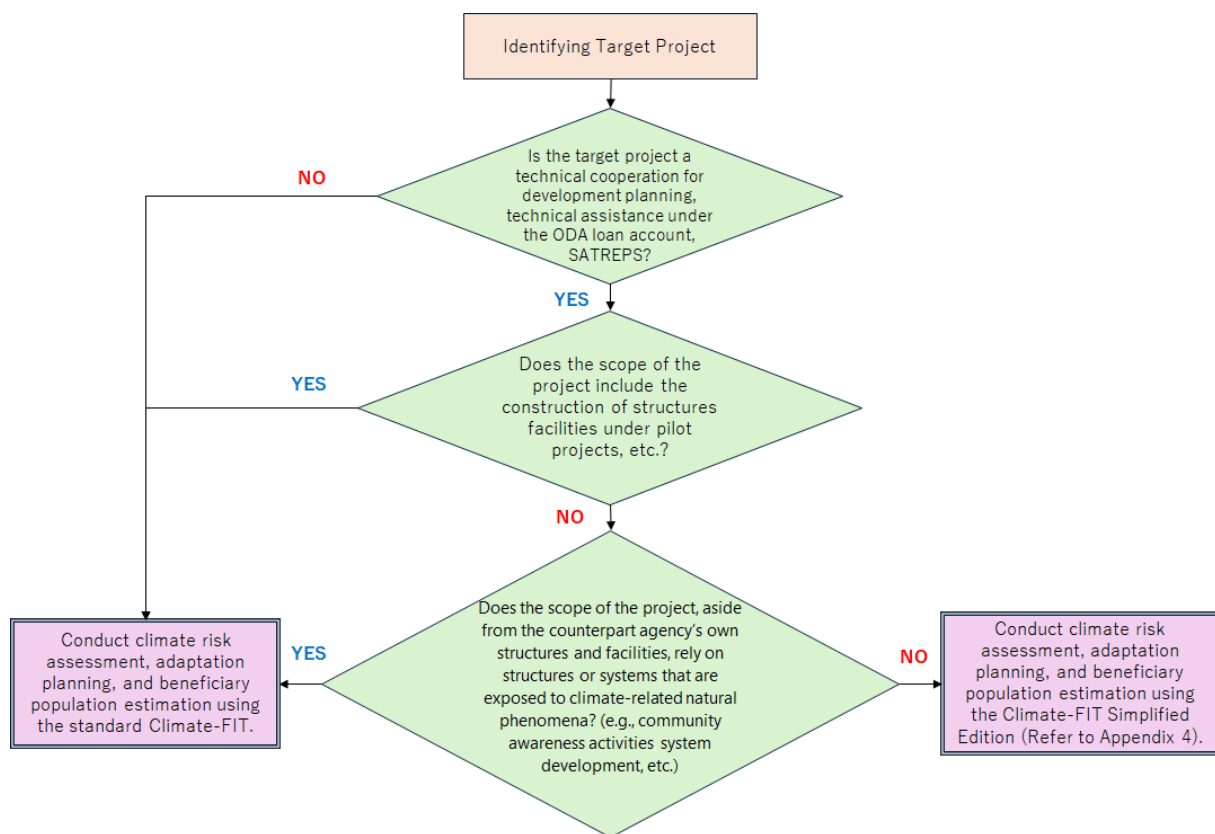


# **Part IV. JICA Climate-FIT (Adaptation) Simplified Edition for Technical Cooperation Projects**

# Climate Risk Assessment and Adaptation Measures in Technical Cooperation Projects (JICA Climate-FIT (Adaptation) Simplified Edition for Technical Cooperation Projects)

For climate risk assessment, adaptation planning, and beneficiary population estimation, this document presents two methodologies: the "Standard Version" guidance (found in "Part I: Guidance for conducting Climate Risk Assessment, considering Adaptation Measures and Beneficiaries Estimation") and the "JICA Climate-FIT (Adaptation) Simplified Edition". Please refer to the following flowchart to determine whether the target project should follow the Standard Version or the Simplified Edition to conduct climate risk assessment, adaptation planning, and beneficiary population estimation.



**Figure i (Repost) Flowchart for Utilizing Climate-FIT (Adaptation)**

## 1. Objective

JICA employs the "JICA Climate Finance Impact Tool (Climate-FIT)," developed in 2011, to assess climate risks and consider adaptation measures for its financial cooperation (ODA loans, grant aid) and technical cooperation (Technical Cooperation Projects, Technical Cooperation for Development Planning, Technical Assistance related to Japanese ODA Loan, and SATREPS) initiatives.

Nevertheless, a significant portion of technical cooperation projects focus on improving project implementation capabilities and supporting relevant legal systems, regulations, and policy formulation through human resource development and capacity building. Consequently, in many cases, such projects lack specific physical assets, presenting a challenge in defining the exposure for risk assessment.

Considering the above, this assessment methodology is formulated for technical cooperation projects to conduct climate risk assessment and examine adaptation measures in a more practical manner, while adhering to the fundamental principles of climate risk assessment using the standard Climate-FIT (Adaptation), and ultimately to determine its contribution to adaptation efforts.

## 2. Target Projects

This methodology for climate risk assessment and the examination of adaptation measures will be applied to technical cooperation (Technical Cooperation Projects, Technical Cooperation for Development Planning, Technical Assistance under the ODA Loan Account, and SATREPS).

## 3. Process

The climate risk assessment and adaptation measure examination for technical cooperation projects will be undertaken through the following steps (1) to (7):

### (1) Determining the Necessity of Risk Assessment Using the Standard Climate-FIT Methodology

Checklist	Check
<p>Does this technical cooperation project involve the installation or deployment of facilities or equipment*1 that are likely to be directly and semi-permanently affected by climate hazards (such as increased temperatures, precipitation variability, heavy rainfall, and flooding)?</p> <ul style="list-style-type: none"> <li>➤ YES: If yes, please mark the YES box on the right and proceed with climate risk assessment and adaptation measure examination using the standard Climate-FIT (Adaptation).</li> <li>➤ NO: If not, please mark the NO box on the right and proceed to step (2)*2.</li> </ul> <p>*1 For the purposes of this assessment, movable assets (items that can be relocated, including vehicles and personal computers) are not considered susceptible to climate change impacts.</p> <p>*2 The standard Climate-FIT is recommended for use even in technical cooperation projects if these projects lead to infrastructure facilities and other assets and climate risk assessment will be necessary for these facilities (e.g., projects involving the planning and design of irrigation facilities or the creation of road maintenance manuals).</p>	<p><input type="checkbox"/> YES <input type="checkbox"/> NO</p>

### (2) Verifying Alignment with the Target Country's Climate Change Response Strategies

Checklist	Check
<p>Review the document to identify the target country's stated goals for climate change mitigation and adaptation, its implementation strategies, and its sector-specific measures. Once reviewed, please mark YES on the right and proceed to step (3).</p>	<p><input type="checkbox"/> YES</p>

