Environmental Check List

JICA Environmental Checklist 13: Bridges

Points to note when filling out the checklist

1. Please answer not only with Yes/No, but also include the reasons for your answer and mitigation measures in the "Specific Environmental and Social Considerations" section.
2. If you have any questions about the terminology, etc., please refer to the "JICA Guidelines for Environmental and Social Considerations" and the "Frequently Asked Questions and Answers on the JICA Guidelines for Environmental and Social Considerations."

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
1. Permits and consultations	(1) Environmental assessment and environmental permits	(a) Have environmental impact assessment reports (EIA reports) etc. been prepared? (b) Are the EIA reports etc. written in an official language or a language widely used in the country? (c) Has the EIA report etc. been approved by the government of the country concerned? (If not approved, enter the expected date of approval in the "Specific Environmental and Social Considerations" column.) (d) Are there any conditions attached to the approval of the EIA report, etc.? If so, have those conditions been met? (e) Other than the above, have any necessary environmental permits and licenses been obtained from local competent authorities? (f) Are the items listed in Appendix 2 of the Guidelines covered? (The scope and level of detail may be adjusted depending on the potential impact of the project.) (g) Has environmental and social consideration been confirmed for the entire scope of the target project, its cumulative impacts, derivative and secondary impacts, and indivisible projects?	(a) Y (b) Y (c) N (d) N (e) N (f) N (g) N	(a) Finalized on April 18, 2025. (b) be written in English and Russian; (c) The project has been reviewed by state environmental experts and is currently under review by the Ministry of Natural Resources, Ecology and Technical Supervision. Approval is expected as early as May. (d) The state environmental expert's approval was subject to the following conditions, and we have agreed with the MOTC that these conditions will be met. - Agreement must be obtained with the landowner prior to the project. - Tree cutting without permission is prohibited. - Requirements of the Kyrgyz Republic's environmental legislation must be complied with. In this project, it has been confirmed that no felling permits are required, as the trees to be felled are common native species and the number of trees to be felled is small. (e) Regarding the felling of trees within the ROW, an investigation is currently underway to determine the amount of trees to be felled, the ownership of the land, and whether or not permits were required for felling. (f) The preparatory survey report covers all items related to environmental and social considerations and is consistent with the contents of the EIA.. (g) In the future, there are plans to renovate a large hydroelectric power plant in the area surrounding the proposed project site, but this project is not necessarily a project for the purpose of the power plant renovation, nor is it the case that the power plant renovation would not be possible without this project. Therefore, the renovation of the large hydroelectric power plant is not considered to be an inseparable part of this project.
	(2) Explanations to and consultations with local stekeholders	(a) Have local stakeholders been properly analysed and identified? (b) Has the content and impacts of the project been adequately explained to, and understood by, local stakeholders through a process that ensures meaningful consultation, including disclosure of information? (c) Regarding local stakeholder consultations, have records been prepared, including the gender and other attributes of participants? (d) Have comments from residents and others been reflected in the project content, etc.?	(a) Y (b) Y (c) Y (d) Y	(a) Local stakeholders, such as the Uchiterek village chief, village council chairman, and elders council chairman, have been identified and explanations have been given to them. (b) Two information sessions have already been held and the project has gained understanding. (c) Minutes have been prepared. (d) There were no particular opinions that should be reflected in this project.

