic minorities and independent experts

PERFORMANCE ATTRIBUTES:

- Degree of mainstreaming of public health plan into public health system
- Level of public health impact and risk minimisation and mitigation
- Degree to which public health benefits are being realised
- Level of stakeholder support for public health management plan
- Level of compliance with public health legislation, standards, and management plan targets

EXAMPLES OF EVIDENCE:

- Public health risk assessment
- Assessment of public health enhancement opportunities
- Public health management plans

9.11 Labour and Working Conditions

DESCRIPTION: This aspect addresses labour and working conditions, including employee opportunity, equity, diversity, health and safety

This aspect is important because workers need to be treated fairly and protected, and expectations on labour and working conditions are well-established in national and international standards and comparable industry practice.

POLICY OBJECTIVE: This objective is to ensure that workers are treated fairly and protected.

PROCESS ATTRIBUTES:

- Quality of the labour management system
- Thoroughness of identification of relevant policy, law and standards
- Quality of the negotiation process where relevant
- Quality of issues and risk identification and prioritisation
- Quality of communications and engagement implementation
- Quality of workforce planning
- Quality of the occupational health and safety program

PERFORMANCE ATTRIBUTES:

- Level of compliance

- Degree of risk of labour conflicts or interruptions
- Degree of risk of staff safety incidents
- Levels of employee safety, occupational health and wellbeing performance
- Levels of employee equity, opportunity, diversity
- Level of engagement / relationship with labour representatives
- Level of staff satisfaction
- Levels of conflicts and disputes

EXAMPLES OF EVIDENCE:
- Staff satisfaction surveys
- Corporate policies and programs, e.g. on equity, occupational health & safety, workforce planning
- Employee and management profiles

9.12 Suppliers and Service Providers

DESCRIPTION: This aspect addresses the procurement of civil works, goods and services (including consultancies) relevant to development of the hydropower project, not just relating to the site development but also to any project-related activity including associated off-site works and social and environmental assessment and planning.

This aspect is important because (i) timely and reliable procurement of civil works contracts, services and supplies is critical for the project to meet its scheduling milestones to deliver on the development objectives; (ii) the quality of components and maximizing local procurement are important dimensions of the sustainable performance of the project, and (iii) all aspects of procurement need to be undertaken transparently and with full accountability.

POLICY OBJECTIVE: The objective is to ensure that procurement is equitable, transparent, and accountable; promotes opportunities for local industries; and articulates and ensures developer and contractor obligations for environmental, social and ethical obligations.

PROCESS ATTRIBUTES:
- Level of understanding of sustainability issues and corruption risks in procurement of project contracts, goods and services
- Degree to which sustainability issues are factored into procurement decisions and documentation
- Level of transparency in the bidding process Quality of the contractual arrangements including penalties for the developer and bidders relating to non-compliance with anti-bribery requirements
- Quality of the bidding documents, including addressing antibribery issues
- Level of independent monitoring of the procurement processes
- Quality of the contract supervision mechanisms and of the internal and external government control bodies with responsibilities on overseeing the procurement processes.
- Quality of the complaints and dispute resolution system, including an effective and timely appeal mechanisms

PERFORMANCE ATTRIBUTES:
- Degree to which local labour and industry is included
- Quality and reliability of procured goods and services

- Level of competence of the suppliers and service providers
- Degree to which procurement decisions are accepted as economically efficient, fair, transparent and accountable by project stakeholders, including civil society
- Number of disputes
- Percentage of disputes successfully resolved

EXAMPLES OF EVIDENCE:
- Tender requirements / specifications
- Evaluation of supplier performance
- Purchasing policy / procedures

9.13 Communications

DESCRIPTION: This aspect addresses the effective use of communication to measure and address expectations and risks regarding the sustainable performance of the hydropower project as seen from all stakeholder perspectives. It encompasses communication within the company, communication between the company and external stakeholders (e.g. affected communities, governments, key institutions, partners, contractors, catchment residents, etc), communication mechanisms used by the developer to ensure sound business management and stakeholder relations, and the overall level of transparency in the communications about the project.

This aspect is important because of the cross-cutting need to coherently involve people in decisions that affect them and to support functional partnerships essential to deliver sustainable performance in all dimensions of hydropower development and operation. The quality of communications (alongside quality processes and products) can greatly influence the employee, contractor, regulator and stakeholder trust and confidence in the developer, and the efficiency of business processes.

POLICY OBJECTIVE: To ensure that project communications support all aspects of the project's sustainability performance, address stakeholder perceptions and concerns, and add value for all involved.