<p><b>【Reference Documents】</b></p> <p>Indicate the document(s) reviewed by checking the corresponding box and provide a summary of the relevant information identified.</p> <p>If documents other than those listed below were reviewed, please specify the document title(s) and summarize the pertinent information.</p> <p><input type="checkbox"/>Nationally Determined Contribution (NDC)</p> <p><input type="checkbox"/>National Adaptation Plan (NAP) (if applicable)</p> <p><input type="checkbox"/>Latest National Communication (NC)</p> <p><input type="checkbox"/>Others (Please specify: _____ )</p> <p><b>【Summary Information】</b></p>	
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**(3) Identifying Climate Hazards**

Checklist	Check
<p>Based on the documents reviewed in step (2), other available literature, information sources, and interviews with counterparts, have you identified potential "future climate hazards" that are likely to affect the activities and operational scope of this technical cooperation project?</p> <ul style="list-style-type: none"> <li>➤ YES: If yes, please specify the identified climate hazards below and mark the YES box on the right. Proceed to step (4).</li> <li>➤ NO: If not, please specify the meaning and the reasons for this verification below, and mark the NO box on the right. In this case, conclude this assessment, as "the activities and operational scope of this technical cooperation project is not expected to be impacted by future climate change, thus this project does not constitute a climate change adaptation measure or does not require consideration of climate change adaptation."</li> </ul> <p><b>【Expected Future Climate Hazards】</b></p> <p>The following are examples of potential climate hazards. Please check all that apply. If any other climate hazards not listed below have been identified, please specify in the "Other" field.</p> <p><input type="checkbox"/>Rising temperatures</p> <p><input type="checkbox"/>Variability in precipitation patterns</p> <p><input type="checkbox"/>Changes in the intensity and frequency of extreme weather (e.g., heavy rainfall, typhoons/hurricanes, strong winds)</p>	<p><input type="checkbox"/>YES</p> <p><input type="checkbox"/>NO</p>

<p><input type="checkbox"/> Changes in the frequency and intensity of weather-related disasters (e.g., floods, droughts, landslides) resulting from the aforementioned impacts</p> <p><input type="checkbox"/> Others (Please specify: _____ )</p> <p><b>【If NO: Please specify the reasons below】</b></p>	
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**(4) Identifying Vulnerabilities in Operational Scope**

Checklist	Check
<p>Have you identified any "vulnerabilities" within the activities and operational scope (including counterparts and relevant organizations) of this technical cooperation project concerning the climate hazards identified in step (3)?</p> <ul style="list-style-type: none"> <li>➤ YES: If yes, please specify the identified vulnerabilities below and mark the YES box. Proceed to step (5).</li> <li>➤ NO: If not, please specify the meaning and the reasons for this verification below, and mark the NO box on the right. In this case, conclude this assessment, as "the activities and operational scope of this technical cooperation project is not expected to be vulnerable to the future climate change, thus this project does not constitute a climate change adaptation measure or does not require consideration of climate change adaptation."</li> </ul> <p><b>【Potential Vulnerabilities】</b></p> <p>Identification can be conducted through methods such as interviews with the implementing agency and relevant government ministries/organizations involved in the technical cooperation project, as well as reviews of reports from similar past studies.</p> <p>The following are examples of potential vulnerabilities. Please check all that apply. If any other climate hazards not listed below have been identified, please specify in the "Other" field.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Lack of established laws, policies, standards, or development plans (developed and administered by central or local governments) that mainstream climate change or facilitate the implementation of adaptation measures.</li> <li><input type="checkbox"/> Insufficient understanding of climate change impacts and adaptation measures among personnel within the implementing agency and relevant government ministries/organizations involved in the technical cooperation project.</li> <li><input type="checkbox"/> Insufficient staffing levels or capacity within the implementing agency and</li> </ul>	<p><input type="checkbox"/> YES</p> <p><input type="checkbox"/> NO</p>

<p>relevant government ministries/organizations involved in the technical cooperation project.</p> <p><input type="checkbox"/>Lack of necessary equipment, machinery, software, information resources, etc., within the implementing agency and relevant government ministries/organizations involved in the technical cooperation project for implementing climate change adaptation measures.</p> <p><input type="checkbox"/>Inadequate coordination mechanisms among the implementing agency and relevant government ministries/organizations involved in the technical cooperation project.</p> <p><input type="checkbox"/>Others (Please specify: _____ )</p> <p><b>【If NO: Please specify the reasons below】</b></p>	
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**(5) Identifying Potential Future Climate Risks**

Checklist	Check
<p>If the vulnerabilities identified in step (4) remain unaddressed or unmitigated, have you identified any future impacts and damages (climate risks) that could affect the activities and operational scope of this technical cooperation project due to the climate hazards identified in step (3)?</p> <ul style="list-style-type: none"> <li>➤ YES: If yes, please specify the identified climate risks below and mark the YES box. Proceed to step (6).</li> <li>➤ NO: If not, please specify the meaning and the reasons for this verification below, and mark the NO box on the right. In this case, conclude this assessment, as "future climate risks are not anticipated to impact the activities and operational scope of this technical cooperation project, thus this project does not constitute a climate change adaptation measure or does not require consideration of climate change adaptation."</li> </ul> <p><b>【Potential Climate Risks】</b></p> <p>It is recommended to verify potential climate risks through consultations with counterparts, sector specialists within the assessment team, and local experts as needed.</p> <p>Examples of potential climate risks are provided in the Annex. Please refer to these examples when listing the identified climate risks below.</p> <ul style="list-style-type: none"> <li>●</li> <li>●</li> </ul>	<p><input type="checkbox"/>YES</p> <p><input type="checkbox"/>NO</p>

<ul style="list-style-type: none"> <li>●</li> <li>●</li> <li>●</li> </ul> <p>【If NO: Please specify the reasons below】</p>	
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**(6) Examining Potential Adaptation Measures**

Checklist	Check												
<p>Have potential adaptation measures been identified that could prevent the occurrence of the climate risks identified in step (5)?</p> <ul style="list-style-type: none"> <li>➤ YES: If yes, please clearly specify the identified adaptation measures and confirm whether they are currently planned for implementation within the technical cooperation project. Then, mark YES on the right and proceed to step (7).</li> <li>➤ NO: If not, please specify the meaning and the reasons for this verification below, and mark the NO box on the right. In this case, conclude this assessment, as "viable adaptation measures have not been identified to address the activities and operational scope of this technical cooperation project, thus this project does not constitute a climate change adaptation measure or does not require consideration of climate change adaptation."</li> </ul> <p><b>【Potential Adaptation Measures】</b></p> <p>It is recommended to verify potential adaptation measures through consultations with counterparts, sector specialists within the assessment team, and local experts as needed.</p> <p>Examples of potential adaptation measures are provided in the Annex. In addition, it is often effective to consider what actions should be taken to improve or eliminate the vulnerabilities identified in (4) when developing adaptation measures.</p> <p>Please list the adaptation measures below, referring to these examples. For each listed measure, please check the "Included in Current Plan" box to see if it is already planned for implementation within this technical cooperation project.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">No</th> <th style="width: 60%;">Adaptation Measure to be Implemented</th> <th style="width: 30%;">Included in Current Plan</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>	No	Adaptation Measure to be Implemented	Included in Current Plan	1		<input type="checkbox"/>	2		<input type="checkbox"/>	3		<input type="checkbox"/>	<input type="checkbox"/> YES <input type="checkbox"/> NO
No	Adaptation Measure to be Implemented	Included in Current Plan											
1		<input type="checkbox"/>											
2		<input type="checkbox"/>											
3		<input type="checkbox"/>											

4		<input type="checkbox"/>
5		<input type="checkbox"/>

Adaptation measures identified above that are not presently incorporated into the project plan warrant consideration for integration into the activities of this technical cooperation project.