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
	(3) Consideration of alternative solutions	(a) Is the range of alternatives for the project/plan appropriate? (b) Have feasible alternatives been considered in terms of technical, financial, environmental and social considerations, with a view to reducing environmental and social issues and, where necessary, total greenhouse gas emissions? (c) Has a comparison been made with an alternative to not implementing the project?	(a) Y (b) Y (c) Y	(a) Four options were considered, including a "no project implementation option," including a "build a bridge upstream of the current Naryn River Bridge," a "rebuild the bridge at the current location," and a "build a bridge downstream of the current Naryn River Bridge." (b) The alternatives were compared from the perspective of reducing total greenhouse gas emissions as well as from the perspectives of environmental and social impact, ease of construction, safety, cost, etc. (c) We are considering options including not implementing the project.
2. Pollution Control	(1) Air quality	(a) Will there be any impact from air pollutants emitted from vehicles passing through the project during operation? Will the project meet the environmental standards of the country concerned? (b) If air quality in areas near the route already exceeds environmental standards, will the project result in further exacerbation of air pollution? (c) Will the works have any adverse impacts and will mitigation measures be in place?	(a) Y (b) N (c) Y	(a) When the line is opened, traffic volume will increase compared to the current situation, but emissions of air pollutants will remain within environmental standards. However, mitigation measures will be prepared, such as requesting relevant agencies to strengthen enforcement against poorly maintained vehicles that could be a source of air pollutants. (b) Air pollution in the vicinity of the project site is below environmental standards. (c) Air pollutants are emitted from the operation of construction vehicles and construction machinery, but they do not exceed the standard values. However, several mitigation measures will be taken, such as not idling engines unnecessarily.
	(2) Water quality	(a) Will the water quality of downstream water areas be deteriorated due to soil runoff from exposed topsoil in embankments, cut earth, etc.? (b) Will the project have any impact on nearby water sources such as wells? (c) Will the discharge result in any water bodies not meeting the environmental standards of the country? (d) Will the works have any adverse impacts and will mitigation measures be in place? (e) Will runoff from the road surface contaminate groundwater or other water sources?	(a) Y (b) N (c) Y (d) Y (d) N	(a) If the embankment collapses and soil flows into the Naryn River, it could potentially worsen the water quality of the Naryn River. (b) The existence of wells is currently under investigation, but the project does not include deep excavation or large-scale pumping of groundwater that could affect the groundwater level or quality. (c) If construction wastewater is discharged improperly, there is a possibility that environmental standards may be temporarily exceeded. (d) The construction will have some negative impacts, but these will be minimal. However, several mitigation measures will be in place, such as proper treatment of construction wastewater. (e) Road drainage will be collected in the drainage channel constructed in this project and discharged into the Naryn River, so there will be no pollution of groundwater or other water sources.

<table>
<tr><th>classification</th><th>item</th><th>Main check items</th><th>Yes: Y
No: N</th><th>Specific environmental and social considerations
(Reasons for Yes/No, grounds, mitigation measures, etc.)</th></tr>
<tr><td></td><td>(3) Noise and vibration</td><td>(a) Does the noise and vibration caused by passing vehicles and railways meet the standards of the host country?
(b) Does low-frequency noise from passing vehicles and trains meet the standards of the country in question?
(c) Will the works have any adverse impacts and will mitigation measures be in place?</td><td>(a) Y
(b) Y
(c) Y</td><td>(a) Currently, noise and vibration levels, except for nighttime noise, meet the standards of the Kyrgyz Republic.
<table>
<tr><th></th><th>unit</th><th colspan="2">Measurements</th><th colspan="2">Reference value</th></tr>
<tr><th></th><th></th><th>Daytime</th><th>night</th><th>Daytime</th><th>night</th></tr>
<tr><td>Equivalent continuous sound pressure level (LAeq)</td><td>dB</td><td>53</td><td>54</td><td>60</td><td>50</td></tr>
<tr><td>Vibration level (Lv)</td><td>dB</td><td>78</td><td>68</td><td colspan="2">108~124</td></tr>
</table>
(b) Noise standards are set in Kyrgyzstan, but they cover frequencies including low-frequency noise, and there are no standards that are limited to low-frequency noise. However, low-frequency noise may be generated when construction vehicles are running or construction machinery is in operation.
(c) During construction, noise and vibration will be generated from the operation of construction vehicles and construction machinery, but will not exceed environmental standards. However, several mitigation measures will be taken, such as the installation of soundproof sheets. During operation, mitigation measures will be prepared, such as requesting relevant agencies to strengthen enforcement against poorly maintained vehicles that could be a source of noise and vibration.</td></tr>
<tr><td></td><td>(4) Waste</td><td>(a) If large amounts of excavated soil and dredged sand are generated, will they be treated and disposed of appropriately in accordance with the regulations of the relevant country?
(b) Will the construction work have any adverse impacts? If so, will mitigation measures be in place?</td><td>(a) Y
(b) Y</td><td>(a) Large amounts of excavated soil and dredged sand will not be generated, but if they are generated, they will be properly treated and disposed of in accordance with Kyrgyzstan regulations.
(b) The construction will not have any adverse impacts, but the following mitigation measures will be in place during construction:
-Waste will be recycled and reused wherever possible.
-Waste that cannot be recycled or reused will be disposed of at designated sites.
-Dumping of waste into rivers and streams is prohibited.</td></tr>
<tr><td>3 Natural environment, protected areas</td><td>(1) Protected areas</td><td>(a) Is the site located within a protected area as defined by the laws of the relevant country, international treaties, etc.?
(b) Will the project affect protected areas?
(c) Will the works have any adverse impacts and will mitigation measures be in place?</td><td>(a) N
(b) N
(c) N</td><td>(a) The project site is not located within a protected area designated by Kyrgyzstan laws or international treaties.
(b) The closest protected area to the project site (South Kyrgyzstan Nature Park) is approximately 30 km away, so the project will not have any impact on the protected area.
(c) There will be no impact on protected areas as a result of this project.</td></tr>
</table>

