Environmental and Social Checklist (Thermal Power)

Thermal power plants burn fossil fuels or biomass to generate electrical energy and heat. Mechanical power is produced by a heat engine, which transforms thermal energy from combustion of a fossil fuel into rotational energy. A generator converts that mechanical energy into electrical energy by creating relative motion between a magnetic field and a conductor. Thermal power plants can be divided based on the type of combustion or gasification: boilers, internal reciprocating engines, and combustion turbines. In addition, combined-cycle and cogeneration systems increase efficiency by utilizing heat lost by conventional combustion systems. The type of system is chosen based on the loads, the availability of fuels, and the energy requirements of the electric power generation facility.

For more details, refer to Annex A (Environmental, Health, and Safety Guidelines for Thermal Power Plants: General Description of Industry Activities)

This environmental checklist covers information relevant to combustion processes fueled by gaseous, liquid and solid fossil fuels and biomass and designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of the fuel type (except for solid waste which is covered under a separate Guideline for Waste Management Facilities), with a total rated heat input capacity above 50 Megawatt thermal input (MWth) on Higher Heating Value (HHV) basis. It applies to boilers, reciprocating engines, and combustion turbines in new and existing facilities.

Where necessary, “8. Environmental Checklist (Electric Power Transmission and Distribution)” should be referred to.

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Environmental and Social Checklist (Thermal Power)

Main Check Items
1. Project Description
1.1 Outline of project
(1) Location of the project, type of project (new plants, expansion or rehabilitation of existing facilities), general layout of thermal power plant and related facilities, type of fuel, fuel supply sources, power generation technology, power generation capacity, and project schedule.
1.2 Consideration of alternatives
(1) Process for comparative evaluation of alternatives Refer to IFC EHS Guidelines Thermal Power Plants: Table B-1 Analysis of Alternatives
2. Environmental and Social Assessment and Management System
2.1 Policy
(1) Policy The client will establish an overarching policy defining the environmental and social objectives and principles that guide the project to achieve sound environmental and social performance. The client will communicate the policy to all levels of its organization. Refer to IFC Performance Standard 1: para 6
2.2 Identification of Risks and Impacts
(1) Identification of Risks and Impacts The client will establish and maintain a process for identifying the environmental and social risks and impacts of the project. The type, scale, and location of the project guide the scope and level of effort devoted to the risks and impacts identification process. The process may comprise a full-scale environmental and social impact assessment, a limited or focused environmental and social assessment, or straightforward application of environmental siting, pollution standards, design criteria, or construction standards. Refer to IFC Performance Standard 1: para 7 – para 12
(2) Comprehensive Environmental and Social Impact Assessment For greenfield developments or large expansions with specifically identified physical elements, aspects, and facilities that are likely to generate potential significant environmental or social impacts, the client will conduct a comprehensive Environmental and Social Impact Assessment, including an examination of alternatives, where appropriate. Refer to IFC Performance Standard 1: para 7
(3) Preparers of the ESIA reports ESIA should be prepared by the client (where applicable by competent professionals). Refer to IFC Performance Standard 1: para 19
(4) Completion of the ESIA reports ESIA describes the environmental and social impacts and risks (including labor, health, and safety) of a proposed project in its area of influence, as well as compliance with the host country laws, regulations and permits and compliance with the WB/IFC Guidelines. If relevant, it may include the illustrative list of issues from a) to s) as found in Exhibit II of the EPs.
(5) Approval of the ESIA reports The Assessment process in any case should address compliance with relevant host country laws, regulations and permits that pertain to environmental and social matters.

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(6) Status of other required environmental and social permits from the appropriate regulatory authorities of the host country government The Assessment process in any case should address compliance with relevant host country laws, regulations and permits that pertain to environmental and social matters.
2.3 Management Programs
(1) Management Programs The client will establish management programs, that, in sum, will describe mitigation and performance improvement measures and actions that address the identified environmental and social risks and impacts of the project. Refer to IFC Performance Standard 1: para 13 Depending on the nature and scale of the project, these programs may consist of some documented combination of operational procedures, practices, plans, and related supporting documents (including legal agreements) that are managed in a systematic way. Refer to IFC Performance Standard 1: para 14 The level of detail and complexity of this collective management program and the priority of the identified measures and actions will be commensurate with the project's risks and impacts, and will take account of the outcome of the engagement process with Affected Communities as appropriate. Refer to IFC Performance Standard 1: para 15 The management programs will establish environmental and social Action Plans, which will define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation. Refer to IFC Performance Standard 1: para 16
2.4 Organizational Capacity and Competency
(1) Organizational Capacity and Competency The client, in collaboration with appropriate and relevant third parties, will establish, maintain, and strengthen as necessary an organizational structure that defines roles, responsibilities, and authority to implement the ESMS. Refer to IFC Performance Standard 1: para 17 Personnel within the client's organization with direct responsibility for the project's environmental and social performance will have the knowledge, skills, and experience necessary to perform their work. Refer to IFC Performance Standard 1: para 18
2.5 Emergency Preparedness and Response
(1) Emergency Preparedness and Response Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment.

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Where applicable, the client will also assist and collaborate with the potentially Affected Communities and the local government agencies in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to ensure effective response. The client will document its emergency preparedness and response activities, resources, and responsibilities, and will provide appropriate information to potentially Affected Community and relevant government agencies. Refer to IFC Performance Standard 1: para 20 Refer to IFC Performance Standard 1: para 21
2.6 Monitoring and Review
(1) Monitoring and Review The client will establish procedures to monitor and measure the effectiveness of the management program, as well as compliance with any related legal and/or contractual obligations and regulatory requirements. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities Refer to IFC Performance Standard 1: para 22 The client should use dynamic mechanisms, such as internal inspections and audits, where relevant, to verify compliance and progress toward the desired outcomes. Refer to IFC Performance Standard 1: para 23 Senior management in the client organization will receive periodic performance reviews of the effectiveness of the ESMS, based on systematic data collection and analysis. Refer to IFC Performance Standard 1: para 24
2.7 Stakeholder Engagement Refer to [*Applicability*]
(1) Stakeholder Analysis and Engagement Planning Clients should identify the range of stakeholders that may be interested in their actions and consider how external communications might facilitate a dialog with all stakeholders. Refer to IFC Performance Standard 1: para 26 The client will develop and implement a Stakeholder Engagement Plan that is scaled to the project risks and impacts and development stage, and be tailored to the characteristics and interests of the Affected Communities. Refer to IFC Performance Standard 1: para 27 In cases where the exact location of the project is not known, but it is reasonably expected to have significant impacts on local communities, the client will prepare a Stakeholder Engagement Framework, as part of its management program. Refer to IFC Performance Standard 1: para 28
(2) Disclosure of Information The client will provide Affected Communities with access to relevant information on: (i) the purpose, nature, and scale of the project; (ii) the duration of proposed project activities; (iii) any risks to and potential impacts on such communities and relevant mitigation measures; (iv) the envisaged stakeholder engagement process; and (v) the grievance mechanism. Refer to IFC Performance Standard 1: para 29
(3) Consultation When Affected Communities are subject to identified risks and adverse impacts from a project, the client will undertake a process of consultation in a manner that provides the

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Affected Communities with opportunities to express their views on project risks, impacts and mitigation measures, and allows the client to consider and respond to them. The client will tailor its consultation process to the language preferences of the Affected Communities, their decision-making process, and the needs of disadvantaged or vulnerable groups. The consultation should also focus inclusive engagement and be documented. Refer to IFC Performance Standard 1: para 30
(4) Informed Consultation and Participation For projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation (ICP) process that will build upon the steps outlined above in Consultation and will result in the Affected Communities' informed participation. The consultation process should capture both men and women's views, and reflect different concerns and priorities between genders. The client will document the process, in particular the measures taken to avoid or minimize risks to and adverse impacts on the Affected Communities, and will inform those affected about how their concerns have been considered. Refer to IFC Performance Standard 1: para 31
(5) Indigenous Peoples For projects with adverse impacts to Indigenous Peoples, the client is required to engage them in a process of ICP and in certain circumstances the client is required to obtain their Free, Prior, and Informed Consent (FPIC). The requirements related to Indigenous Peoples and the definition of the special circumstances requiring FPIC are described in Section 6.5. Refer to IFC Performance Standard 1: para 32
(6) Private Sector Responsibilities Under Government-Led Stakeholder Engagement Where stakeholder engagement is the responsibility of the host government, the client will collaborate with the responsible government agency, to the extent permitted by the agency. Refer to IFC Performance Standard 1: para 33
2.8 External Communications and Grievance Mechanism Refer to [*Applicability*]
(1) External Communications Clients will implement and maintain a procedure for external communications. In addition, clients are encouraged to make publicly available periodic reports on their environmental and social sustainability. Refer to IFC Performance Standard 1: para 34
(2) Grievance mechanism for Affected Communities Where there are Affected Communities, the client will establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the client's environmental and social performance. The client will inform the Affected Communities about the mechanism in the course of the stakeholder engagement process. Refer to IFC Performance Standard 1: para 35
2.9 Ongoing Reporting to Affected Communities
(1) Ongoing Reporting to Affected Communities The client will provide periodic reports to the Affected Communities that describe progress with implementation of the project Action Plans on issues that involve ongoing risk