**【If NO: Please specify the reasons below】**

**(7) Determining the Beneficiary Population**

Checklist	Check
<p>The number of direct beneficiaries of the technical cooperation project is the fundamental basis for defining the beneficiary population of the adaptation measures. Exceptionally, where the number of ultimate beneficiaries impacted by the project can be estimated and a logical relationship exists between the implementation of adaptation measures and their benefits (e.g., there is a connection between the direct beneficiaries who formulate and implement adaptation measures or their activities and the ultimate beneficiaries who benefit, and both are potentially affected by the same climate hazard), the total number of direct and ultimate beneficiaries may constitute the "beneficiary population." However, if the ultimate beneficiaries are included in the beneficiary population, the rationale for the relationship between the implementation of adaptation measures and the benefits must be documented and kept readily available for reference.</p> <p><b>【Beneficiary Population Figures】</b></p> <ul style="list-style-type: none"> <li>• Number of Direct Beneficiaries:</li> <li>• Number of Ultimate Beneficiaries (if quantifiable):</li> <li>• Total Beneficiary Population:</li> <li>• Rationale for Beneficiary Population Calculation:</li> </ul>	<input type="checkbox"/> YES

## Annex: Examples of climate risks and adaptation measures by sector

### [Agriculture · Horticultural Crops · Livestock]

**Table 1 Example of climate risks for a project in the agriculture sector (major crops)**

Climate risk category	Examples of climate risks
Hard infrastructure	Damage to the agricultural infrastructure (irrigation equipment, agricultural roads, collection facilities, warehouses, etc.)
Farmland	Soil erosion of farmland
	Occurrence of salinization
Crops	Reduced yields due to water scarcity, high/low temperatures, increased pest and disease outbreaks, etc.
Farmers, union, etc.	Increased per-unit production costs (including fertilizer, irrigation, pesticides, seeds, labor, etc.)
	Reduced crop yield
	Economic losses due to reduced yields
	Changes in revenues (economic losses) from agricultural production due to pests, diseases, etc.
Government, financial institutions, extension services	Decline in food security due to fluctuations in crop yields

**Table 2 Example of adaptation measures for a project in the agriculture sector (major crops)**

Adaptation measure category	Examples of adaptation measures
Hard infrastructure	Infrastructure redesign
	Development of early warning systems
	Development of weather information provision systems
Farmland	Promotion of water resources reuse and groundwater utilization (wells, capacity building)
	Soil management techniques, such as conservation tillage and measures to prevent soil erosion and loss of soil moisture due to drought
Farmers, union, etc.	Development and introduction of heat-tolerant and drought-resistant varieties
	Crop diversification (mixed cultivation, intercropping, agroforestry)
	Crop switching
	Utilization of weather monitoring data
	Adoption and implementation of water-saving farming and innovative agricultural techniques
Government, financial institutions, extension services	Understanding and dissemination of climate change information
	Enhancing research for climate change projections, etc.
	Provision of informative and educational activities on climate change for farmers and unions
	Promotion of legislative change for water resources and farmland conservation
	Provision of public funding (grants, subsidies, etc.) for climate change responses
	Strengthening the organization/capacity of relevant ministries and agencies regarding climate change, etc.
	Development and promotion of agricultural insurance programs
Others	Tree planting and forest conservation in water catchment areas

**Table 3 Example of climate risks for a project in the agriculture sector (horticultural crops)**

Climate risk category	Examples of climate risks
Hard infrastructure (horticultural facilities)	Damage or collapse due to heavy rain and strong winds
	Inundation and washout due to flooding, etc.
Crops	Changes in horticultural crop yields (leaf vegetables, fruits, etc.), decline in value of products (due to degradation of appearance)

Farmers, union, etc.	Increases per-unit production costs (including fertilizer, irrigation, pesticides, seeds, labor, etc.)
	Reduced crop yield
	Economic losses due to reduced yields
	Changes in revenues (economic losses) from agricultural production due to pests, diseases, etc.
Government, financial institutions, extension services	Decline in food security due to fluctuations in crop yields

**Table 4 Example of adaptation measures for a project in the agriculture sector (horticultural crops)**

Adaptation measure category	Examples of adaptation measures
Hard infrastructure (horticultural facilities)	Relocation of facilities
Crops	Temperature control in horticultural greenhouses
Farmers, union, etc.	Development of innovative cultivation management techniques
	Utilization of weather monitoring data
Government, financial institutions, extension services	Understanding and dissemination of climate change information
	Enhancing research for climate change projections, etc.
	Provision of informative and educational activities on climate change for farmers and unions
	Promotion of legislative change for water resources and farmland conservation
	Provision of public funding (grants, subsidies, etc.) for climate change responses
	Strengthening the organization/capacity of relevant ministries and agencies regarding climate change, etc.
	Development and promotion of agricultural insurance programs

**Table 5 Example of climate risks for a project in the agriculture sector (livestock)**

Climate risk category	Examples of climate risks
Hard infrastructure (barns, etc.)	Damage or collapse of livestock barns
	Inundation or washout of livestock barns
Feed crops	Unstable feed supply
	Changes in feed quality
	Higher feed prices
Livestock	Changes in livestock health and feed intake
	Reduced growth rate (due to high temperatures)
	Reduced product quality (e.g., lower quality eggs, meat, and milk)
	Frequent outbreaks of diseases and parasites
Farmers, union, etc.	Increased per-unit production costs (including costs for electricity, fuel, fertilizer, pesticides, seeds, labor, etc.)
	Reduced production volume
	Fluctuations in income from livestock
Government, financial institutions, extension services	Decline in food security due to changes in livestock production

**Table 6 Example of adaptation measures for a project in the agriculture sector (livestock)**

Adaptation measures	Examples of adaptation measures
Hard infrastructure (barns, etc.)	Temperature management of livestock barns (creating shade, etc.)
Feed crops	Switching to alternative feed crops
	Utilization of alternative feed sources
Livestock	Introduction of breeds that are more resilient to heat waves and other climate stressors

Farmers, union, etc.	Development and introduction of heat-tolerant and drought-resistant varieties
	Utilization of weather monitoring data
Government, financial institutions, extension services	Understanding and dissemination of climate change information
	Enhancing research for climate change projections, etc.
	Provision of informative and educational activities on climate change for farmers and unions
	Promotion of legislative change for water resources and farmland conservation
	Provision of public funding (grants, subsidies, etc.) for climate change responses
	Strengthening the organization/capacity of relevant ministries and agencies regarding climate change, etc.
	Development and promotion of agricultural insurance programs