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
	(2) Ecosystem and biodiversity	(a) Does the project site contain primary forests, tropical natural forests, or ecologically significant habitats (e.g., coral reefs, mangrove swamps, tidal flats, etc.)? (b) Does the project site include any habitat of rare species that require protection under the laws of the host country, international treaties, etc.? (c) Will the project involve significant conversion or significant degradation of important habitats or forests that may have significant impacts on biodiversity, and if so, will appropriate measures be taken to address such impacts? (d) Are measures being taken to prevent the blocking of wildlife and livestock migration routes, the fragmentation of habitats, and traffic accidents involving animals? (e) Will the construction of roads and bridges result in deforestation, poaching, desertification, drying of marshes, etc.? Is there a risk that invasive species (that did not previously live in the area), pests, etc. will be introduced, disrupting the ecosystem? (If there is a possibility of this, please also state the measures in the "Specific Environmental and Social Considerations" section.) (f) If there are concerns about other significant impacts on biodiversity, are measures being taken to reduce the impacts on biodiversity? (g) Will the works have any adverse impacts and will mitigation measures be in place?	(a) N (b) N (c) N (d) Y (e) N (f) N (g) N	(a) There are no primary forests, tropical natural forests or ecologically important habitats in or around the proposed project site. (b) There are no habitats for rare species that require protection under Kyrgyz national laws, international treaties, etc. in or around the project site. (c) There are no important habitats or forests in or around the project site, and there is no concern that there will be any significant impacts on biodiversity. (d) Both the right and left banks are used as routes for grazing livestock, but a separate route will be prepared during construction and a new route will be provided after the bridge is opened. After the bridge is opened, the existing bridge will be used as a route for livestock, reducing the number of collisions between livestock and automobiles. (e) The Project will not result in deforestation, poaching, desertification, or drying of marshes, and there is no possibility that the ecosystem will be disturbed by the introduction of foreign species or pests. (f) According to the IUCN, there is a possibility that the surrounding area is home to a total of 31 species (29 bird species and 2 mammal species), including 6 endangered species (EN), 8 vulnerable species (VU), and 17 net threatened species (NT). However, the presence of these species could not be confirmed in this biodiversity survey. (g) There will be no or only a small negative impact on biodiversity due to this project. Furthermore, no construction methods that generate impact noise, such as blasting, that could affect the ecosystem will be adopted.Also, Although trees will be cut down in this project, they are non-fruit trees and no ecosystems that rely on them as habitats have been identified, so no negative impact on biodiversity is expected.
	(3) Hydorology	(a) Will the construction of the structure cause any changes in the water system, resulting in adverse effects on the flow of surface water and/or groundwater? (b) Will the works have any adverse impacts and will mitigation measures be in place?	(a) Y (b) Y	(a) There is a possibility that the pile driving work and the construction of bridge piers will affect the flow velocity and direction on the Narin side. (b) The construction work will have a negative impact on hydrology, but these impacts will be mitigated through mitigation measures such as minimizing water-stopped areas.