PROCESS ATTRIBUTES:
- Degree to which analytical based-assessments are used to identify communication needs of stakeholders
- Quality of the project communications strategy (e.g. comprehensive, linked to project objectives, prepared collaboratively)
- Level of communication support for key project partnerships
- Level of communication support to empower stakeholder voices
- Quality of the processes to review, refine and adjust communication strategies over time
- Adequacy of a developer's communication unit (with qualified staff) in the project management structure to coordinate communication inputs

PERFORMANCE ATTRIBUTES:
- Degree to which stakeholder views are reflected in the project communication strategy
- Number of stakeholder complaints on lack of project status information or responsiveness to raised concerns
- Number of communication failures on key project partnerships

EXAMPLES OF EVIDENCE:
- Project communication plans and strategies
- Independent surveys
- Records of stakeholder input and feedback

9.14 Asset and Community Safety

DESCRIPTION: This aspect addresses planning for asset and community safety during the operation of the project.

This aspect is important because the first priority for dam designers, builders, owners and operators is dam safety and the protection of life, property and the environment from the consequences of dam failure and other safety risks (e.g. road, construction and water management, or personal safety of non-project locals).

POLICY OBJECTIVE: This objective is to ensure the protection of life, property and the environment from the consequences of dam failure and other safety risks.

PROCESS ATTRIBUTES:
- Quality of the safety management and monitoring plan
- Quality of the Emergency Preparedness Plan (EPP) / asset safety planning
- Quality of the auditing and reporting on safety performance
- Quality of the community and staff consultations and training for safety and EPP
- Quality of the log of complaints and suggestions
- Quality of the communications / engagement planning
- Comprehensiveness of the identification and prioritisation of risks

PERFORMANCE ATTRIBUTES:
- Degree of involvement of regulators and safety-oriented stakeholders in monitoring, testing, reporting
- Degree of effectiveness of the complaints mechanism
- Level of community participation and support
- Level of performance on safety performance statistics
- Level of adherence to planned arrangements during safety drills and incidents

EXAMPLES OF EVIDENCE:
- Safety management plans
- Emergency preparedness plans
- Safety monitoring reports and records

9.15 Project Benefits

DESCRIPTION: This aspect addresses project benefits with a particular focus on benefit sharing, including revenue sharing, entitlements and access to resources and equitable access to electricity for those in the resettlement zone and immediate project area.

This aspect is important because through project benefits there is the potential to improve livelihoods of host communities and the broader region, and to potentially support broader economic development, and through benefit sharing strategies it can clearly be demonstrated that the project adds value to all affected parties.

POLICY OBJECTIVE: The objective is to ensure that (i) opportunities for provision of benefits to the region have been identified and explored; and that (ii) opportunities for provision of benefits to project affected people have been identified and are implemented, that project affected people share in those benefits, and that they have a role in decision making on optimizing and sharing of those benefits throughout the project life.

PROCESS ATTRIBUTES:

- Quality of the project benefit analysis
- Quality of the benefit sharing assessment
- Quality of the benefit sharing plan
- Quality of the participatory process
- Quality of the monitoring, evaluation and review plan to ensure commitments are met

PERFORMANCE ATTRIBUTES:

- Level of finance secured for revenue sharing
- Level of stakeholder support
- Likelihood of extent to which opportunities identified and prioritised by project affected people can be realised.
- Extent of livelihood restitution and food security attained

EXAMPLES OF EVIDENCE:

- Benefit sharing plan
- Independent assessments of poverty, living standards, food security, access to electricity and access to resources
- Stakeholder interviews

9.16 Environmental Management Plan

DESCRIPTION: This aspect addresses the management of environmental impacts associated with the hydropower development and operation.

This aspect is important because it identifies and assesses the environmental management measures to avoid, minimise, mitigate and/or compensate for environmental impacts and, where possible, enables environmental enhancement.

POLICY OBJECTIVE: The objective is to ensure that management measures are designed to comprehensively and effectively address environment impacts for the operation of the project.

PROCESS ATTRIBUTES:

- Quality of environmental management planning
- Level of adequacy of capacity and resources to implement
- Degree of alignment with the environmental impact assessment
- Quality of participatory process (stakeholder engagement / regulator, variety of perspectives)

- Quality of mechanisms for monitoring and continual improvement throughout the life of the project

PERFORMANCE ATTRIBUTES:

- Level of regulatory support for EMP
- Level of stakeholder support for EMP
- Degree to which the EMP has been integrated with site selection, design optimisation and the project management plan
- Degree to which the EMP has effective measures to comprehensively avoid, minimise, mitigate and compensate for environmental impacts and where possible enable environmental enhancement

EXAMPLES OF EVIDENCE:

- Existing EMP
- Agreements with stakeholders and/or regulators
- Independent expert testimony on EMP plans or content
- Records of measures and processes in place which address environmental impacts

9.17 Catchment Management

DESCRIPTION: This aspect addresses the proponent's role in catchment management in relation to other stakeholders and managers.