## 【Water Resources (Water Supply)】

**Table 7 Example of climate risks for a project in the water resources (water supply)**

Climate risk category		Examples of climate risks
Hard infrastructure	Water storage, intake, purification facilities, distribution facilities, etc. Costs, expenditures	Equipment damage
		Functional degradation
		Infiltration of rainwater and sewage
		Changes in annual operating and maintenance costs per unit of drinking water supply facilities
Soft infrastructure	Project-related organization and personnel	Reduction of adequate water supply capacity
		Suspension of adequate operations/maintenance of equipment/facilities
		Decline in operational/maintenance capabilities
Surrounding environment	Access to water resources	Restrictions/unavailability of access to safe water
		Changes in water supply-demand balance
		Changes in the number of months per year without shortage of water supply, and the associated decrease or increase in reliability
		Changes in the annual number of days with water outages lasting 12 hours or more per day, and the associated increase or decrease in reliability
		Increased incidence of waterborne diseases
	Health and Hygiene	Increase or decrease in the mortality rate of children under five years of age (the number of deaths per 1,000 live births) due to changes in the supply of safe water
		Soil erosion in water source
	Water source areas	Soil erosion in water source
	Water resources	Water quality deterioration (changes in turbidity, BOC, phosphorus, nitrogen, etc.)
		Restriction or suspension of water intake due to the influx of large amounts of sediment
		Changes in groundwater levels and water quality
		Decrease in glaciers
		Increase or decrease in annual available water resources

**Table 8 Example of adaptation measures for a project in the water resources (water supply)**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Water storage, intake, purification facilities, distribution facilities, etc.	Facility design incorporating multiple water intake options in anticipation of frequency of heavy rainfall (e.g., increase the intake pond capacity considering high turbidity during predicted frequent heavy rainfall)
		Selection of water distribution pipe locations to avoid areas where floods may occur
Soft infrastructure	Project-related organization and personnel	Incorporating climate change risk into investment design plans
		Formulation of business continuity plan (BCP)
		Development of water utilization management strategy for the entire basin
		Formulation of water intake plans to account for changes in precipitation and river flow
		Collection of climate-related data, disaster-related events and intensity/frequency of climate hazards
		Strengthening the operations and implementation of maintenance of equipment/facilities
		Enhancing the maintenance and management skills of staff
		Budget measures for operational management and human resources development
		Changes in ①land use plans (avoiding construction of water purification plants and distribution/supply pipes) and ②revision of infrastructure design standards, considering the future intensification of climate hazards

Surrounding environment	Water source areas	Protection of forests in water source area
		Improving monitoring capacity for water sources
		Maintaining vegetation in upstream areas

## 【Water Resources (Sewage)】

**Table 9 Example of climate risks for a project in the environmental management (sewage)**

Climate risk category		Examples of climate risks
Hard infrastructure	Sewage treatment facilities, water collection system, piping, etc.	Functional degradation or suspension due to damage to treatment facilities, etc.
		Functional degradation due to inflow of sewage exceeding treatment capacity
		Damage or functional degradation of water collection systems, piping, etc.
		Decline in quality of processed water, discharge of untreated water
		Water contamination due to the inflow of untreated water
Soft infrastructure	Project-related organization and personnel	Change (deterioration) in project profitability due to change (increase) in water treatment costs
Surrounding environment	Health and Hygiene	Deterioration of public health due to unsanitary water environment

**Table 10 Example of adaptation measures for a project in environmental management (sewage)**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Sewage treatment facilities, piping, etc.	Performing regular equipment inspection
		Establishment of a program to reduce water infiltration in water pipes
Soft infrastructure	Project-related organization and personnel	Monitoring water quality and evaluating the need for new or revised source protection plans
		Improvement of monitoring capacity for water sources of rivers receiving wastewater discharge
		Formulation of plans and mechanisms for promoting the improvement of water use efficiency in areas subject to water supply
		Formulation of plans for reducing sewage treatment
		Collection of climate-related data, disaster-related events and intensity/frequency of climate hazards
		Formulation of business continuity plan (BCP)
		Strengthening the operations and implementation of maintenance of equipment/facilities
		Enhancing the maintenance and management skills of staff
		Budget measures for operational management and human resources development
		Changes in ①land use plans (avoiding construction of water purification plants and distribution/supply pipes) and ②revision of infrastructure design standards, considering the future intensification of climate hazards

**[Disaster Prevention]**

**Table 11 Example of climate risks for disaster prevention/risk reduction projects (weather-related disasters, water-related disasters)**

Climate risk category		Examples of climate risks
Hard infrastructure	Disaster prevention equipment/facilities	Damage to equipment or suspension of facilities due to occurrence of climate hazards, etc.
		Suspension of operation of equipment and others due to fuel shortages, etc.
Soft infrastructure	Project-related organization and personnel for disaster prevention	Functional degradation or suspension of disaster-prevention related organizations/systems
		Suspension of disaster prevention information provision, etc.
		Lack of personnel and staff, etc.
Surrounding environment	Residents, property, industries	Occurrence of human impacts (casualties and health damage) and material damage (building destruction and traffic flow disruptions) due to the occurrence of flooding in surrounding areas caused by damage to equipment/facilities
		Delayed evacuation (especially for the elderly) due to lack of information dissemination
		Occurrence of flooding, suspension of business operations, etc.

**Table 12 Example of adaptation measures for disaster prevention/risk reduction projects (weather-related disasters, water-related disasters)**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Disaster prevention equipment/facilities	Revision of facilities, equipment design, specifications
		Inspection of deteriorating equipment/facilities
		Functional enhancement of early warning systems
		Maximize the utilization of existing facilities
		Pre-release operations at dams (creating guidelines for pre-release, and conducting temporary release from water supply dams)
Soft infrastructure	Project-related organization and personnel for disaster prevention	Enhancement of resources (human/physical/economic) related to climate change countermeasures
		Establishment of subsidy programs for relocation from areas of high climate risk
		Formulation of business continuity plan (BCP) by the private sector for climate disasters
		Construction of disaster-related information dissemination systems with local residents using hazard maps, etc.
		Development of disaster response systems and improvement of personnel capacity through disaster prevention drills, etc.
Surrounding environment	Residents, property, industries	Countermeasures to prevent spread of damage and secondary disasters for anticipated climate risks
		Promoting understanding of disaster prevention and climate change awareness among local residents (facilitator training)

## 【Forest and Natural Environment Conservation】

**Table 13 Example of climate risk for a project in the forest and natural environment conservation sector**

Climate risk category	Examples of climate risks
Forests	Loss of forest area
	Changes in vegetation
	Shifts in dominant species
Land	Mountain slope collapse
	Occurrence of landslides
	Habitat loss
	Changes (deterioration) in habitat quality
Ecosystems (terrestrial, freshwater, coastal, marine, etc.)	Shifts in dominant species
	Changes in abundance of species (numbers of species in an area)
	Occurrence of habitat shifts (changes in the distribution of biological species)
	Introduction and proliferation of alien species and pests
	Extinction of endemic species
	Occurrence and spread of diseases among biological species
	Changes in the seasonality of animal and plant species
Decline of ecosystem services	
Project-related organization and personnel	Changes in the volume and quality of operations related to forest and natural environment conservation
	Decrease in revenue due to the degradation of natural environment tourism resources