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
	(4) Topography and geology	(a) Are there any areas along the route where the soil is poor and landslides are likely to occur? (b) Will civil engineering works such as embankment and cutting cause landslides or landslides? (If there is a possibility of landslides or landslides occurring, please also describe measures to prevent such collapses or landslides in the "Specific Environmental and Social Considerations" section.) (c) Will soil erosion occur from embankments, cuts, soil dumps, and soil quarries? (If there is a possibility of soil erosion, please also describe measures to prevent soil erosion in the "Specific Environmental and Social Considerations" section.) (d) Will the excavation of rivers and channels result in large-scale changes to the topography and geological structure around the planned site? (e) Will the works have any adverse impacts and will mitigation measures be in place?	(a) N (b) Y (c) Y (d) N (e) N	(a) There are no areas where landslides or landslides may occur in the project site. (b) In this project, embankments will be constructed in conjunction with the construction of connecting roads. Measures to prevent landslides will be taken, such as appropriate compaction. (c) After operation, drainage facilities will be installed to prevent soil erosion from the embankments and ensure proper drainage of rainwater. There will be no risk of soil erosion from the soil dump or sand quarry. (d) During construction, riverbed excavation will be carried out in conjunction with the bridge pier construction, but the extent of alteration will be kept to a minimum, so no major changes will occur to the topography or geological structure. (e) After operation, drainage facilities will be installed to properly drain rainwater and several mitigation measures will be prepared, such as preventing soil erosion from the embankments.
	(5) Soil contamination	(a) Has the soil at the site ever been contaminated? (b) Will the works have any adverse impacts, and will there be mitigation measures in place?	(a) N (b) N	(a) There are no projects that could cause soil contamination in or around the project site, and there is no possibility that the soil has been contaminated. (b) There is no possibility that the project will cause soil contamination in the surrounding area. However, several mitigation measures will be put in place to prevent soil contamination, such as proper disposal of waste.

<table>
<tr><th>classification</th><th>item</th><th>Main check items</th><th>Yes: Y
No: N</th><th>Specific environmental and social considerations
(Reasons for Yes/No, grounds, mitigation measures, etc.)</th></tr>
<tr><td>4. Social Environment, resettlement</td><td>(1) Resettlement</td><td>(a) Will the implementation of the project result in land acquisition involving involuntary resettlement? If so, please state the scale of land acquisition and the scale of resettlement.
(b) Will efforts be made to minimise the impacts of resettlement? Will there be other land acquisition or loss of livelihoods?
(c) Will the residents who are to be relocated be given an appropriate explanation regarding compensation and livelihood reconstruction measures before they are relocated?
(d) Will a relocation survey be conducted and a relocation plan be drawn up, including compensation at replacement cost and restoration of livelihoods after relocation?
(e) Will compensation be paid in advance of relocation?
(f) Is there a written compensation policy?
(g) Does the plan give due consideration to the socially vulnerable, particularly women, children, the elderly, the poor, people with disabilities, refugees/internally displaced persons, and minorities, among those to be resettled?
(h) Will any compensation agreements agreed upon be explained in writing to those affected and will pre-relocation consent be obtained for displaced persons?
(i) Will the system for properly implementing resident relocation be established? Will sufficient implementation capacity and budgetary measures be in place?
(j) Is there a plan for monitoring the impacts of resettlement?
(k) Is there a complaints handling mechanism?</td><td>(a) Y
(b) Y
(c)
(d)
(e)
(f)
(g)
(h)
(i)
(j)
(k)</td><td>(a) This project will require land acquisition, but will not involve involuntary resettlement. The scale of land acquisition, etc. is as follows:
<table>
<tr><th colspan="2">Eligibility for compensation</th><th>Impact</th></tr>
<tr><td>1</td><td>Farmland</td><td>286.31 m2</td></tr>
<tr><td>2</td><td>commercial land</td><td>100 m2</td></tr>
<tr><td>3</td><td>Non-residential buildings</td><td>55.2 m2</td></tr>
<tr><td>4</td><td>Affected fences</td><td>116.45 m2</td></tr>
<tr><td>5</td><td>Trees</td><td>53 bottles</td></tr>
</table>
(b) The alignment etc. has been considered to minimize the area of land acquisition. No loss of livelihood will occur as a result of land acquisition.
(c) A total of two residents' consultation meetings were held, and the details of compensation were explained.
(d) A replacement cost study has been carried out and compensation for each target has been estimated. However, as the project will not affect the means of earning livelihood, no award has been made for the restoration of livelihoods.
(e) Payment of compensation will be made by the MOTC prior to the commencement of construction work.
(f) The compensation policy is in writing.
(g) There are no vulnerable people among the affected residents. The interview survey also sought the opinions of women who are affected.
(h) The details of compensation will be explained in writing to the affected persons and their consent will be obtained before construction begins.
(i) A system for the appropriate implementation of the resettlement plan has been established, and the MOTC will take budgetary measures for the resettlement plan.
(j) Monitoring of the impacts of the resettlement plan is planned.
(k) A grievance redress mechanism is in place every six months.</td></tr>
</table>