This aspect is important because (i) the health of the catchment and present and future land uses may have implications for hydropower operations; and (ii) management actions of the developer can affect environmental, social and economic values in the catchment.

POLICY OBJECTIVE: The objective is to promote catchment management that ensures good environmental, social and economic outcomes, taking into consideration the specific role and responsibility of the proponent.

PROCESS ATTRIBUTES:

- Level of understanding of the catchment, land uses, interactions and other influences on catchment condition
- Clarity of definition of the role and responsibility of the proponent and accountability of other parties
- Quality of identification of environmental, social and economic objectives for catchment management
- Quality of the catchment management planning process
- Quality of participatory process (stakeholder engagement / regulator, variety of perspectives)
- Degree of integration of catchment management planning with broader regional conservation and land-use priorities

PERFORMANCE ATTRIBUTES:

- Degree to which the catchment management plan is achieving desired specific environmental, social and economic outcomes
- Degree to which the monitoring and adaptive management programmehas been adequately resourced and is achieving desired outcomes

- Level of regulator support
- Level of stakeholder support

EXAMPLES OF EVIDENCE:
- Design plans for land restoration and rehabilitation
- Catchment management agreements or planning
- High-value terrestrial habitat retention or protection programs

9.18 Reservoir Management

DESCRIPTION: This aspect addresses the planning for management of environmental, social and economic issues within and around the reservoir area during project development and operation.

This aspect is important because there are some particularly critical issues relevant to the reservoir area to be addressed at all stages: (i) during construction (e.g. clearing of vegetation, contaminated sites, cultural heritage); (ii) during reservoir filling (e.g. water quality, wildlife management, community impacts, land stability); and (iii) during operations (e.g. optimising power generation, integrating multiple uses, commercial uses, rights of access, safety, aesthetics). The potential for production of greenhouse gases needs assessment at the project preparation stage with feedback into siting and design considerations.

POLICY OBJECTIVE: The objective is to ensure that the reservoir is designedand managed to achieve a balance among biodiversity, habitat and ecosystem services and social and economic objectives, including power and other multi-purpose outcomes of the hydropower facility.

PROCESS ATTRIBUTES:
- Quality of identification of environmental, social and economic objectives for reservoir management
- Quality of design of the reservoirongoing operation and maintenance of the reservoir
- Quality of participatory process (stakeholder engagement / regulator, variety of perspectives)
- Quality of the assessment of greenhouse gas emissions

PERFORMANCE ATTRIBUTES:
- Degree to which reservoir designand management are achieving desired specific environmental, social and economic outcomes
- Degree to which monitoring and adaptive management programme is adequately resourced and likely to achieve desired outcomes.
- Degree to which reservoir management is fully integrated in infrastructure design, operations management and economic / financial analysis
- Level of regulator support
- Level of stakeholder support

EXAMPLES OF EVIDENCE:
- Reservoir design documents
- Model output for reservoir operations
- Documented environmental, social, and economic objectives for reservoir management

9.19 Environmental Flows and Downstream Sustainability

DESCRIPTION: This aspect addresses the design of environmental flows in relation to environmental, social and economic impacts and benefits downstream of the planned hydropower development and operation.

This aspect is important because flow regulation can affect the viability of representative ecosystems and habitats for rare, endemic and endangered fresh water dependant species, and ecosystem services as well as social and economic objectives.

POLICY OBJECTIVE: The objective is to ensure that a downstream flow regime has been designed to achieve the best fit between biodiversity, habitat, ecosystem services and social and economic objectives, including power and other multi-purpose outcomes of the hydropower facility.

PROCESS ATTRIBUTES:

- Quality of identification of environmental, social and economic objectives for environmental flows
- Level of understanding of relationship between hydrology, ecosystems and social uses
- Level of understanding of relationship between hydrology and environmental, social and economic objectives
- Quality of design of the environmental flow (e.g. pattern of flow, balance between objectives)
- Quality of participatory process (stakeholder engagement / regulator, variety of perspectives)

PERFORMANCE ATTRIBUTES:

- Degree to which the flow regime is likely to achieve environmental, social and economic objectives
- Degree to which the monitoring and adaptive management programme is adequately resourced and likely to achieve desired outcomes
- Degree to which the environmental flow is fully integrated in infrastructure design, operations management and economic / financial analyses
- Level of regulator support
- Level of stakeholder support

EXAMPLES OF EVIDENCE:

- Documented environmental, social, and economic objectives for downstream flows
- Documented measures and process in place to manage downstream flows
- Surveys or other measures of stakeholder opinion
- Investigations and scientific reports

9.20 Biodiversity, Habitats and Protected Areas

DESCRIPTION: This aspect addresses ecosystem values, habitat and specific issues such as threatened species and fish passage in the catchment, reservoir and downstream areas. It also looks at management actions to protect habitats and specific areas of high conservation value and assesses opportunities for enhancement / restoration of biodiversity resources.