**Table 14 Example of adaptations measure for a project in the forest and natural environment conservation sector**

Adaptation measure category	Examples of adaptation measures
Forests	Forest management (regular logging, tree-thinning, etc.)
	Biodiversity conservation
	Vegetation monitoring
Land	Designation of conservation areas
	Creation of management strategies for conservation areas
	Landslide prevention measures on steep slopes
	Regulation of land use
Ecosystems (terrestrial, freshwater, coastal, marine, etc.)	Ecosystem monitoring
	Habitat and land scape management for flora and fauna in the target area
	Development of environmental conservation technologies/techniques
	Ex-situ conservation
Project-related organization and personnel	Establishment of protected areas and species translocation
	Development of future climate projection data related to climate change, implementation of monitoring

**[Electricity (Power Generation, Transmission and Distribution)]**

**Table 15 Example of climate risk for a project of electricity (power generation, transmission and distribution)**

Climate risk category		Examples of climate risks
Hard infrastructure	Thermal power plants	Reduction/depletion of available freshwater for cooling facilities due to decreased river flow (reduced water intake)
		Increased cooling water temperature due to rising air temperatures, leading to decreased plant operational efficiency and reduced power supply
		Damage to infrastructure due to soil erosion, flooding, and inundation. In coastal areas, damage to infrastructure due to sea-level rise and storm surges, leading to decreased power generation and efficiency.
		Widespread dispersion of pollutants generated within power plants (due to flooding and inundation)
	Wind power plants	Reduced output due to fluctuations in wind speed (wind load) (strong winds exceeding turbine operational limits or decreased wind speed)
		Reduced output due to temperature changes such as extreme low temperatures (occurrence of turbine blade icing)
		Damage to infrastructure and turbine blades under strong winds such as storms and typhoons
	Solar power plants	Reduced voltage, decreased cell power generation efficiency, and reduced output due to rising temperatures
		Increased power generation due to decreasing temperatures, leading to the generation of out-of-specification excessive voltage
		Increased soil temperature due to rising air temperatures, leading to a decrease in the allowable current capacity of DC voltage cables for solar power equipment
		Power generation efficiency decreases due to reduced solar irradiance
		Reduced power generation due to increased snowfall and longer snow accumulation periods on panel surfaces
		Improved equipment cooling effect and increased output due to increased wind speed/volume
		Reduced output due to changes in cloud cover and cloud conditions
		Damage to infrastructure due to increased occurrence/frequency of lightning and storms
	Transmission and distribution	Reduced capacity of the power grid due to strong winds
		Fluctuations in power grid transmission efficiency of the power grid reduce the capacity for power transmission to maintain appropriate operating conditions
		Increased power transmission and distribution loss rates at substations and transformers
		Occurrence of soil erosion damage to transmission towers due to heavy rain and flooding, leading to damage/destruction of transmission towers
		Damage/destruction of transmission lines, distribution networks, and substations due to ice storms, strong winds, heavy snowfall, and icing (e.g., sagging of transmission lines)
Increased dust damage due to drought		
Damage/destruction of underground power cables and underground equipment due to flooding		
Loss/deterioration of information/communication services across the entire power grid due to high temperatures, storm surges, soil erosion, and flooding, leading to damage to the operation of the entire power grid control system		
Overheating of transformer equipment and transmission line equipment, and decreased transmission efficiency		

Soft infrastructure	Project-related organization and personnel	Reduced operational management function of power generation related organizations
		Occurrence of shortages in personnel to respond to equipment failures, etc.

**Table 16 Example of adaptation measure for a project of electricity (power generation, transmission and distribution)**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Thermal power plants	Strengthening protective facilities and regular monitoring of fuel storage facilities, including coal stockpiles
		Diversification of water sources, such as securing new water sources
		Redesigning cooling facilities (water recovery from heat exchangers, reduction of evaporation losses, promotion of secondary use of wastewater, introduction of dry cooling towers, etc.)
		Selecting construction sites anticipating future temperature increases
	Wind power plants	Setting site locations considering changes in wind speed/direction due to projected climate change during the turbine's equipment life
		Considering the development and commercialization of vertical-axis wind turbines (higher output per land area, operable over a wider range of wind speeds)
		Appropriately selecting the angle of panels to prevent the accumulation of dust and dirt due to strong winds and storms, and selecting self-cleaning modules
	Solar power plants	Selecting installation sites with low potential for dust, dirt, and snow accumulation
		Securing free space around solar panels to allow snow to fall and accumulate in response to increased snowfall
		Selecting solar cells and modules designed to withstand high temperatures and short peak periods
		Decentralization of the location of solar panels and the connecting grids to accommodate fluctuations in cloud cover
	Transmission and distribution	Selecting cables and underground equipment that can withstand high soil moisture content and flooding
		Selecting information and communications technology (ICT) equipment that are resilient to higher temperatures and humidity
		Improving the system's ability to quickly recover to normal operation in the event of a power outage
		Considering power generation plans for regions with dispersed power plants
		Designing the height of transmission lines on power grids to minimize the impact of strong winds
Soft infrastructure	Project-related organization and personnel	Implementing and developing systems for monitoring weather changes
		Introducing control plans and systems for power generation equipment according to weather change conditions
		Implementing maintenance of power generation equipment at appropriate frequency and timing
		Establishment and implementation of building structural standards with disaster prevention measures
		Formulation of Business Continuity Plans (BCP)
		Identification of the range of climate change potential scenarios projected during the lifespan of infrastructure equipment and development of corresponding response policies

## 【Hydropower】

**Table 17 Example of climate risk for a project of hydroelectric power generation**

Climate risk category		Examples of climate risks
Hard infrastructure	Facilities related to power generation etc.	Damage to or destruction of infrastructure equipment due to flooding and glacial lake outbursts
		Reduction in the number of operating days with sufficient power generation capacity
	Water storage/distribution-related facilities	Increased intensity of changes in inflow to reservoirs due to droughts and heavy rainfall, etc.
		Reduction in the usable period and facility lifespan of reservoirs
Soft infrastructure	Business operation	Increase in costs per unit of energy generation (including operation, maintenance, and capital costs) (e.g., average \$49-110/MWh)
Surrounding environment	Downstream	Degradation and loss of ecosystems in downstream areas of hydropower plants due to changes in water flow
		Occurrence of dam overtopping (frequency of water flow from spillways)

**Table 18 Example of adaptation measures for a project of hydroelectric power generation**

Adaptation measure category		Examples of adaptation measures
Soft infrastructure	Operation and Planning	Incorporating climate change risk into investment design planning
		Formulate business continuity plan (BCP)
		Enhancing power generation modeling capabilities under different climate change scenarios
		Development of management and operational rules for hydrological forecasting methods and adaptation measures considering climate change impacts
		Developing basin-wide water use management strategies that consider downstream environmental and social environment (human water use)
		Analyzing the range of climate change projection scenarios over the lifetime (life) of a hydroelectric plant
		Considering the energy output improvement by creating reservoir management plans that take into account changes in precipitation and river flows
	Design	Selection and design of installation sites considering future climate hazards
		Designing considering increased inflows to dams due to glacier melt
	Role of Administrative Agencies	Collection of climate-related data and disaster information
		Strengthening implementation of equipment and facility maintenance management
		Enhancing the maintenance and management capacity of staff
		Ensuring budget for maintenance and human resource development
		Changes in ①land use plans (avoiding construction of power plants, substations, and transmission facilities) and ②revision of infrastructure design standards, considering the future intensification of climate hazards
System development	Effective utilization of water utilization and flood control capacity by upgrading dam operation methods	
Surrounding environment	Improvement of surrounding environment	Implementation of natural environment restoration, improvement, and management in upstream areas (including afforestation) to reduce flooding, soil erosion, sediment deposition, and landslides