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
	(2)Living and livelihood	(a) If a bridge or access road is to be constructed as part of new development, will it have an impact on existing means of transportation or the lives of residents who are involved in such transportation? Also, will it result in significant changes in land use and livelihoods, job losses, etc.? (If such impacts are expected, please also state mitigation measures in the "Specific Environmental and Social Considerations" section.) (b) Will the project have any adverse effects on the livelihoods of other residents? (c) Will the project have any negative impacts on road traffic in the surrounding areas (such as congestion, increased traffic accidents, etc.)? (d) Will the project disrupt the mobility of residents? (e) Will overpasses or other structures cause obstruction of sunlight or electromagnetic interference? (f) Will the project have adverse impacts on ecosystem services (provision and regulating), affecting the health and safety of communities, particularly indigenous peoples who depend on these services? (g) Will the works have any adverse impacts and will mitigation measures be in place?	(a) N (b) Y (c) N (d) N (e) N (f) N (g) Y	(a) There is an access road used by local residents, but since this will be rerouted during the construction work, there will be no impact on the residents' lives. (b) Use of the riverbank may be temporarily restricted during construction, which may result in the blocking of livestock movement routes. Therefore, we will secure riverside routes for local residents as much as possible. (c) During construction, the existing bridge will be used, so there will be no impact. After construction, the horizontal curve will become larger, so driving safety will increase. However, several mitigation measures, such as the installation of signs, will be prepared to ensure road traffic safety. (d) There will be no impact during construction, as the existing bridge will remain in service. After construction is completed, the current bridge will be used as a road for people and livestock only, so there will be no impact on the movement of residents. (e) The project will not cause any obstruction to sunlight or electromagnetic interference. (f) There will be no adverse impacts on ecosystem services due to the project. (g) As the construction work may have negative impacts, such as blocking livestock movement routes, several mitigation measures will be taken, such as providing movement routes.
	(3) Socially vulnerable	(a) Is appropriate consideration given to socially vulnerable groups, such as women, children, the elderly, the poor, people with disabilities, refugees/internally displaced persons, and minorities? (b) Will the works have any adverse impacts and will mitigation measures be in place?	(a) Y (b) Y	(a) Care will be taken to ensure that vulnerable groups such as women, children and the elderly are not affected in the areas surrounding the planned site. (b) During construction, care will be taken to avoid gender-based job segregation and wage disparities, and labor laws will be observed to prevent child labor.
	(4) Heritage	(a) Is there a risk that the project will damage archaeological, historical, cultural or religiously valuable heritage or historic sites? Also, will measures prescribed by the domestic laws of the host country be taken into consideration? (b) Will the works have any adverse impacts and will mitigation measures be in place?	(a) N (b) N	(a) There are no historic sites or other archaeological, historical, cultural or religiously valuable heritage or historic sites in the vicinity of the proposed project site. (b) Same as above.
	(5) Landscape	(a) If there are any landscapes that require special consideration, will the project have a negative impact on them? (b) Will the works have any adverse impacts and will mitigation measures be in place?	(a) N (b) N	(a) There are several vantage points around the proposed project site that offer scenic views of the Toktogul Reservoir. However, the proposed project site is not included in the view range of any of the vantage points. There will be no adverse impact on the landscape due to the project, or if there is any impact, it will be minor. (b) Same as above.