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to or impacts on Affected Communities and on issues that the consultation process or grievance mechanism have identified as a concern to those Communities. Refer to IFC Performance Standard 1: para 36
3. Pollution prevention and waste minimization, pollution controls and solid and chemical waste management
3.1 Air Pollution
3.1.1 Air Pollution – Baseline data and ambient air quality standards
(1) Baseline data of ambient air quality, and compliance status with the ambient air quality standards To address adverse project impacts on existing ambient conditions, consider baseline conditions. Refer to IFC General EHS Guidelines: Table 1.1.1 WHO Ambient Air Quality Guidelines Refer to IFC EHS Guidelines Thermal Power Plants: Table B-2 Suggested Air Quality Impact Assessment Approach (Baseline)
3.1.2 Air Pollution - Conditions after the Project Implementation
(1) Type of emission sources of the project, and location of each emission source (combustion unit, open contact condenser/cooling tower system, other ancillary facilities, etc.), and compliance status with the emission standards applied to the project Refer to IFC Performance Standard 3: para 5 Refer to IFC EHS Guidelines Thermal Power Plants: Table 6 Emissions Guidelines [Page 20]
(2) Compliance status of ambient air quality around the project site with ambient air quality standards The Assessment process in any case should address compliance with relevant host country laws, regulations and permits that pertain to environmental and social matters. Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines, or other internationally recognized sources. Refer to IFC General EHS Guidelines: Table 1.1.1 WHO Ambient Air Quality Guidelines Refer to IFC EHS Guidelines Thermal Power Plants: Table B-2 Suggested Air Quality Impact Assessment Approach (Impact Assessment)
(3) Heat dissipation to the atmosphere Vapor plumes from heat-dissipation systems may have physical or aesthetic impacts due to the increased moisture and chemical content of the air, the nature and extent of these increases, and the significance of their potential environmental impacts to man's activities in the site vicinity. Refer to NUREG-1555: 5.3.3.1 Heat Dissipation to the Atmosphere [Page 5.3.3.1-1 – Page 5.3.3.1-9]
3.1.3 Air Pollution - Pollution Controls/Minimization
(1) Air Emission The primary emissions to air from the combustion of fossil fuels or biomass are sulfur dioxide (SO_2), nitrogen oxides (NOX), particulate matter (PM), carbon monoxide (CO), and greenhouse gases, such as carbon dioxide (CO_2). The amount and nature of air emissions depends on factors such as the fuel (e.g., coal, fuel oil, natural gas, or biomass), the type and design of the combustion unit (e.g., reciprocating engines, combustion turbines, or boilers), operating practices, emission control measures (e.g., primary combustion control, secondary flue gas treatment), and the overall system efficiency. Measures to prevent, minimize and control air emissions should be implemented. Refer to IFC EHS Guidelines Thermal Power Plants: Air Emissions [Page 2]
(2) Sulfur Dioxide

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The range of options for the control of sulfur oxides varies substantially because of large differences in the sulfur content of different fuels and in control costs. The choice of technology depends on a benefit-cost analysis of the environmental performance of different fuels, the cost of controls, and the existence of a market for sulfur control by-products. Refer to IFC EHS Guidelines Thermal Power Plants: Air Emissions [Page 3 – Page4] Refer to IFC EHS Guidelines Thermal Power Plants: Table1 Performance / Characteristics of FGDs
(3) Nitrogen Oxides Formation of nitrogen oxides can be controlled by modifying operational and design parameters of the combustion process. Additional treatment of NOX from the flue gas may be required in some cases depending on the ambient air quality objectives. Refer to IFC EHS Guidelines Thermal Power Plants: Air Emissions [Page 4] Refer to IFC EHS Guidelines Thermal Power Plants: Table2 Performance / Characteristics of Secondary NOx Reduction Systems
(4) Particulate Matter Particulate matter is emitted from the combustion process, especially from the use of heavy fuel oil, coal, and solid biomass. Particulate matter can also be released during transfer and storage of coal and additives, such as lime. Refer to IFC EHS Guidelines Thermal Power Plants: Air Emissions [Page 5] Refer to IFC EHS Guidelines Thermal Power Plants: Table3 Performance / Characteristics of Dust Removal Systems
(5) Other Pollutants Depending on the fuel type and quality, other air pollutants may be present in environmentally significant quantities requiring proper consideration in the evaluation of potential impacts to ambient air quality and in the design and implementation of management actions and environmental controls. Examples of additional pollutants include mercury in coal, vanadium in heavy fuel oil, and other heavy metals present in waste fuels such as petroleum coke (petcoke) and used lubricating oils. Refer to IFC EHS Guidelines Thermal Power Plants: Air Emissions [Page 6]
(6) Emissions Offsets Where these emissions values result nonetheless in excessive ambient impacts relative to local regulatory standards, the project should explore and implement site-specific offsets that result in no net increase in the total emissions of those pollutants (e.g., particulate matter, sulfur dioxide, or nitrogen dioxide) that are responsible for the degradation of the airshed. Offset provisions should be implemented before the power plant comes fully on stream. Refer to IFC EHS Guidelines Thermal Power Plants: Air Emissions [Page 6]
3.2 Water Pollution
3.2.1 Water Pollution - Baseline data and ambient water quality standards
(1) Baseline data of ambient water quality, and compliance status with the ambient water quality standards To address adverse project impacts on existing ambient conditions, consider baseline conditions.
3.2.2 Water Pollution - Conditions after the Project Implementation
(1) Wastewater sources of the project, and water quality of each wastewater (Thermal Discharge, Liquid Waste and Sanitary Wastewater) Refer to IFC Performance Standard 3: para 5
(2) Compliance status of the effluents from the project with the effluent standards applied to the project

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Refer to IFC EHS Guidelines Thermal Power Plants: Table 5 Effluent Guidelines [Page 18] Refer to IFC General EHS Guidelines: Table 1.3.1 Indicative Values for Treated Sanitary Sewage Discharges
(3) Compliance status of ambient water quality around the project site with ambient water quality standards applied to the project
3.2.3 Water Pollution - Pollution Controls/Minimization
(1) Thermal Discharges Thermal power plants with steam-powered generators and once-through cooling systems use significant volume of water to cool and condense the steam for return to the boiler. The heated water is normally discharged back to the source water (i.e., river, lake, estuary, or the ocean) or the nearest surface water body. Measures to prevent, minimize and control thermal discharges should be implemented. Refer to IFC EHS Guidelines Thermal Power Plants: Effluents [Page 9]
(2) Liquid Waste The wastewater streams in a thermal power plant include cooling tower blowdown; ash handling wastewater; wet FGD system discharges; material storage runoff; metal cleaning wastewater; and low-volume wastewater, such as air heater and precipitator wash water, boiler blowdown, boiler chemical cleaning waste, floor and yard drains and sumps, laboratory wastes, and backflush from ion exchange boiler water purification units. The characteristics of the wastewaters generated depend on the ways in which the water has been used. Refer to IFC EHS Guidelines Thermal Power Plants: Effluents [Page 10]
(3) Sanitary Wastewater Sewage and other wastewater generated from washrooms, etc. are similar to domestic wastewater. Extracted from IFC EHS Guidelines Thermal Power Plant: Effluents [Page 11] Refer to IFC General EHS Guidelines: 1.3 Wastewater and Ambient Water Quality [Page 29]
3.3 Wastes
3.3.1 Wastes - Conditions after the Project Implementation
(1) Type of wastes, generated quantity, and treatment/disposal way of each waste from the project Coal-fired and biomass-fired thermal power plants generate the greatest amount of solid wastes due to the relatively high percentage of ash in the fuel. The large-volume coal combustion wastes (CCW) are fly ash, bottom ash, boiler slag, and FGD sludge. Biomass contains less sulfur. Fluidized-bed combustion (FBC) boilers generate fly ash and bottom ash, which is called bed ash. Oil combustion wastes include fly ash and bottom ash and are normally only generated in significant quantities when residual fuel oil is burned in oil-fired steam electric boilers. Metals are constituents of concern in both CCW and low-volume solid wastes. Refer to IFC Performance Standard 3: para 5 Refer to IFC EHS Guidelines Thermal Power Plants: Solid Waste [Page 11] Refer to IFC General EHS Guidelines: 1.6 Solid and Hazardous Waste Management: General Waste Management & Hazardrous Waste Management[Page 46]
3.3.2 Wastes - Pollution Controls/Minimization
(1) Solid Wastes Coal-fired and biomass-fired thermal power plants generate the greatest amount of solid wastes due to the relatively high percentage of ash in the fuel. Ash residues are not typically classified as a hazardous waste due to their inert nature.25 However, where ash residues are expected to contain potentially significant levels of