**[Road Sector]**

**Table 19 Example of climate risk for a project in the road sector**

Climate risk category		Examples of climate risks
Hard infrastructure	Roads and road surfaces	Subsidence or damage due to ground subsidence or landslides
		Submergence of roads due to floods and inundation
		Reduced strength and deterioration of pavement
		Damage and destruction due to wildfires
		Shortened service life
		Overcapacity of the wastewater system (wastewater overflow)
	Bridges	Damage and destruction to guide signs, lights, etc.
		Reduced stability of bridge deck
		Damage and destruction to suspension bridges, signboards, and tall structures due to changes in wind speed
		Corrosion of reinforcing steel
Soft infrastructure	Project-related organization and personnel	Damage due to thermal expansion of bridge joints and paving surfaces
		Damage and scouring of bridge piers
		Reduced maintenance and management functions of road project-related organizations
		Occurrence of personnel shortages to respond to roads/bridge damage

**Table 20 Example of adaptation measure for a project in the road sector**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Infrastructure development	Redesigning or relocating road facilities
		Selecting asphalt cement and asphalt emulsion considering future temperature change projections
Soft infrastructure	System and design	Conducting vulnerabilities and weather risk impact assessment during the developing a master plan for road construction
		Securing adequate road space to serve as a buffer area for floods, droughts, and other extreme weather
		Introduction of early warning system on flood, storm, and geological structure risk, improvement of hazard maps

## 【Railway Sector】

**Table 21 Example of climate risk for a project in the railway sector**

Climate risk category		Examples of climate risks
Hard infrastructure	Various facilities related to railway lines (tracks, train depots, railcar inspection/repair facilities, operational safety equipment, substation electrical conduits, railway crossings, etc.)	Inundation damage of infrastructure equipment and vehicles
		Occurrence of railway track buckling
		Damage to drainage systems, tunnels, and bridges
		Damage to guide signs such as catenary and signal equipment
		Damage to power lines and cables
		Damage from fallen trees to tracks and overhead lines
	Railway vehicles	Shortened service life Vehicle damage due to natural disasters
Soft infrastructure	Project-related organization and personnel	Delay of railway, suspension of operation
		Increased railway air conditioning costs (cooling costs during high temperatures, heating costs during cold temperatures)
		Economic losses due to damage to railway facilities and vehicles, and railway service disruptions
		Increased costs for responding to damage and accidents due to extreme weather
		Increased maintenance work and labor costs
		Stress on passengers and staff due to extreme weather events
		Damage to surrounding supply chain networks due to railway service restrictions/interruptions
Surrounding environment	Users (passenger, freight)	Stress and danger to the lives of passengers and staff due to extreme weather
		Suspension of freight transport

**Table 22 Example of adaptation measures for a project in the railway sector**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Various facilities related to railway lines (tracks, train depots, railcar inspection/repair facilities, operational safety equipment, substation electrical conduits, railway crossings, etc.)	Readjustment of railway routes (including tunnel routes)
	Railway vehicles	Maintaining quality through diligent regular maintenance
Soft infrastructure	Project-related organization and personnel	Creation of hazard maps and notification to government agencies and railway users
		Introduction and operation of emergency response guidance that identifies detours and alternative means of operation
		Implementation of detailed vulnerability mapping of infrastructure facilities and railway track locations
		Strengthening the monitoring of meteorological conditions and the status of infrastructure equipment

		Creation of GIS-based extreme weather warning systems and weather forecast maps
		Formulation of emergency response plans during meteorological events with multiple railway operators and transportation-related companies
		Formulation of emergency response plans for passengers and staff, and implementation of training exercises

**[Airport]**

**Table 23 Example of climate risk for a project in the airport sector**

Climate risk category		Examples of climate risks
Hard infrastructure	Airport-related facilities (runways, parking lots, control facilities, passenger facilities, warehouses, logistics facilities, drainage facilities, etc.), access facilities (road, rail)	Damage and inundation of related facilities
		Washout of structures, pavement, buildings, containers, cargo, etc.
		Increased corrosion rate of port structures (due to increase in mold, mycotoxin, mites, etc. due to increase in rainfall)
		Reduced visibility due to increased rainfall or fog occurrence
		Delays/cancellations of flight departures/arrivals due to poor visibility
		Delays/cancellations of flight departures/arrivals due to strong winds exceeding crosswind limits
		Deterioration and deformation of pavement and concrete facilities due to heat
		Long-term inundation due to insufficient drainage capacity
		Decline or suspension of airport/logistics functions
		Disruption of passenger and freight flow due to damage to access facilities
Equipment, etc. (cargo handling machinery, vehicles, etc.)		Damage to aircraft
		Overturning damage to cargo handling machinery
		Increased delays and stoppages in the operation of cargo handling machinery
		Restrictions on the movement range of vehicles/railways within the airport (when rainfall intensity exceeds drainage design standards, during flooding, etc.)
Soft infrastructure	Project-related organization and personnel	Reduced efficiency of cargo handling operations
		Delays or stoppages in business operations, increased insurance costs related to business operations
		Reduced customer confidence in service reliability
		Increased energy costs
		Stoppage of passenger and freight flow due to airport closure
		Human casualties and health hazards due to flooding, heat waves, etc.
		Reduced occupational safety (increased slip and fall accidents)
Surrounding environment	Passengers	Stoppage of passenger and freight flow due to airport closure
		Human casualties and health damage due to flooding, heatwaves, etc.
	Aircraft, cargo	Washout of containers and other cargo
		Damage to cargo due to flooding, high temperatures, etc.

**Table 24 Example of adaptation measure for a project in the airport sector**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Airport-related facilities (runways, parking lots, control facilities, passenger facilities, warehouses,	Setting protection levels according to the importance of the airport
		Introduction of navigation support systems enabling take-off and landing even in adverse weather conditions

	logistics facilities, drainage facilities, etc.), access facilities (road, rail)	Monitoring of weather and marine conditions
		Prediction and information provision regarding the impact of storm surges and high waves
		Reviewing the design strength of pavement and concrete facilities
Soft infrastructure	Project-related organization and personnel	Formulation and expansion of Business Continuity Plans (Airport BCP) (reviewing anticipated damage due to climate change and strengthening measures to prevent disasters)
		Implementation of wave and sea level monitoring
		Assessment of disaster risks and dissemination through hazard maps, etc.
		Consideration of optimal renewal, etc., of facilities based on life cycle costs
		Enhancing regional disaster resilience through organizations such as councils
		Implementation of climate change training within the operating entity
Surrounding environment	Passengers	Promoting the formulation of evacuation plans and the implementation of drills
		Enhancing regional disaster resilience through organizations such as councils
	Aircraft, cargo	Promotion of countermeasures against the washout of containers, etc.