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
	(6) Ethnic minorities and indigenous peoples	(a) Has consideration been given to mitigating the impact on the culture and lifestyles of ethnic minorities and indigenous peoples of the country? (b) Are the rights of ethnic minorities and indigenous peoples to their lands and resources respected? (c) Where necessary, have indigenous peoples plans been developed and published? (d) Are efforts being made to obtain free, prior and informed consent of ethnic minorities and indigenous peoples? (e) Will the works have any adverse impacts and will mitigation measures be in place?	(a) N (b) N (c) N (d) N (e) N	(a) There are no ethnic minorities or indigenous peoples living in the vicinity of the proposed project site. (b) Same as above. (c) Same as above. (d) Same as above. (e) Same as above.
	(7) Working conditions	(a) Will the project comply with applicable local occupational safety and health laws? (b) Are tangible safety considerations in place for those involved in the project, such as the installation of safety equipment to prevent industrial accidents and the management of hazardous materials? (c) Are soft measures being planned and implemented for those involved in the project, such as the formulation of a safety and health plan and the provision of safety training (including road safety and public health) to workers, etc.?	(a) Y (b) Y (c) Y	(a) The law to be observed is Law No. 106 "Labor Law of the Kyrgyz Republic," and we will comply with this law and ensure safe working conditions. (b) During construction, a construction safety engineer will be stationed on-site to ensure the safety of workers. In addition, gate guards will be stationed at the accommodation to ensure safety. (c) This project plans to provide safety training to workers and other personnel to ensure their safety.
	(8) Health, safety, and security of the local community	(a) Will the influx of workers, etc., associated with the project have any negative impacts on hygiene, such as the outbreak of diseases (including infectious diseases such as HIV)? Also, will mitigation measures be prepared for such impacts? (b) Will the influx of workers and other personnel associated with the project have any negative impacts on the safety of local communities, such as a deterioration in public order? Also, will there be mitigation measures in place to address such impacts? (c) When host countries or other parties employ security personnel or other personnel to ensure safety in formulating or implementing a project, are appropriate measures taken to ensure that they do not exercise security capabilities except for preventive and self-defense purposes? (d) Will the works have any adverse impacts and will mitigation measures be in place?	(a) Y (b) Y (c) Y (d) Y	(a) The influx of workers and other personnel associated with this project may have a negative impact on hygiene, such as the outbreak of infectious diseases. However, mitigation measures will be taken, such as thorough hygiene management in accommodation facilities. (b) The influx of workers and other personnel associated with this project may have a negative impact on the safety of the local community, including a deterioration in public order. However, several mitigation measures will be prepared, including providing thorough training to workers on proper etiquette and building a system of communication and cooperation with the local community. (c) With regard to security personnel provided by the host country, we request that they refrain from exercising excessive security capabilities. (d) Although the project may have adverse effects on the health, safety, and security of the local community, several mitigation measures will be prepared, including the implementation of safety education. During operation, concrete blocks will be installed on the current Naryn River Bridge to prevent vehicles from entering and ensure the safety of pedestrians.