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heavy metals, radioactivity, or other potentially hazardous materials, they should be tested at the start of plant operations to verify their classification as hazardous or non-hazardous according to local regulations or internationally recognized standards. Refer to IFC EHS Guidelines Thermal Power Plants: Solid Wastes [Page 11] Refer to IFC General EHS Guidelines: 1.6 Waste Management: General Waste Management & Hazardrous Waste Management [Page 47]
(2) Hazardous Material and Oil Hazardous materials stored and used at combustion facilities include solid, liquid, and gaseous waste-based fuels; air, water, and wastewater treatment chemicals; and equipment and facility maintenance chemicals. Refer to IFC EHS Guidelines Thermal Power Plants: Hazardous Material and Oil [Page 13] Refer to IFC General EHS Guidelines: 1.5 Hazardous Materials Management: [Page 36 – Page 45] Refer to IFC General EHS Guidelines: 3.7 Emergency Preparedness and Response [Page 86 – Page 88]
(3) Pesticide Use and Management The client will not purchase, store, use, manufacture, or trade in products that fall in WHO Recommended Classification of Pesticides by Hazard Class Ia (extremely hazardous); or Ib (highly hazardous). The client will not purchase, store, use, manufacture or trade in Class II (moderately hazardous) pesticides, unless the project has appropriate controls on manufacture, procurement, or distribution and/or use of these chemicals. Refer to IFC Performance Standard 3: para 14 Refer to IFC Performance Standard 3: para 15 Refer to IFC Performance Standard 3: para 16 Refer to IFC Performance Standard 3: para 17
3.4 Noise
3.4.1 Noise – Baseline data and ambient noise standards
(1) Baseline data of ambient noise levels , and compliance status with the ambient noise standards To address adverse project impacts on existing ambient conditions, consider baseline conditions. Refer to IFC Performance Standard 3: para 5 Refer to IFC General EHS Guidelines: Table 1.7.1- Noise Level Guidelines
3.4.2 Noise - Conditions after the Project Implementation
(1) Type of noise sources, noise levels of each source, and compliance status with the noise standards applied to the project Principal sources of noise in thermal power plants include the turbine generators and auxiliaries; boilers and auxiliaries, such as coal pulverizers; reciprocating engines; fans and ductwork; pumps; compressors; condensers; precipitators, including rappers and plate vibrators; piping and valves; motors; transformers; circuit breakers; and cooling towers. Refer to IFC EHS Guidelines Thermal Power Generation: Noise [Page 13]
(2) Compliance status of ambient noise levels around the project site with ambient noise standards applied to the project The Assessment process in any case should address compliance with relevant host country laws, regulations and permits that pertain to environmental and social matters.
3.4.3 Noise– Pollution Controls/Minimization
(1) Noise Principal sources of noise in thermal power plants include the turbine generators and auxiliaries; boilers and auxiliaries, such as coal pulverizers; reciprocating engines; fans and ductwork; pumps; compressors; condensers; precipitators, including rappers and plate vibrators; piping and valves; motors; transformers; circuit breakers; and cooling

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towers. Measures to prevent, minimize and control noise should be implemented. Refer to IFC EHS Guidelines Thermal Power Plant: Noise [Page 13] Refer to IFC General EHS Guidelines: 1.7 Noise: [Page 52]
4. Natural environment
4.1 Ecosystem
4.1.1 Protection and conservation of ecosystem - Conditions prior to the Project Implementation
(1) Ecologically sensitive areas Condition of ecologically sensitive areas, such as coral reefs, mangrove, and wetlands, in and around the project site.
(2) Modified Habitat Condition of modified Habitat that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition. Refer to IFC Performance Standard 6: para 11
(3) Natural Habitat Condition of natural habitats composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition. Refer to IFC Performance Standard 6: para 13
(4) Critical Habitat Condition of critical habitat areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes. Refer to IFC Performance Standard 6: para 16
(5) Legally Protected Areas and Internationally Recognized Areas Condition of areas that meet the IUCN definition: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." Refer to IFC Performance Standard 6: para 20
(6) Rare, threatened and endangered species Condition of rare, threatened and endangered species as defined by the IUCN Red List of Threatened Species or as defined in any national legislation, in and around the project site.
4.1.2 Protection and conservation of ecosystem - Conditions after the Project Implementation
(1) Modified Habitat The client should minimize impacts on areas of modified habitat that include significant biodiversity and implement mitigation measures as appropriate. Extract from IFC Performance Standard 6: para 12
(2) Natural Habitat The client will not significantly convert or degrade natural habitats, unless all of the following are demonstrated:

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• No other viable alternatives within the region exist for development of the project on modified habitat • Consultation has established the views of stakeholders, including Affected Communities, with respect to the extent of conversion and degradation • Any conversion or degradation is mitigated according to the mitigation hierarchy Extract from IFC Performance Standard 6: para 14 Mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Refer to IFC Performance Standard 6: para 15
(3) Critical Habitat In areas of critical habitat, the client will not implement any project activities unless all of the following are demonstrated: • No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical • The project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values •The project does not lead to a net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species over a reasonable period of time • A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program Refer to IFC Performance Standard 6: para 17
(4) Legally protected and Internationally Protected Areas In circumstances where a proposed project is located within a legally protected area or an internationally recognized area, the client will meet the requirements of 4.1.2 (2) and 4.1.2 (3) above, as applicable. In addition, the client will: • Demonstrate that the proposed development in such areas is legally permitted • Act in a manner consistent with any government recognized management plans for such areas • Consult protected area sponsors and managers, Affected Communities, Indigenous Peoples and other stakeholders on the proposed project, as appropriate • Implement additional programs, as appropriate, to promote and enhance the conservation aims and effective management of the area Refer to IFC Performance Standard 6: para 20
(5) Invasive Alien Species The client will not deliberately introduce any alien species with a high risk of invasive behavior regardless of whether such introductions are permitted under the existing regulatory framework. Refer to IFC Performance Standard 6: para 21 Refer to IFC Performance Standard 6: para 22 Where alien species are already established in the country or region of the proposed project, the client will exercise diligence in not spreading them into areas in which they have not already been established. Refer to IFC Performance Standard 6: para 23
(6) Biodiversity Offset For the protection and conservation of biodiversity, the mitigation hierarchy includes biodiversity offsets, which may be considered only after appropriate avoidance, minimization, and restoration measures have been applied.

