

Environmental Checklist: 11. Thermal Power (1)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
1 Permits and Explanation	(1) EIA and Environmental Permits	① Have EIA reports been officially completed? ② Have EIA reports been approved by authorities of the host country's government? ③ Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? ④ In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	
	(2) Explanation to the Public	① Are contents of the project and the potential impacts adequately explained to the public based on appropriate procedures, including information disclosure? Is understanding obtained from the public? ② Are proper responses made to comments from the public and regulatory authorities?	
2 Mitigation Measures	(1) Air Quality	① Do air pollutants, such as sulfur oxides (SO _x), nitrogen oxides (NO _x), and soot and dust emitted by power plant operations comply with the country's emission standards? Is there a possibility that air pollutants emitted from the project will cause areas that do not comply with the country's ambient air quality standards? ② In the case of coal-fired power plants, is there a possibility that fugitive coal dust from coal piles, coal handling facilities, and dust from coal ash disposal sites will cause air pollution? Are adequate measures taken to prevent the air pollution?	
	(2) Water Quality	① Do effluents including thermal effluents from the power plant comply with the country's effluent standards? Is there a possibility that the effluents from the project will cause areas that do not comply with the country's ambient water quality standards or cause a significant temperature rise in the receiving waters? ② In the case of coal-fired power plants, do leachates from coal piles and coal ash disposal sites comply with the country's effluent standards? ③ Are adequate measures taken to prevent contamination of surface water, soil, groundwater, and seawater by the effluents?	
	(3) Wastes	① Are wastes, (such as waste oils, and waste chemical agents), coal ash, and by-product gypsum from flue gas desulfurization generated by the power plant operations properly treated and disposed of in accordance with the country's standards?	
	(4) Noise and Vibration	① Do noise and vibrations generated by the power plant operations comply with the country's ambient standards, and occupational health and safety standards? ② In the case of coal-fired power plants, are the facilities for coal unloading, coal storage areas, and facilities for coal handling designed to reduce noise?	
	(5) Subsidence	① In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	
	(6) Odor	① Are there any odor sources? Are adequate odor control measures taken?	

Environmental Checklist: 11. Thermal Power (2)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
3 Natural Environment	(1) Protected Areas	① Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	
	(2) Ecosystem and biota	① Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? ② Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? ③ If significant ecological impacts are anticipated, are adequate environmental protection measures taken to reduce the impacts on ecosystem? ④ Is there a possibility that the amount of water (e.g., surface water, groundwater) used by the project will adversely affect aquatic environments, such as rivers? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms? ⑤ Is there a possibility that discharge of thermal effluents, intake of a large volume of cooling water or discharge of leachates will adversely affect the ecosystem of surrounding water areas?	
4 Social Environment	(1) Resettlement	① Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? ② Is adequate explanation on relocation and compensation given to affected persons prior to resettlement? ③ Is the resettlement plan, including proper compensation, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? ④ Does the resettlement plan pay particular attention to vulnerable groups or persons, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? ⑤ Are agreements with the affected persons obtained prior to resettlement? ⑥ Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? ⑦ Is a plan developed to monitor the impacts of resettlement?	

Environmental Checklist: 11. Thermal Power (3)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
4 Social Environment	(2) Living and Livelihood	① Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? ② Is sufficient infrastructure (e.g., hospitals, schools, roads) available for the project implementation? If existing infrastructure is insufficient, is a plan developed to construct new infrastructure or improve existing infrastructure? ③ Is there a possibility that large vehicle traffic associated with the project will affect road traffic in the surrounding areas? Are adequate measures considered to reduce the impacts on traffic, if necessary? ④ Is there a possibility that diseases (including communicable diseases, such as HIV) will be introduced due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? ⑤ Is there a possibility that the amount of water used (e.g., surface water, groundwater) and discharge of thermal effluents by the project will adversely affect existing water uses and uses of water areas (especially fishing)?	
	(3) Heritage	① Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage sites? Are adequate measures considered to protect these sites in accordance with the country's laws?	
	(4) Landscape	① Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	

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Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
4 Social Environment	(5) working conditons	<p>① Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?</p> <p>② Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?</p> <p>③ Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public sanitation) for workers etc.?</p> <p>④ Are appropriate measures being taken to ensure that security guards involved in the project do not violate safety of other individuals involved, or local residents?</p>	
5 Others	(1) Impacts during Construction	<p>① Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</p> <p>② If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>③ If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</p>	
	(2) Accident Prevention Measures	<p>① Are adequate accident prevention plans and mitigation measures developed to cover both the soft and hard aspects of the project, such as establishment of safety rules, installation of prevention facilities, and equipment, and safety education for workers? Are adequate measures for emergency response to accidental events considered?</p> <p>② In the case of coal-fired power plants, are adequate measures planned to prevent spontaneous combustion at the coal piles? (e.g., sprinkler systems).</p>	
	(3) Monitoring	<p>① Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</p> <p>② Are the items, methods and frequencies included in the monitoring program judged to be appropriate?</p> <p>③ Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</p> <p>④ Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?</p>	

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6 Note	Reference to Checklist of Other Sectors	① Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of electric transmission lines and/or electric distribution facilities). ② Where necessary, pertinent items described in the Ports and Harbors checklist should also be checked (e.g., projects including construction of port and harbor facilities).	
	Note on Using Environmental Checklist	① In the case of coal-fired power plants, the following items should be confirmed: <ul style="list-style-type: none"> • Are coal quality standards established? • Are the electric generation facilities planned by considering coal quality? ② If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, and global warming).	

- 1) Regarding the term “Country’s Standards” mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from the World Bank Safeguard Policy as a general rule, or the International Finance Corporation Performance Standards for private sector limited or non-recourse project finance cases, or other standards established by other international financial institutions, or other internationally recognized standards or good practices established by developed countries such as Japan regarding environmental and social considerations, the background and rationale for this deviation, and the measures to rectify it if necessary, are to be confirmed. In cases where local environmental regulations are yet to be established in some areas, considerations should be based on comparisons with international standards such as the World Bank Safeguard Policy, and appropriate standards of other countries(including Japan).
- 2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.