classification	item	Main check items	Yes: Y No: N	Specific environmental and social considerations (Reasons for Yes/No, grounds, mitigation measures, etc.)
5.Other	(1) Monitoring	(a) Is there a plan and implementation of monitoring by the project owner for any of the above environmental and social items that may have an impact? (b) What are the items, methods, frequency, etc. of the plan? (c) Will a monitoring system for the operator (organization, personnel, equipment, budget, etc. and their continuity) be established? (d) Are there provisions regarding the method and frequency of reporting monitoring results, etc. by business operators to competent authorities, etc.? (e) Will a grievance mechanism regarding environmental and social considerations be established?	(a) Y (b) Y (c) Y (d) Y (e) Y	(a) Periodic monitoring will be carried out for items that are expected to be affected during construction and after operation (air quality, water quality, noise, vibration, etc.) (b) The monitoring plan is a feasible plan that takes into account the Kyrgyz Republic's technical level and the status of measuring equipment, etc. Items that are expected to have an impact during construction and after operation, as well as methods, frequency, etc., will be stipulated in the environmental management plan. (c) The monitoring plan specifies the monitoring system (organization, etc.) for each item. (d) The monitoring plan shall stipulate the frequency of reporting for each item. (e) This project will establish a grievance redress mechanism for environmental and social considerations.
6 Points to keep in mind	(1) Reference to other environmental checklists	(a) Where necessary, additional checks in the road, rail and forestry checklists should also be evaluated. (b) If necessary, the relevant items in the checklist for power transmission, transformation and distribution should also be evaluated (e.g., when the project involves the construction of power transmission, transformation and distribution facilities).	(a) Y (b) N	(a) (2) Water quality (e) was added from the checklist related to roads, (4) Topography and geology (d) was added from the checklist related to river erosion control, and (5) Soil contamination was added from the checklist related to waste and evaluated. (b) This project will not involve the construction of any power transmission, transformation or distribution facilities.
	(2) Precautions when using the Environmental Checklist	(a) Where necessary, identify any transboundary or global environmental impacts (e.g. transboundary waste disposal, potential elements of global warming, etc.). (b) For projects that are expected to generate greenhouse gases exceeding a certain amount, has the total greenhouse gas emissions been estimated prior to the implementation of the project?	(a) Y (b) Y	(a) In this project, climate change is expected to increase climatic hazards such as heavy rain, which is expected to have an impact on the exposure of bridge piers and abutments. Therefore, this project will consider climate risk assessment and adaptation measures. (b) Greenhouse gas emissions from automobiles traveling within the planned area will be 4,200 tCO2 per year , and it is predicted that greenhouse gas emissions will increase as traffic volume and driving speeds increase after the road is opened to traffic.

Environmental Management Plan and Environmental Monitoring Plan

Environmental Management Plan (EMP)

[Before construction/during construction]

No.	item	Reasons for evaluation	mitigation measures	implementation institution	responsibility institution	cost
1	Air quality	The operation of construction vehicles and machinery may affect air quality in and around the project area.	・Use appropriate construction equipment and perform regular maintenance ・Avoid unnecessary idling ・Periodic watering to prevent dust. ・When backfilling or temporarily storing construction materials at a construction site, cover them with a sheet to prevent them from scattering. ・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken. ・Request relevant agencies to step up enforcement against poorly maintained vehicles	Contractors ·consultant ・MOTC	・MOTC	10,000 USD
2	water quality	Pier construction work and other works may cause turbid water, which may affect the project area and the surrounding waters.	・Use appropriate construction equipment and perform regular maintenance ・Wastewater from construction work will not be discharged into rivers without proper treatment. ・Do not wash construction machinery in rivers ・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	Contractors ·consultant ・MOTC	・MOTC	12,500 USD
3	Noise and vibration	There is a possibility that noise and vibrations will increase in the project area and its surrounding areas due to the operation of construction vehicles and construction machinery.	・Use appropriate construction equipment and perform regular maintenance ・Use construction machinery that produces as little noise as possible ・Construction work should be carried out only during designated working hours. ・If work is to be carried out at night, notify local residents in advance and obtain their permission. ・Install soundproof walls as necessary. ・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and	Contractors ·consultant ・MOTC	・MOTC	12,500 USD