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When a client is considering the development of an offset as part of the mitigation strategy, external experts with knowledge in offset design and implementation must be involved. Refer to IFC Performance Standard 6: para 10
4.1.3 Biodiversity Action Plan (BAP) ***Refer to [Applicability of Experts]***
(1) Biodiversity Action Plan（BAP） In such cases where a client is able to meet the requirements defined in 4.1.2(3), the project's mitigation strategy will be described in a Biodiversity Action Plan and will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated. Refer to IFC Performance Standard 1: para 16 Refer to IFC Performance Standard 6: para 18 The client should retain external experts with appropriate regional experience to assist in the development of a mitigation hierarchy that complies with the Performance Standard and to verify the implementation of those measures. Refer to IFC Performance Standard 6: para 8
4.2 Management of Ecosystem Services
(1) Management of Ecosystem Services Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Refer to IFC Performance Standard 6: para 2 Refer to IFC Performance Standard 6: para 3 Where a project is likely to adversely impact ecosystem services, as determined by the risks and impacts identification process, the client will conduct a systematic review to identify priority ecosystem services. Refer to IFC Performance Standard 6: para 24 If impacts are unavoidable, the client will minimize them and implement mitigation measures that aim to maintain the value and functionality of priority services. Refer to IFC Performance Standard 6: para 25
4.3 Sustainable management of Living Natural Resources
(1) Sustainable management of renewable natural resources Clients who are engaged in primary industries such as the production of living natural resources, including natural and plantation forestry, agriculture, animal husbandry, aquaculture, and fisheries will manage living natural resources in a sustainable manner, through the application of industry-specific good management practices and available technologies. Where such primary production practices are codified in globally, regionally, or nationally recognized standards, the client will implement sustainable management practices to one or more relevant and credible standards as demonstrated by independent verification or certification. Refer to IFC Performance Standard 6: para 26 Refer to IFC Performance Standard 6: para 27 Refer to IFC Performance Standard 6: para 28 Refer to IFC Performance Standard 6: para 29

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4.4 Supply Chain
(1) Supply Chain Where a client is purchasing primary production (especially but not exclusively food and fiber commodities) that is known to be produced in regions where there is a risk of significant conversion of natural and/or critical habitats, systems and verification practices will be adopted as part of the client's ESMS to evaluate its primary suppliers. Refer to IFC Performance Standard 6: para 30
4.5 Hydrology
(1) Hydrology 1) Baseline of hydrology 2) Predicted impacts on currents, waves and tidal currents by the project (caused by installation of offshore structures and modification of bathometry), and mitigation measures to reduce the impacts
(2) Water Consumption and Aquatic Habitat Alteration Combustion facilities using once-through cooling systems require large quantities of water which are discharged back to receiving surface water with elevated temperature. Water is also required for boiler makeup, auxiliary station equipment, ash handling, and FGD systems.17 The withdrawal of such large quantities of water has the potential to compete with other important water uses such as agricultural irrigation or drinking water sources. Withdrawal and discharge with elevated temperature and chemical contaminants such as biocides or other additives, if used, may affect aquatic organisms, including phytoplankton, zooplankton, fish, crustaceans, shellfish, and many other forms of aquatic life. Management measures to prevent or control impacts to water resources and aquatic habitats should be implemented. Refer to IFC EHS Guidelines Thermal Power Plants: Water Consumption and Aquatic Habitat Alteration [Page 8]
4.6 Topography and Geology
(1) Topography and Geology 1) Existing topography and geology features 2) Predicted impacts on alteration of topographic features and geologic structures, and mitigation measures to reduce the impacts 3) Predicted impacts on alteration of topographic features and geologic structures by installation of related facilities, and mitigation measures to reduce the impacts
5. Social environment
5.1 Labor and Working Conditions
(1) Human Resources Policies and Procedures The client will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of the Performance Standard and national law. Extract from IFC Performance Standard 2: para 8 The client will provide workers with documented information that is clear and understandable, regarding their rights under national labor and employment law and any applicable collective agreements, including their rights related to hours of work, wages, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur. Extract from IFC Performance Standard 2: para 9
(2) Working Conditions and Terms of Employment Where the client is a party to a collective bargaining agreement with a workers' organization, such agreement will be respected. Where such agreements do not exist, or do not

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address working conditions and terms of employment, the client will provide reasonable working conditions and terms of employment. Refer to IFC Performance Standard 2: para 10 The client will identify migrant workers and ensure that they are engaged on substantially equivalent terms and conditions to non-migrant workers carrying out similar work. Extract from IFC Performance Standard 2: para 11 Where accommodation services are provided to workers covered by the scope of this Performance Standard, the client will put in place and implement policies on the quality and management of the accommodation and provision of basic services. Refer to IFC Performance Standard 2: para 12
(3) Workers' Organizations In countries where national law recognizes workers' rights to form and to join workers' organizations of their choosing without interference and to bargain collectively, the client will comply with national law. Where national law substantially restricts workers' organizations, the client will not restrict workers from developing alternative mechanisms to express their grievances and protect their rights regarding working conditions and terms of employment. Refer to IFC Performance Standard 2: para 13 In either case described above, and where national law is silent, the client will not discourage workers from electing worker representatives, forming or joining workers' organizations of their choosing, or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations and collective bargaining. The client will engage with such workers' representatives and workers' organizations, and provide them with information needed for meaningful negotiation in a timely manner. Refer to IFC Performance Standard 2: para 14
(4) Non-Discrimination and Equal Opportunity The client will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. The principles of non-discrimination apply to migrant workers. Refer to IFC Performance Standard 2: para 15 Refer to IFC Performance Standard 2: para 16 Refer to IFC Performance Standard 2: para 17
(5) Retrenchment Prior to implementing any collective dismissals, the client will carry out an analysis of alternatives to retrenchment. If the analysis does not identify viable alternatives to retrenchment, a retrenchment plan will be developed and implemented to reduce the adverse impacts of retrenchment on workers. Refer to IFC Performance Standard 2: para 18 The client should ensure that all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner. Refer to IFC Performance Standard 2: para 19
(6) Grievance Mechanism for workers The client will provide a grievance mechanism for workers (and their organizations, where they exist) to raise workplace concerns. The client will inform the workers of the

Main Check Items
grievance mechanism at the time of recruitment and make it easily accessible to them. Refer to IFC Performance Standard 2: para 20
(7) Child Labor The client will not employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Children under the age of 18 will not be employed in hazardous work. All work of persons under the age of 18 will be subject to an appropriate risk assessment and regular monitoring of health, working conditions, and hours of work. Refer to IFC Performance Standard 2: para 21
(8) Forced Labor The client will not employ forced labor, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. The client will not employ trafficked persons. Refer to IFC Performance Standard 2: para 22
(9) Occupational Health and Safety The client will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the client's work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. Refer to IFC Performance Standard 2: para 23
(10) Workers Engaged by Third Parties With respect to contracted workers the client will take commercially reasonable efforts to ascertain that the third parties who engage these workers are reputable and legitimate enterprises and have an appropriate ESMS that will allow them to operate in a manner consistent with the requirements of 5.1, except for 5.1 (5) above and 5.1 (11) below. Refer to IFC Performance Standard 2: para 24 The client will establish policies and procedures for managing and monitoring the performance of such third party employers. Refer to IFC Performance Standard 2: para 25 The client will ensure that contracted workers have access to a grievance mechanism. Refer to IFC Performance Standard 2: para 26
(11) Supply Chain Where there is a high risk of child labor or forced labor in the primary supply chain, the client will identify those risks consistent with 5.1 (7) and (8) above. If child labor or forced labor cases are identified, the client will take appropriate steps to remedy them. Refer to IFC Performance Standard 2: para 27 Where there is a high risk of significant safety issues related to supply chain workers, the client will introduce procedures and mitigation measures to ensure that primary suppliers within the supply chain are taking steps to prevent or to correct life-threatening situations. Refer to IFC Performance Standard 2: para 28 Refer to IFC Performance Standard 2: para 29
5.2 Socio-economic

