

Environmental Checklist: 9. Chemical Manufacturing (1)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
1 Permits and Explanation	(1) EIA and Environmental Permits	<p>Have EIA reports been officially completed?</p> <p>Have EIA reports been approved by authorities of the host country's government?</p> <p>Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?</p> <p>In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?</p>	
	(2) Explanation to the Public	<p>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?</p> <p>Are proper responses made to comments from the public and regulatory authorities?</p>	
2 Mitigation Measures	(1) Air Quality	<p>Do air pollutants, such as sulfur oxides (SO_x), nitrogen oxides (NO_x), and soot and dust emitted from the project 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?</p> <p>Are adequate measures taken to prevent air pollution by the leakage of hazardous chemical substances?</p>	
	(2) Water Quality	<p>Do effluents (containing BOD, COD, SS, oil and grease, pH, and other chemicals that depend on the specific process configuration) from various processes 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?</p> <p>Are adequate measures taken to prevent contamination of surface water, groundwater and soil by the effluents from storage areas, including raw materials, chemicals, intermediate products, final products, and wastes?</p>	
	(3) Wastes	<p>Are hazardous wastes generated from various facilities properly stabilized, treated, and disposed of in accordance with the country's standards? Are non-hazardous wastes also properly treated and disposed of in accordance with the country's standards?</p> <p>Are adequate measures taken to prevent contamination of soil and groundwater by leachates from the waste storage/disposal sites?</p>	
	(4) Soil Contamination	<p>Has the soil of the project site been contaminated in the past, and are adequate measures taken to prevent soil contamination by leaked materials, such as raw materials and chemical agents?</p>	

Environmental Checklist: 9. Chemical Manufacturing (2)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
2 Mitigation Measures	(5) Noise and Vibration	Do noise and vibrations comply with the country's standards? Is there a possibility that noise generated by large vehicle traffic for transportation of materials, such as raw materials and products will cause impacts?	
	(6) Subsidence	In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	
	(7) Odor	Are there any odor sources? Are adequate odor control measures taken?	
3 Natural Environment	(1) Protected Areas	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	Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? 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?	
4 Social Environment	(1) Resettlement	Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? Is adequate explanation on relocation and compensation given to affected persons prior to resettlement? Is the resettlement plan, including proper compensation, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? 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? Are agreements with the affected persons obtained prior to resettlement? Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? Is a plan developed to monitor the impacts of resettlement?	

Environmental Checklist: 9. Chemical Manufacturing (3)

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
4 Social Environment	(2) Living and Livelihood	<p>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?</p> <p>Is there a possibility that large vehicle traffic for transportation of materials, such as raw materials and products will cause impacts on traffic in the surrounding areas, impede the movement of inhabitants, and cause risks to pedestrians?</p> <p>Is there a possibility that the amount of water (e.g., surface water, groundwater) used by the project will adversely affect the existing water uses and water area uses?</p>	
	(3) Heritage	<p>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?</p>	
	(4) Landscape	<p>Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?</p>	
5 Others	(1) Impacts during Construction	<p>Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</p> <p>If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</p> <p>If necessary, is health and safety education (e.g., traffic safety, public health) provided for project personnel, including workers?</p>	
	(2) Accident Prevention Measures	<p>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>Are adequate accident prevention measures (e.g., installation of prevention facilities and equipment and establishment of prevention management framework) taken for storage, loading/unloading, and transportation of hazardous and dangerous materials?</p>	

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Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
5 Others	(3) Monitoring	<p>Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</p> <p>Are the items, methods and frequencies included in the monitoring program judged to be appropriate?</p> <p>Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</p> <p>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>	
6 Note	Reference to Checklist of Other Sectors	<p>For petrochemical manufacturing projects, the Petrochemicals checklist should be used.</p> <p>Where necessary, pertinent items described in the Ports and Harbors checklist should also be checked (e.g., projects including construction of ports and harbor facilities).</p>	
	Note on Using Environmental Checklist	<p>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).</p> <p>The chemicals used in chemical manufacturing differ depending on the specific process configuration. It should be confirmed that adequate environmental protection measures, including wastewater treatment for each process are implemented.</p>	

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 international standards, appropriate environmental considerations are made, if necessary.

In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan' experience).

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.