## [Ports and Harbors]

**Table 25 Example of climate risk for a project in the port and harbor sector**

Climate risk category		Examples of climate risks
Hard infrastructure	Port-related facilities (quays, seawalls, cargo handling areas/equipment, warehouses, logistics facilities, drainage facilities, etc.), waterfront transport facilities (roads, bridges)	Damage and inundation of related facilities
		Washout of structures, pavement, buildings, etc.
		Increased corrosion rate of port structures (due to increase in mold, mycotoxin, mites, etc. due to increase in rainfall)
		Reduced water calmness due to changes in wave heights, damage to breakwaters, etc.
		Long-term inundation due to insufficient drainage capacity
		Decline or suspension of port/logistics functions
		Impassability for vessels due to reduced under-bridge clearance
	Berths, vessel routes	Sedimentation and insufficient water depth in berths and navigation channels
	Facilities, etc. (cargo handling equipment, vehicles, etc.)	Buckling of port railway tracks
		Runaway of port cargo handling machinery (container cranes, etc.) due to strong winds and thunderstorms
		Overturning damage to cargo handling machinery
		Damage to navigation system and communication equipment in ports and harbors
		Increased volume of refrigerated storage due to rising temperatures
Increased delays and stoppages in the operation of port cargo handling machinery		
Soft infrastructure	Project-related organization and personnel	Restrictions on the movement range of vehicles/port railways within the port (when rainfall intensity exceeds drainage design standards, during flooding, etc.)
		Reduced efficiency of cargo handling operations
		Delays and stoppages in port business operations, increased insurance costs related to port business operations
		Reduced customer confidence in port service reliability
		Increased energy costs (due to increased refrigeration associated with increased air temperature)
		Decreased market access in neighboring areas due to port closures
Surrounding environment	Port and harbor users	Increased transportation costs in and outside ports and harbors
		Human casualties and health damage due to wave overtopping, inundation, heatwaves, etc.
	Port and harbor cargo	Reduced occupational safety (increase in slips and falls)
		Washout of containers and other cargo
	Tidal flats, seagrass beds, sandy beaches	Damage to cargo due to inundation, high temperatures, etc.
		Reduction in the area of shallow waters and tidal flats due to changes in sea level and wave conditions
		Impact on ecosystems

**Table 26 Example of adaptation measure for a project in the port and harbor sector**

Adaptation measure category		Examples of adaptation measures
Hard infrastructure	Port-related facilities (quays, seawalls, cargo handling areas/equipment, warehouses, logistics facilities, drainage facilities, etc.), waterfront transport facilities (roads, bridges)	Establishment of protection levels according to the importance of the backgrounds
		Monitoring of weather and sea weather
		Prediction and information provision regarding the impact of storm surges and high waves
	Berths, vessel routes	Monitoring of waves and sea level

		Prediction and information provision regarding the impact of storm surges and high waves
		Clear indication of restricted areas and times
	Facilities, etc. (cargo handling equipment, vehicles, etc.)	Utilization of privately-owned facilities (parapet walls, terminals, warehouses, greenspace, etc.)
Soft infrastructure	Project-related organization and personnel	Establishment and expansion of the Port Business Continuity Plan (Port and Harbor BCP) (reviewing possible damages due to climate change and strengthening measures to prevent disasters)
		Implementation of wave and sea level monitoring
		Assessment of disaster risks and dissemination through hazard maps, etc.
		Consideration of optimal renewal, etc., of facilities based on life cycle costs
		Enhancing regional disaster resilience through organizations such as councils
		Implementation of climate change training within the operating entity
Surrounding environment	Port and harbor users	Promoting the formulation of evacuation plans and the implementation of drills
		Enhancing regional disaster resilience through organizations such as councils
	Port and harbor cargo	Promotion of countermeasures against the washout of containers, etc.
		Monitoring of waves and sea level
	Tidal flats, seagrass beds, sandy beaches	Prediction and information provision regarding the impact of storm surges and high waves
		Development of quantitative assessment methods for disaster risk reduction functions of coastal ecosystems

**[Industrial Area]**

**Table 27 Example of climate risk for a project in the industrial area sector**

Climate risk category		Examples of climate risks
Hard infrastructure	Infrastructure and related equipment in the industrial park	Defects and damage to roads and storage facilities due to floods, high temperatures, etc.
		Inundation of building structures
		Overload of the wastewater treatment system, exceeding the allowable amount
		Deterioration of coastal erosion in port and harbor facilities (such as piers, breakwaters, seawalls, flood control structures)
		Impassability of piers and connecting roads from piers
		Short-circuiting of the underlying electrical equipment
		Clogging of drainage outlets due to storms
		Inundation and flotation of equipment and tanks
		Diffusion of contaminated soil and substances due to floods, etc.
		Damage to port and harbor infrastructure due to increased rapid movement of seawater and river tides
		Increase in corrosion rates due to flooding, inundation, and elevated temperatures
		Heat stress and changes in radiation stress due to rising temperatures
Soft infrastructure	Project-related organization and personnel	Increased frequency of repairs and maintenance of facilities and equipment, and reinforcement of strength (which increases costs)
		Increased maintenance costs
		Increased insurance costs
Surrounding environment	Tenant businesses	Damage to companies located in the industrial park
		Human casualties in the industrial park
		Suspension of production functions in factories due to flooding and heavy rain inundation, and the overflow of waste materials associated with inundation, etc.
		Restrictions and delays in access to various markets and sales channels from the industrial park
		Shortage and interruption of raw material supply
		Increased costs due to the need for more repair/refurbishment of facilities/equipment, maintenance frequency, reinforcement
	Workforce at the industrial park	Increased occurrence of natural disasters, etc.
		Occurrence of human casualties
	Others	Existing coastal flood protection standards provided by breakwaters, revetment works, etc., become insufficient due to sea-level rise and storm surges
		Reduced investment returns from financial institutions due to the presence or absence of incorporating climate change impacts into the decision-making process
		Global supply chain disruptions, such as the suspension of manufacturing and supply of key components delivered to global manufacturers
		Decrease in usable water volume for industrial use (including groundwater and surface water)
		Increased financial losses due to the suspension of business activities such as factory operations and transportation stoppages due to flooding, etc.
		Reduced productivity and revenue due to loss or disruption of ICT
		Increased exposure opportunities for mortgage lenders (increased collateral opportunities such as transferred mortgage debt)
Increased opportunities and amounts for the insurance industry due to flooding		