Main Check Items
5.2.1 Socio-economic - Conditions prior to the Project Implementation
(1) Resident living standards including employment, income sources and levels, etc.
(2) Transportation network conditions
(3) Supply conditions of goods and services (raw materials, commerce, real estates, etc.)
(4) Infrastructure conditions of housing supply, hospitals, schools, potable water supply, sewage network, sewage treatment facilities, garbage treatment facilities, etc.
5.2.2 Socio-economic - Conditions after the Project Implementation
(1) Predicted impacts on infrastructure by the project, and mitigation measures to reduce the impacts
(2) Predicted impacts on traffic by the project, and mitigation measures to reduce the impacts
(3) Predicted impacts on water use by the project, and mitigation measures to reduce the impacts
(4) Predicted impacts on supply of goods and services by the project, and mitigation measures to reduce the impacts
(5) Predicted impacts on the local economy by the project, and mitigation measures to reduce the impacts
5.3 Community Health, Safety and Security
5.3.1 Community Health, Safety and Security
(1) Infrastructure and Equipment Design and Safety ***Refer to [Applicability of Experts]*** The client will design, construct, operate, and decommission the structural elements or components of the project in accordance with GIIP (good international industry practice), taking into consideration safety risks to third parties or Affected Communities. The structural elements will be designed and constructed by competent professionals. The structural elements will be certified or approved by competent authorities or professionals. When structural elements or components, such as dams, tailings dams, or ash ponds are situated in high-risk locations, and their failure or malfunction may threaten the safety of communities, the client will engage one or more external experts with relevant and recognized experience in similar projects, separate from those responsible for the design and construction, to conduct a review as early as possible in project development and throughout the stages of project design, construction, operation, and decommissioning. Refer to IFC Performance Standard 4: para 6
(2) Hazardous Materials Management and Safety The client will avoid or minimize the potential for community exposure to hazardous materials. Exercise commercially reasonable efforts to control the safety of deliveries of hazardous materials, and of transportation and disposal of hazardous wastes, and will implement measures to avoid or control community exposure to pesticides. Refer to IFC Performance Standard 4: para 7
(3) Ecosystem Services Where appropriate and feasible, the client will identify those risks and potential impacts on priority ecosystem services that may be exacerbated by climate change. Adverse impacts should be avoided, and if these impacts are unavoidable, the client will implement mitigation measures. With respect to the use of and loss of access to provisioning services, clients will implement mitigation measures. Refer to IFC Performance Standard 4: para 8 Refer to IFC Performance Standard 5: para 25 – para 29 Refer to IFC Performance Standard 6: para 24 and para 25
(4) Community Exposure to Disease

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The client will avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, and communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. Refer to IFC Performance Standard 4: para 9 The client will avoid or minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent project labor. Extract from IFC Performance Standard 4: para 10
(5) Emergency Preparedness and Response The client will assist and collaborate with the Affected Communities, local government agencies, and other relevant parties, in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to respond to such emergency situations. The client will document its emergency preparedness and response activities, resources, and responsibilities, and will disclose appropriate information to Affected Communities, relevant government agencies, or other relevant parties. Refer to IFC Performance Standard 4: para 11
(6) Security Personnel When the client retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the project site. In making such arrangements, the client will be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, and by applicable law. The client will assess and document risks arising from the project's use of government security personnel deployed to provide security services. The client will consider and, where appropriate, investigate all allegations of unlawful or abusive acts of security personnel, take action (or urge appropriate parties to take action) to prevent recurrence, and report unlawful and abusive acts to public authorities. Refer to IFC Performance Standard 4: para 12 Refer to IFC Performance Standard 4: para 13 Refer to IFC Performance Standard 4: para 14
5.3.2 Community Health and Safety for Thermal Power Plant
(1) Water Consumption Boiler units require large amounts of cooling water for steam condensation and efficient thermal operation. The cooling water flow rate through the condenser is by far the largest process water flow, normally equating to about 98 percent of the total process water flow for the entire unit. In a once-through cooling water system, water is usually taken into the plant from surface waters, but sometimes ground waters or municipal supplies are used. The potential effects of water use should be assessed Refer to IFC EHS Guidelines Thermal Power Plants: Community Health and Safety [Page 16 - Page 17] Refer to IFC General EHS Guidelines: 3.1 Water Quality and Availability [Page 77 – Page 78]
(2) Traffic Safety Operation of a thermal power plant will increase traffic volume, in particular for facilities with fuels transported via land and sea, including heavy trucks carrying fuel, additives, etc. The increased traffic can be especially significant in sparsely populate areas where some thermal power plants are located. Refer to IFC General EHS Guidelines: 3.4 Traffic Safety [Page 81 – Page82] Refer to IFC EHS Guidelines Shipping: 1.3 Community Health and Safety [Page 12]
5.3.3 Community Health and Safety Plan

Main Check Items
(1) Community Health and Safety Plan The management programs will establish environmental and social Action Plans, which will define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation. Refer to IFC Performance Standard 1: para 16
5.4 Land acquisition and involuntary resettlement
5.4.1 Land acquisition and involuntary resettlement – General
(1) Project Design The client will consider feasible alternative project designs to avoid or minimize physical and/or economic displacement(*), while balancing environmental, social, and financial costs and benefits, paying particular attention to impacts on the poor and vulnerable. Extract from IFC Performance Standard 5: para 8 (*) Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. Refer to IFC Performance Standard 5: para 1
(2) Compensation and Benefits for Displaced Persons When displacement cannot be avoided, the client will offer displaced communities and persons compensation for loss of assets at full replacement cost and other assistance to help them improve or restore their standards of living or livelihoods. The client will take possession of acquired land and related assets only after compensation has been made available and, where applicable, resettlement sites and moving allowances have been provided to the displaced persons in addition to compensation. Refer to IFC Performance Standard 5: para9
(3) Community Engagement The client will engage with Affected Communities, including host communities, through the process of stakeholder engagement. Disclosure of relevant information and participation of Affected Communities and persons will continue during the planning, implementation, monitoring, and evaluation of compensation payments, livelihood restoration activities, and resettlement to achieve outcomes. Refer to IFC Performance Standard 5: para 10
(4) Grievance mechanism The client will establish a grievance mechanism consistent with Performance Standard 1 as early as possible in the project development phase. This will allow the client to receive and address specific concerns about compensation and relocation raised by displaced persons or members of host communities in a timely fashion, including a recourse mechanism designed to resolve disputes in an impartial manner. Extract from IFC Performance Standard 5: para 11
(5) Resettlement and Livelihood Restoration Planning and Implementation Where involuntary resettlement is unavoidable, either as a result of a negotiated settlement or expropriation, a census will be carried out to collect appropriate socio-economic baseline data to identify the persons who will be displaced by the project, determine who will be eligible for compensation and assistance, and discourage ineligible persons, such as opportunistic settlers, from claiming benefits. In the absence of host government procedures, the client will establish a cut-off date for eligibility. Information regarding the cut-off date will be well documented and disseminated throughout the project area. Refer to IFC Performance Standard 5: para 12

Main Check Items
In cases where affected persons reject compensation offers that meet the requirements of the Performance Standard and, as a result, expropriation or other legal procedures are initiated, the client will explore opportunities to collaborate with the responsible government agency, and, if permitted by the agency, play an active role in resettlement planning, implementation, and monitoring. Refer to IFC Performance Standard 5: para 13 The client will establish procedures to monitor and evaluate the implementation of a Resettlement Action Plan or Livelihood Restoration Plan and take corrective action as necessary. Refer to IFC Performance Standard 5: para 14 The external completion audit of the Resettlement Action Plan or Livelihood Restoration Plan should be undertaken once all mitigation measures have been substantially completed and once displaced persons are deemed to have been provided adequate opportunity and assistance to sustainably restore their livelihoods. The completion audit will be undertaken by competent resettlement professionals once the agreed monitoring period is concluded. Refer to IFC Performance Standard 5: para 15 Where the exact nature or magnitude of the land acquisition or restrictions on land use related to a project with potential to cause physical and/or economic displacement is unknown due to the stage of project development, the client will develop a Resettlement and/or Livelihood Restoration Framework outlining general principles compatible with the Performance Standard. Refer to IFC Performance Standard 5: para 16
5.4.2 Land acquisition and involuntary resettlement – Displacement
(1) Classification of displaced persons Displaced persons may be classified as persons: (i) who have formal legal rights to the land they occupy or use; (ii) who do not have formal legal rights to land or assets, but have a claim to land that is recognized or recognizable under the national law; or (iii) who have no recognizable legal right or claim to the land or assets they occupy or use. The census will establish the status of the displaced persons. Refer to IFC Performance Standard 5: para 17
(2) Physical Displacement In the case of physical displacement, the client will develop a Resettlement Action Plan. Particular attention will be paid to the needs of the poor and the vulnerable. The client will document all transactions to acquire land rights, as well as compensation measures and relocation activities. Refer to IFC Performance Standard 5: para 19 If people living in the project area are required to move to another location, the client will (i) offer displaced persons choices among feasible resettlement options, including adequate replacement housing or cash compensation where appropriate; and (ii) provide relocation assistance suited to the needs of each group of displaced persons.