This aspect is important because hydro projects can have significant impacts on biodiversity and because development of all types may create cumulative impacts on biodiversity.

POLICY OBJECTIVE: The objective is to ensure the protection of biodiversity and high conservation value areas through the operation of the project, and to enhance where practicable opportunities arise.

PROCESS ATTRIBUTES:

- Quality of identification of objectives for biodiversity and conservation area management, including target species and habitats
- Quality of plans to manage for biodiversity and conservation objectives
- Quality of participatory process (stakeholder engagement / regulator, variety of perspectives)
- Degree of integration with broader regional conservation and biodiversity priorities

PERFORMANCE ATTRIBUTES:

- Degree to which biodiversity and habitat management plan is likely to achieve objectives
- Degree to which monitoring and adaptive management programmehas been adequately resourced and is achieving objectives
- Level of regulator support
- Level of stakeholder support

EXAMPLES OF EVIDENCE:

- Research and database on biodiversity and threatened species
- Interviews with regulators
- Independent assessment by appropriately qualified individuals or groups

9.21 Pest and Invasive Species

DESCRIPTION: This aspect addresses potential impacts arising from pest and invasive species associated with the hydropower project.

This aspect is important because pests and invasive species can have significant impacts on indigenous biodiversity and the social and economic activities in the project area including the future operation of the hydropower project.

POLICY OBJECTIVE: The objective is to ensure the protection of biodiversity and social and economic values in the catchment area, reservoir and downstream environment from the impacts of pest and invasive species.

PROCESS ATTRIBUTES:

- Quality of the risk assessment of potential pests and invasive species
- Quality of planning to prevent the introduction and manage the spread of pests and invasive species, including setting objectives
- Degree of integration with broader regional pest and invasive species management programmes

PERFORMANCE ATTRIBUTES:

- Degree to which pest and invasive species management plan is achieving objectives
- Degree to which monitoring and adaptive management programme has been adequately resourced and is likely to achieve objectives
- Level of regulator support

EXAMPLES OF EVIDENCE:
- Research and database on pest and invasive species
- Interviews with regulators
- Independent assessment by appropriately qualified individuals or groups
- Reports and documents on measures and processes in place to control pests and invasive species

9.22 Sedimentation and Erosion

DESCRIPTION: This aspect addresses the management of potential impacts arising from sedimentation and erosion associated with the hydropower development.

This aspect is important because sedimentation and erosion can affect the functioning of the hydropower facility, the lifetime of the reservoir, and the environmental, social, economic values and safety in the reservoir and downstream areas.

POLICY OBJECTIVE: The objective is to ensure that the project as a whole is designed and managed to avoid, minimise and mitigate reservoir and downstream impacts related to sedimentation and erosion.

PROCESS ATTRIBUTES:
- Quality of risk assessment of potential sedimentation and erosion issues in the reservoir and downstream area
- Quality of the planning for the siting, design and operations of the hydropower project to manage risks associated with sedimentation and erosion.

PERFORMANCE ATTRIBUTES:
- Degree to which siting, design and operations of the hydropower project are likely to achieve desired level of risk management in relation to sedimentation and erosion
- Degree to which the monitoring and adaptive management programme is adequately resourced and likely to achieve desired outcomes.
- Degree to which the sedimentation and erosion management is fully integrated in site selection, design, operations planning, economic / financial analysis and environmental flow planning.
- Level of regulator support

EXAMPLES OF EVIDENCE:
- Sedimentation and erosion risk management planning
- Investigations into sedimentation and erosion issues in the reservoir and downstream
- Interviews with stakeholders and regulators

9.23 Water Quality

DESCRIPTION: This aspect addresses the management of potential impacts which the operation of a hydropower project may have on the water quality in a reservoir and in downstream areas.

POLICY OBJECTIVE: The objective is to ensure that the operator is aware of the potential impacts that the project may have and has taken the necessary steps to avoid decrease in water quality.

PROCESS ATTRIBUTES:

- Quality of risk assessment of potential decreases in water quality in the reservoir and in the downstream area.
- Quality of the planning for the operation of the hydropower project to manage impacts that the project may have on the water quality, i.e. leakages, obsolete assets and facilities

PERFORMANCE ATTRIBUTES:

- Degree to which water quality is measured, monitored and reported
- Degree to which the operation of the hydropower project is likely to mitigate or avoid changes in water quality

EXAMPLES OF EVIDENCE:

- Ledgers of water quality data
- Documents on water quality monitoring measures
- Reports on undertaken measures