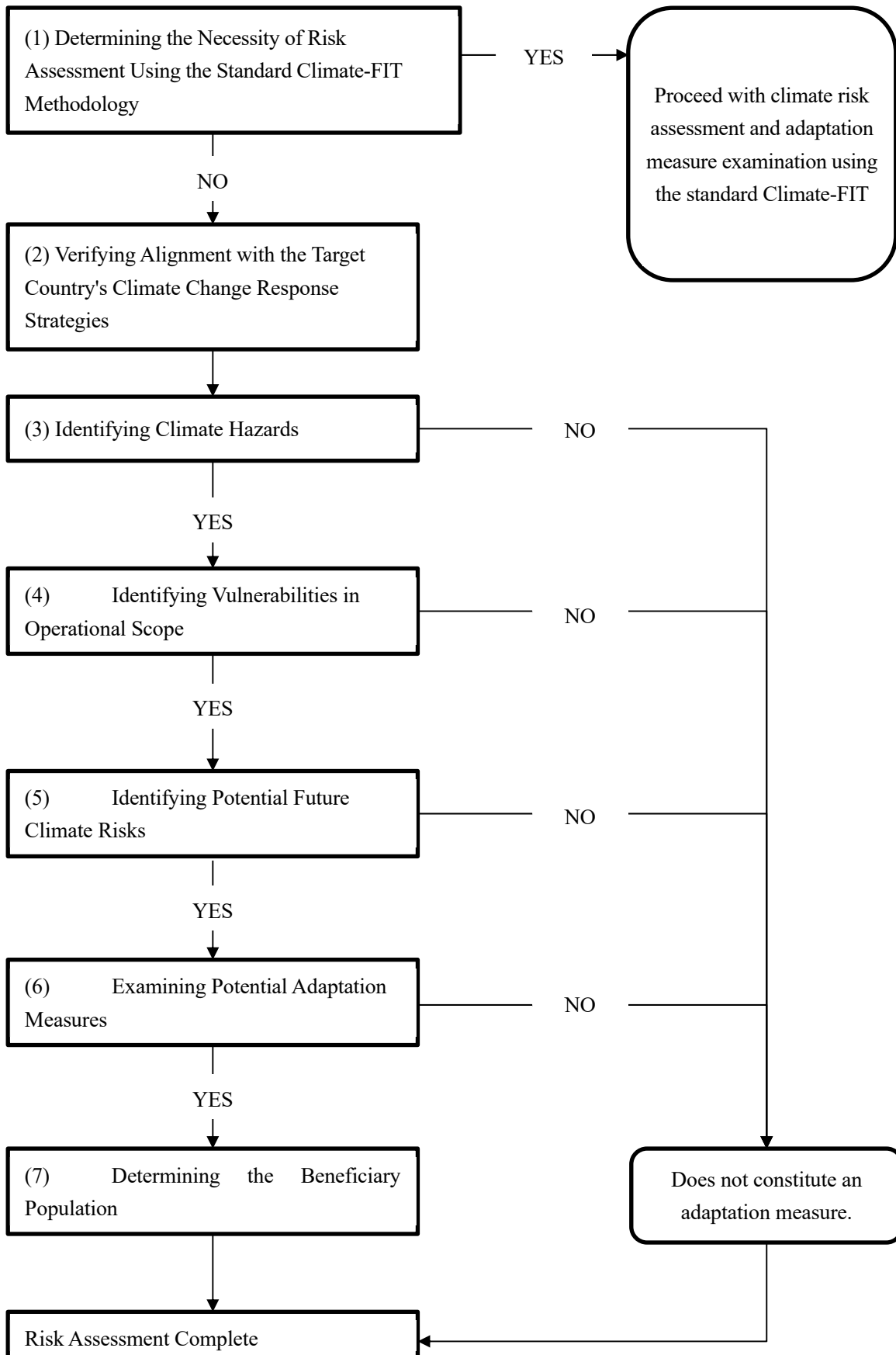
		Decrease in domestic firms' production due to increased turmoil in the supply chain due to extreme weather
		Prevalence of new diseases within workers with changes in disease patterns due to climate change
		Increased conflict with vulnerable communities in the vicinity where livelihoods are adversely affected by climate change (e.g., artificial fisheries)
		Negative impact on the overall economic activity of the industrial park due to changes in the national socio-economic situation affected by climate change (e.g., increased national poverty and anxiety caused by the loss of land and water stress, etc.)
		Defects and damage to roads and storage facilities due to floods, high temperatures, etc.

**Table 28 Example of adaptation measures for a project in the industrial area sector**

Adaptation measure category		Examples of adaptation measures
Soft infrastructure	Land development	Regularly performing maintenance and cleaning of drainage channels to ensure drainage function
	Disaster Prevention Measures	Implementing countermeasures to prevent the leakage of chemical substances and pollutants even during flooding
		Formulation and expansion of Business Continuity Plans (BCP) (reviewing anticipated damage due to climate change and adding scenarios of situations where the continuation of port and industrial park functions is difficult due to strong winds, waves, etc., even if not resulting in a disaster)
		Reviewing and formulating policies for cooperation systems with local governments during disasters (assignment of joint commanders, management of responsible organizations, etc.)
	Economic aspect	Aiming to increase credit line limits by implementing energy-saving measures
	Policies and regulations	Introducing the additional inclusion of evaluation content based on climate change impacts in mandatory environmental impact assessment processes
		Establishment of provisions on minimization of buffer zones/areas where residential construction is impossible in the vicinity of industrial zones
		Promoting public-private climate change risk reduction initiatives (coordination with local governments, etc.)
	Operation and design	Establishment of supervisory agencies and staff responsible for implementing measures to adapt to climate change impacts in the industrial park, formulation of overall management plans, and review of current standards and regulations
		Introducing the additional inclusion of evaluation content based on climate change impacts in mandatory environmental impact assessment processes
		Introducing early warning systems as disaster prevention measures against climate change impacts within the industrial park
		Formulation of land selection and development plans considering the impacts of climate change
		Developing and implementing rehabilitation plans for already affected locations/regions (providing incentives and relocation compensation for vulnerable industrial sectors)
		Reviewing and formulating response plans leading up to shutdown plans (suspension of operations) in the event of emergencies
		Providing training to relevant planning agencies/departments on how to identify climate change risks and incorporate them into business (planning, decision-making, construction projects, etc.)

		<p>Conducting vulnerability assessments of climate change-related risks at the business locations of major industrial companies during industrial park development</p> <p>Introduction of design and building standards with high vulnerability to climate change by the government, and determination of specifications for industrial buildings on site</p> <p>Integrating climate change aspects into the company's risk and innovation management processes (e.g., supply risks) and identifying critical components</p> <p>Investigating and considering the introduction of potential business opportunities arising from climate change within the industrial park (e.g., cooling technologies)</p>
Surrounding environment	Companies in the industrial park	Enhancing the diversity and efficiency of raw material procurement for production processes to avoid dependence on potentially climate change-vulnerable suppliers
		Securing suppliers in neighboring regions; similarly, ensuring diversity in sales channels for products within the industrial park
		Developing sustainable products within the industrial park that are less susceptible to climate change impacts
		Diversification of industrial sectors within the industrial park
		Sharing identified climate risk information with suppliers and discussing countermeasures
		Introducing climate insurance against climate change impacts, such as weather index insurance
		Promoting diverse industries, including small and medium-scale agriculture, to stabilize food supply within the industrial park
	Workforce at the industrial park	Considering new work schedules to avoid heat stress for outdoor workers (provision of drinking water, shelters and disaster-prepared assembly points for workers, etc.)

## Procedure Flow for Examining Climate Risk Assessment and Adaptation Measures in Technical Cooperation Projects





JICA Climate-FIT (Adaptation)

Office for Sustainability Management  
Operations Strategy Department  
Japan International Cooperation Agency