Main Check Items
New resettlement sites built for displaced persons must offer improved living conditions. Refer to IFC Performance Standard 5: para 20 Refer to IFC Performance Standard 5: para 21 (In case of displaced persons with legal rights to the land or rights recognized by national laws) Refer to IFC Performance Standard 5: para 22 (In case of displaced persons with no legal rights to the land) Forced evictions will not be carried out except in accordance with law and the requirements of the Performance Standard. Refer to IFC Performance Standard 5: para 24 Note: The requirements of physical displacement differ depending upon the Classification as mentioned in 5.4.2 (1) Classification of displaced persons
(3) Economic Displacement In the case of projects involving economic displacement only, the client will develop a Livelihood Restoration Plan to compensate affected persons and/or communities and offer other assistance that meet the objectives of the Performance Standard. Refer to IFC Performance Standard 5: para 25 Economically displaced persons who face loss of assets or access to assets will be compensated for such loss at full replacement cost. ● In cases where land acquisition or restrictions on land use affect commercial structures, affected business owners will be compensated for the cost of reestablishing commercial activities elsewhere, for lost net income during the period of transition, and for the costs of the transfer and reinstallation of the plant, machinery, or other equipment. ● In cases affecting persons with legal rights or claims to land which are recognized or recognizable under national law (see 5.4.2 (1) (i) and (ii)), replacement property (e.g., agricultural or commercial sites) of equal or greater value will be provided, or, where appropriate, cash compensation at full replacement cost. ● Economically displaced persons who are without legally recognizable claims to land (see 5.4.2 (1) (iii)) will be compensated for lost assets other than land (such as crops, irrigation infrastructure and other improvements made to the land), at full replacement cost. The client is not required to compensate or assist opportunistic settlers who encroach on the project area after the cut-off date for eligibility. Refer to IFC Performance Standard 5: para 27 In addition to compensation for lost assets, if any, as required above, economically displaced persons whose livelihoods or income levels are adversely affected will also be provided opportunities to improve, or at least restore, their means of income-earning capacity, production levels, and standards of living: ● For persons whose livelihoods are land-based, replacement land that has a combination of productive potential, locational advantages, and other factors at least equivalent to that being lost should be offered as a matter of priority. ● For persons whose livelihoods are natural resource-based and where project-related restrictions on access envisaged in 5.5.1 (1) apply, implementation of measures will be made to either allow continued access to affected resources or provide access to alternative resources with equivalent livelihood-earning potential and accessibility. Where appropriate, benefits and compensation associated with natural resource usage may be collective in nature rather than directly oriented towards individuals or households. ● If circumstances prevent the client from providing land or similar resources as described above, alternative income earning opportunities may be provided, such as credit facilities, training, cash, or employment opportunities. Cash compensation alone, however, is frequently insufficient to restore livelihoods. Refer to IFC Performance Standard 5: para 28

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Refer to IFC Performance Standard 5: para 29
5.4.3 Land acquisition and involuntary resettlement – Private sector responsibilities under government – managed resettlement
(1) Private sector responsibilities under government – managed resettlement In case of acquisition of land rights of access to land through compulsory means or negotiated settlements involving physical displacement, the client will identify and describe government resettlement measures. If these measures do not meet the relevant requirements of this Performance Standard, the client will prepare a Supplemental Resettlement Plan that, together with the documents prepared by the responsible government agency, will address the relevant requirements of this Performance Standard (the General Requirements and requirements for Physical Displacement and Economic Displacement above). Where land acquisition and resettlement are the responsibility of the government, the client will collaborate with the responsible government agency, to the extent permitted by the agency, to achieve outcomes that are consistent with this Performance Standard. In addition, where government capacity is limited, the client will play an active role during resettlement planning, implementation, and monitoring, as described in paragraphs 23 through 25 of IFC Performance Standard 5. Refer to IFC Performance Standard 5: para 30 Refer to IFC Performance Standard 5: para 31 Refer to IFC Performance Standard 5: para 32
5.5 Indigenous Peoples
5.5.1 Indigenous Peoples – Host country laws and regulations for indigenous peoples
(1) Definitions of indigenous peoples, human rights, traditional natural resource use, traditional land use, traditional cultural properties, protected areas. In the Performance Standard, the term “Indigenous Peoples” is used in a generic sense to refer to a distinct social and cultural group possessing characteristics in varying degrees. The Performance Standard applies to communities or groups of Indigenous Peoples who maintain a collective attachment, i.e., whose identity as a group or community is linked, to distinct habitats or ancestral territories and the natural resources therein. The client may be required to seek inputs from competent professionals to ascertain whether a particular group is considered as Indigenous Peoples for the purpose of the Performance Standard. Refer to IFC Performance Standard 7: para 4 Refer to IFC Performance Standard 7: para 5 Refer to IFC Performance Standard 7: para 6 Refer to IFC Performance Standard 7: para 7
5.5.2 Indigenous Peoples – Conditions prior to the Project Implementation
(1) Identification of indigenous people communities The client will identify, through an environmental and social risks and impacts assessment process, all communities of Indigenous Peoples within the project area of influence who may be affected by the project. Refer to IFC Performance Standard 7: para 8
5.5.3 Indigenous Peoples – Protection
(1) Avoidance of Adverse Impacts

Main Check Items
The client will identify the nature and degree of the expected direct and indirect economic, social, cultural (including cultural heritage), and environmental impacts on them. Refer to IFC Performance Standard 7: para 8 Adverse impacts on Affected Communities of Indigenous Peoples should be avoided where possible. Where alternatives have been explored and adverse impacts are unavoidable, the client will minimize, restore, and/or compensate for these impacts in a culturally appropriate manner commensurate with the nature and scale of such impacts and the vulnerability of the Affected Communities of Indigenous Peoples. Refer to IFC Performance Standard 7: para 9
(2) Participation and Consent For projects with adverse impacts to Indigenous Peoples, the client is required to engage them in a process of ICP and in certain circumstances the client is required to obtain their Free, Prior, and Informed Consent (FPIC). The requirements related to Indigenous Peoples and the definition of the special circumstances requiring FPIC are described in Performance Standard 7. Refer to IFC Performance Standard 1: para 32 The client will undertake an engagement process with the Affected Communities of Indigenous Peoples as required in Performance Standard 1. Refer to IFC Performance Standard 7: para 10 Affected Communities of Indigenous Peoples may be particularly vulnerable to the loss of, alienation from or exploitation of their land and access to natural and cultural resources. In recognition of this vulnerability, in addition to the General Requirements of this Performance Standard, the client will obtain the FPIC of the Affected Communities of Indigenous Peoples in the circumstances described in paragraphs 13–17 of this Performance Standard. The client will document: (i) the mutually accepted process between the client and Affected Communities of Indigenous Peoples, and (ii) evidence of agreement between the parties as the outcome of the negotiations. Refer to IFC Performance Standard 7: para 11 and 12 Refer to IFC Performance Standard 7: para 13- para 17
(3) Mitigation and Development Benefits The client and the Affected Communities of Indigenous Peoples will identify mitigation measures in alignment with the mitigation hierarchy described in Performance Standard 1 as well as opportunities for culturally appropriate and sustainable development benefits. Refer to IFC Performance Standard 7: para 18 Refer to IFC Performance Standard 7: para 19 Refer to IFC Performance Standard 7: para 20
(4) Impacts on Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use ***Refer to [Applicability of Experts]*** If the client proposes to locate a project on, or commercially develop natural resources on lands traditionally owned by, or under the customary use of, Indigenous Peoples, and adverse impacts can be expected, the client will take the following steps: ● Document efforts to avoid and otherwise minimize the area of land proposed for the project ● Document efforts to avoid and otherwise minimize impacts on natural resources and natural areas of importance to Indigenous People

Main Check Items
● Identify and review all property interests and traditional resource uses prior to purchasing or leasing land ● Assess and document the Affected Communities of Indigenous Peoples' resource use without prejudicing any Indigenous Peoples' land claim. The assessment of land and natural resource use should be gender inclusive and specifically consider women's role in the management and use of these resources ● Ensure that Affected Communities of Indigenous Peoples are informed of their land rights under national law, including any national law recognizing customary use rights ● Offer Affected Communities of Indigenous Peoples compensation and due process in the case of commercial development of their land and natural resources, together with culturally appropriate sustainable development opportunities Refer to IFC Performance Standard 7: para 14 The client will engage external experts to assist in the identification of the project risks and impacts. Refer to IFC Performance Standard 7: para 11
(5) Relocation of Indigenous Peoples from Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use ***Refer to [Applicability of Experts]*** The client will consider feasible alternative project designs to avoid the relocation of Indigenous Peoples from communally held lands and natural resources subject to traditional ownership or under customary use. If such relocation is unavoidable the client will not proceed with the project unless FPIC has been obtained. Refer to IFC Performance Standard 7: para 15 The client will engage external experts to assist in the identification of the project risks and impacts. Refer to IFC Performance Standard 7: para 11
(6) Critical Cultural Heritage ***Refer to [Applicability of Experts]*** Where significant project impacts on critical cultural heritage are unavoidable, the client will obtain the FPIC of the Affected Communities of Indigenous Peoples. Refer to IFC Performance Standard 7: para 16 Where a project proposes to use the cultural heritage including knowledge, innovations, or practices of Indigenous Peoples for commercial purposes, the client will inform the Affected Communities of Indigenous Peoples of (i) their rights under national law; (ii) the scope and nature of the proposed commercial development; (iii) the potential consequences of such development; and (iv) obtain their FPIC. Refer to IFC Performance Standard 7: para 17 The client will engage external experts to assist in the identification of the project risks and impacts. Refer to IFC Performance Standard 7: para 11
(7) Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues Where the government has a defined role in the management of Indigenous Peoples issues in relation to the project, the client will collaborate with the responsible government agency, to the extent feasible and permitted by the agency, to achieve outcomes that are consistent with the objectives of the Performance Standard. Refer to IFC Performance Standard 7: para 21

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The client will prepare a plan that, together with the documents prepared by the responsible government agency, will address the relevant requirements of this Performance Standard. Refer to IFC Performance Standard 7: para 22
5.5.4 Indigenous Peoples Plan (IPP)
(1) Where specific mitigation measures and actions are necessary for the project to comply with applicable laws and regulations and to meet the requirements of Performance Standards 1 through 8, prepare an Action Plan. The IPP is prepared in a flexible and pragmatic manner, and its level of detail varies depending on the specific project and the nature of the effects to be addressed. Refer to IFC Performance Standard 1: para 29
5.6 Cultural property and heritage
5.6.1 Cultural property and heritage – Conditions prior to the Project Implementation
(1) Tangible forms of cultural heritage Condition of tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures, having archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values as well as unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls in and around the project site. Refer to IFC Performance Standard 8: para 3
(2) Intangible forms of culture Condition of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles in and around the project site. Refer to IFC Performance Standard 8: para 3
(3) Critical Cultural Heritage Condition of critical cultural heritage which consists of one or both of the following types of cultural heritage: (i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; or (ii) legally protected cultural heritage areas Refer to IFC Performance Standard 8: para 13
5.6.2 Cultural property and heritage – Protection
(1) Internationally Recognized Practices In addition to complying with applicable law on the protection of cultural heritage, including national law implementing the host country's obligations under the Convention Concerning the Protection of the World Cultural and Natural Heritage, the client will identify and protect cultural heritage by ensuring that internationally recognized practices for the protection, field-based study, and documentation of cultural heritage are implemented. Refer to IFC Performance Standard 8: para 6
(2) Chance Find Procedures The environmental and social risks and impacts identification process should determine whether the proposed location of a project is in areas where cultural heritage is expected to be found, either during construction or operations. Refer to IFC Performance Standard 8: para 8
(3) Consultation

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Where a project may affect cultural heritage, the client will consult with affected Communities within the host country who use, or have used within living memory, the cultural heritage for long-standing cultural purposes to identify cultural heritage of importance, and to incorporate into the client's decision-making process the views of the Affected Communities on such cultural heritage. Refer to IFC Performance Standard 8: para 9
(4) Community Access Where the client's project site contains cultural heritage or prevents access to previously accessible cultural heritage sites being used by, or that have been used by, Affected Communities within living memory for long-standing cultural purposes, the client will, based on consultations under the 5.6.2 (3), allow continued access to the cultural site or will provide an alternative access route, subject to overriding health, safety, and security considerations. Refer to IFC Performance Standard 8: para 10
(5) Removal of Replicable Cultural Heritage Where the client has encountered tangible cultural heritage that is replicable and not critical, the client will apply mitigation measures that favor avoidance. Where avoidance is not feasible, the client will apply a mitigation hierarchy as follows: ● Minimize adverse impacts and implement restoration measures, in situ, that ensure maintenance of the value and functionality of the cultural heritage, including maintaining or restoring any ecosystem processes needed to support it ● Where restoration in situ is not possible, restore the functionality of the cultural heritage, in a different location, including the ecosystem processes needed to support it ● The permanent removal of historical and archeological artifacts and structures is carried out according to the principles of 5.6.2 (1) above ● Only where minimization of adverse impacts and restoration to ensure maintenance of the value and functionality of the cultural heritage are demonstrably not feasible, and where the Affected Communities are using the tangible cultural heritage for long-standing cultural purposes, compensate for loss of that tangible cultural heritage. Refer to IFC Performance Standard 8: para 11
(6) Removal of Non-Replicable Cultural Heritage Most cultural heritage is best protected by preservation in its place. The client will not remove any nonreplicable cultural heritage, unless certain conditions are met. Refer to IFC Performance Standard 8: para 12
(7) Critical Cultural Heritage The client should not remove, significantly alter, or damage critical cultural heritage. In exceptional circumstances, the client will use a process of Informed Consultation and Participation (ICP) of the Affected Communities as described in Performance Standard 1 and which uses a good faith negotiation process that results in a documented outcome. Legally protected cultural heritage areas are important for the protection and conservation of cultural heritage, and additional measures are needed. Refer to IFC Performance Standard 8: para 14 Refer to IFC Performance Standard 8: para 15
(8) Project's Use of Cultural Heritage Where a project proposes to use the cultural heritage of local communities for commercial purposes, the client will inform these communities of their rights under national law, the scope and nature of the proposed commercial development and potential consequences of such development. Refer to IFC Performance Standard 8: para 16
(9)Assessment relating to the cultural heritage ***Refer to [Applicability of Experts]*** The client will retain external experts to assist in the assessment and protection of critical cultural heritage.

Main Check Items
Refer to IFC Performance Standard 8: para 7
5.7 Landscape
(1) Location and type of visual resources, main viewpoints, etc. (2) Distance from the project site to each aesthetic resource Predicted changes on landscape by the project, and mitigation measures to reduce the impacts
6. Impacts during Construction
(1) Predicted impacts by pollution, and mitigation measures to reduce the impacts Where historical pollution such as land or ground water contamination exists, the client will seek to determine whether it is responsible for mitigation measures. If it is determined that the client is legally responsible, then these liabilities will be resolved in accordance with national law, or where this is silent, with GIIP. Refer to IFC Performance Standard 3: para 10 Guidance on techniques for prevention, minimization and control of the potential for the release of pollutants and materials. Refer to IFC General EHS Guidelines: Construction and Decommissioning [Page 89]
(2) Predicted impacts on natural environment, and mitigation measures to reduce the impacts
(3) Predicted impacts on social environment and mitigation measures to reduce the impacts
(4) Occupational Health and safety during construction Guidance on the prevention and control of over-extension and ergonomic injuries and illnesses; A fall protection plan; Prevention of slip and falls from the same elevation; Prevention and control of the potential fall of materials and ejection of solid particles; Prevention and control of temporary hazards associated with vehicle traffic and use of lifting equipment. Refer to IFC General EHS Guidelines: 4.2 Occupational Health and Safety [Page 92 – Page 94]
(5) Community Health and safety during construction Projects should implement risk management strategies to protect the community from physical, chemical, or other hazards associated with sites under construction. Refer to IFC General EHS Guidelines: 4.3 Community Health and Safety [Page 94 – Page 95]
7. Accident Prevention Measures
7.1 Occupational health and safety
(1) Non-ionizing radiation Combustion facility workers may have a higher exposure to electric and magnetic fields (EMF) than the general public due to working in proximity to electric power generators, equipment, and connecting high-voltage transmission lines. Occupational EMF exposure should be prevented or minimized through the preparation and implementation of an EMF safety program Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 14]
(2) Heat Occupational exposure to heat occurs during operation and maintenance of combustion units, pipes, and related hot equipment. Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 14]
(3) Noise

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Noise sources in combustion facilities include the turbine generators and auxiliaries; boilers and auxiliaries, such as pulverizers; diesel engines; fans and ductwork; pumps; compressors; condensers; precipitators, including rappers and plate vibrators; piping and valves; motors; transformers; circuit breakers; and cooling towers. Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 15]
(4) Confined spaces Specific areas for confined space entry may include coal ash containers, turbines, condensers, and cooling water towers (during maintenance activities). Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 15] Refer to IFC General EHS Guidelines: 2.8 Special Hazard Environments [Page 74]
(5) Electrical hazards Energized equipment and power lines can pose electrical hazards for workers at thermal power plants. Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 15]
(6) Fire and explosion hazards Thermal power plants store, transfer, and use large quantities of fuels; therefore, careful handling is necessary to mitigate fire and explosion risks. In particular, fire and explosion hazards increase as the particle size of coal is reduced. Particle sizes of coal that can fuel a propagating explosion occur within thermal dryers, cyclones, baghouses, pulverized-fuel systems, grinding mills, and other process or conveyance equipment. Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 15] Refer to IFC General EHS Guidelines: 2.1 General Facility Design and Operation [Page 61] Refer to IFC General EHS Guidelines: 2.4 Chemical Hazards [Page 69]
(7) Chemical hazards Thermal power plants utilize hazardous materials, including ammonia for NOX control systems, and chlorine gas for treatment of cooling tower and boiler water. Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 16] Refer to IFC General EHS Guidelines: 2.4 Chemical Hazards [Page 69]
(8) Dust Dust is generated in handing solid fuels, additives, and solid wastes (e.g., ash). Dust may contain silica (associated with silicosis), arsenic (skin and lung cancer), coal dust (black lung), and other potentially harmful substances. Extracted from IFC EHS Guidelines Thermal Power Plants: Occupational Health and Safety[Page 16] Refer to IFC General EHS Guidelines: 2.1 General Facility Design and Operation [Page 61] Refer to IFC General EHS Guidelines: 2.4 Chemical Hazards [Page 69]
(9) Hazardous materials If the generated waste is considered hazardous, the client will adopt GIIP alternatives for its environmentally sound disposal while adhering to the limitations applicable to its transboundary movement. Projects which manufacture, handle, use, or store hazardous materials should establish management programs that are commensurate with the potential risks present. The main objectives of projects involving hazardous materials should be the protection of the workforce and the prevention and control of releases and accidents. These objectives should be addressed by integrating prevention and control measures, management actions, and procedures into day-to-day business activities. Refer to IFC General EHS Guidelines: General Hazardous Materials Management [Page 37]

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When hazardous waste disposal is conducted by third parties, the client will use contractors that are reputable and legitimate enterprises licensed by the relevant government regulatory agencies and obtain chain of custody documentation to the final destination. Refer to IFC Performance Standard 3: para 12
(10) Emergency preparedness and response Where the project involves specifically identified physical elements, aspects and facilities that are likely to generate impacts, the ESMS will establish and maintain an emergency preparedness and response system so that the client, in collaboration with appropriate and relevant third parties, will be prepared to respond to accidental and emergency situations associated with the project in a manner appropriate to prevent and mitigate any harm to people and/or the environment. Where applicable, the client will also assist and collaborate with the potentially Affected Communities and the local government agencies in their preparations to respond effectively to emergency situations, especially when their participation and collaboration are necessary to ensure effective response. The client will document its emergency preparedness and response activities, resources, and responsibilities, and will provide appropriate information to potentially Affected Community and relevant government agencies. Refer to IFC Performance Standard 1: para 20 Refer to IFC Performance Standard 1: para 21
8. Decommissioning
(1) Outline of decommissioning Decommissioning facilities, decommissioning period, site-clearance verification procedures stipulated by host country regulations for decommissioning. Refer to IFC General EHS Guidelines: 4.0 Construction and Decommissioning [Page 89]
9. Monitoring ***Refer to [Applicability]***
9.1 Environmental Monitoring
(1) Environmental Monitoring Additional guidance on applicable sampling and analytical methods for emissions and effluents in monitoring for air, water, solid and hazardous waste, and noise. Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the particular project. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities. Refer to IFC Performance Standard 1: para 22 – para 24 Refer to IFC EHS Guidelines Thermnal Power Plants: Environmental Monitoring [Page 19] Refer to IFC EHS Guidelines Thermal Power Plants: Table5 Effluent Guidelines Refer to IFC EHS Guidelines Thermal Power Plants: Table6 Emissions Guidelines Refer to IFC EHS Guidelines Thermal Power Plants: Table7 Typical Air Emission Monitoring Parameters / Frequency for Thermal Power Plants Refer to IFC General EHS Guidelines: Air Quality [Page 10 – Page 11] Refer to IFC General EHS Guidelines: Water Quality [Page 30 – Page 31] Refer to IFC General EHS Guidelines: Waste Management [Page 50 – Page 51] Refer to IFC General EHS Guidelines: Noise Levels [Page 53]
9.2 Occupational Health and Safety Monitoring
(1) Occupational Health and Safety Monitoring The working environment should be monitored for occupational hazards relevant to the specific project. Monitoring should be designed and implemented by accredited

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professionals as part of an occupational health and safety monitoring program. Facilities should also maintain a record of occupational accidents and diseases and dangerous occurrences and accidents. Where appropriate, clients will consider involving representatives from Affected Communities to participate in monitoring activities. Refer to IFC Performance Standard 1: para 22 – para 24 Refer to IFC EHS Guidelines Thermal Power Plants: Table 8 ICNIRP exposure limits for occupational exposure to electric and magnetic fields Refer to IFC General EHS Guidelines: 2.9 Monitoring [Page 75 - 76]
10. Others
10.1 Cumulative Impacts
10.1.1 Existing projects, the Proposed Project, and Anticipated Future Projects
(1) Further planned development of the project Refer to IFC Performance Standard 1: para 8
(2) Other related development projects (type, location, scale, proponent, etc.) Refer to IFC Performance Standard 1: para 8
10.1.2 Predicted cumulative Impacts
(1) Predicted cumulative impacts by further planned development of the project Refer to IFC Performance Standard 1: para 8
(2) Predicted cumulative impacts by further planned development of the project and the other related projects Refer to IFC Performance Standard 1: para 8
10.2 Efficient production, delivery and use of energy
(1) Efficient production, delivery and use of energy The client will implement technically and financially feasible and cost effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities. Refer to IFC Performance Standard 3: para 6 Energy management at the facility level should be viewed in the context of overall consumption patterns, including those associated with production processes and supporting utilities, as well as overall impacts associated with emissions from power sources. Refer to IFC General EHS Guidelines: 1.2 Energy Conservation [Page 18 – Page 24]
(2) Water Consumption When the project is a potentially significant consumer of water, the client shall adopt measures that avoid or reduce water usage so that the project's water consumption does not have significant adverse impacts on others. Refer to IFC Performance Standard 3: para 9
10.3 Greenhouse Gas Emissions
(1) Quantity of direct GHG emissions For projects that are expected to or currently produce more than 25,000 tonnes of CO_2-equivalent annually, the client will quantify direct emissions from the facilities owned or controlled within the physical project boundary. Refer to IFC Performance Standard 3: para 8

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(2) Quantity of indirect GHG emissions For projects that are expected to or currently produce more than 25,000 tonnes of CO_2-equivalent annually, the client will quantify indirect emissions associated with the off-site production of energy used by the project. Refer to IFC Performance Standard 3: para 8
(3) Quantification and monitoring of GHG emissions For projects that are expected to or currently produce more than 25,000 tonnes of CO_2-equivalent annually, quantification of GHG emissions will be conducted by the client annually in accordance with internationally recognized methodologies and good practice. Refer to IFC Performance Standard 3: para 8
(4) Options to reduce GHG emissions The client will consider alternatives and implement technically and financially feasible and cost-effective options to reduce project-related GHG emissions during the design and operation of the project. Refer to IFC Performance Standard 3: para 7 Refer to IFC EHS Guidelines Thermal Power Plants: Energy Efficiency and GHG Emissions [Page 7] Refer to IFC EHS Guidelines Thermal Power Plants: Table4 Typical CO_2 Emissions Performance of New Thermal Power Plants
11. Reference to Checklist of Other Sectors
(1) Where necessary, pertinent items described in the Electric Power Transmission and Distribution checklist should also be checked (e.g., projects including construction of electric power transmission and distribution)