No.	item	Reasons for evaluation	mitigation measures	implementation institution	responsibility institution	cost
			necessary measures will be taken. ・Request relevant agencies to step up enforcement against poorly maintained vehicles If any damage is found on the road during construction, repair it immediately.			
4	Waste	If construction waste (asphalt rubble, concrete blocks, construction wood) and construction soil are generated and not properly disposed of, there is a risk that it could have an adverse effect on the project planning area and its surrounding areas.	・Recycle and reuse waste whenever possible ・Waste that cannot be recycled or reused must be disposed of at designated locations ・Prohibit dumping of waste into rivers	Contractors ・consultant ・MOTC	・MOTC	Contractor load
5	Ecosystem and biodiversity	During construction, there is a possibility that the ecosystem will be affected in the proposed area and its surrounding areas due to the felling of trees and the removal of pastures.	・Avoid cutting trees that do not affect construction work. ・Transplant trees whenever possible ・When cutting trees, approval must be obtained from the Toktogul Territory Environmental Protection Agency and relevant government agencies.	Contractors ・consultant ・MOTC	・MOTC	Contractor load
6	Hydrology	During the construction, the flow direction and flow speed of the Naryn River may change due to partial water stoppage in the river for pier construction.	・Create construction plans that take into account the riverbed	Contractors ・consultant ・MOTC	・MOTC	Contractor load
7	Topography and geology	During construction, embankments will be built in conjunction with the construction of connecting roads, but if the embankments are not properly compacted, there is a risk of them collapsing.	・Proper compaction should be performed during embankment construction. ・If necessary, use waterproof sheets to block rainwater from penetrating into the embankment and prevent the embankment from losing strength or collapsing.	Contractors	・MOTC	Contractor load
8	Resettlement	The construction of bridges and access roads will not require resettlement, but tree felling and land acquisition will be required.	・When relocating a structure, take every precaution. ・Compensation will be completed before construction begins. ・If a complaint is submitted, MOTC will deal with it appropriately in accordance with the complaint handling mechanism.	Contractors ・MOTC	・MOTC	Contractor load
9	Living and livelihood	During construction, there is a possibility that it will affect the movement of livestock along the riverbank, as well as local residents who collect driftwood from the riverbank for fuel.	・The access road will be replaced before construction begins. ・Prepare routes for livestock movement ・Secure a route for local residents to collect driftwood for fuel from the riverbed	Contractors ・MOTC	・MOTC	Contractor load
10	Land use and utilization of local resources	The land use will change because part of the farmland will be expropriated and part of the pastureland will be used as a construction yard. In	・The construction yard will be kept as compact as possible. ・Gravel will be obtained from existing quarries and will not be	Contractors ・MOTC	・MOTC	Contractor load

No.	item	Reasons for evaluation	mitigation measures	implementation institution	responsibility institution	cost
		addition, if the use of the riverbed is restricted, it may have an impact on local residents who collect driftwood for fuel from the riverbed.	extracted from rivers. ・Prepare routes for livestock movement ・Do not impede the activities of local residents who collect driftwood for fuel from riverbanks.			
11	Misdistribution of benefits and damages	If preferential hiring of workers for the construction work of this project gives priority to those from certain communities or ethnic groups, there is a possibility that benefits will be unevenly distributed.	・Ensure transparency when selecting workers.	Contractors ・MOTC	・MOTC	Contractor load
12	Conflicts of interest within the region	Giving priority to hiring workers from certain communities for the construction work of this project could give rise to conflicts of interest within the region.	・Ensure transparency when selecting workers. During construction, measures will be taken in consultation with village residents to prevent livestock from entering the village.	Contractors ・MOTC	・MOTC	Contractor load
13	Infectious diseases such as HIV/ AIDS	If workers in the construction industry bring in an infectious disease, there is a risk that the disease will spread to local residents.	・Strictly prohibit drug use ・Carry out HIV/AIDS awareness activities. Collect the latest information on the outbreak of infectious diseases . ・Work in cooperation with medical staff at local hospitals to discuss issues such as whether or not to get vaccinated.	Contractors ・MOTC	・MOTC	Contractor load
14	Children's right	If children are employed in the construction work of this project, it will violate children's rights.	・When selecting workers, thoroughly verify their age. ・Comply with the Labor Law of the Kyrgyz Republic and prohibit the employment of anyone under the age of 16. Even if a person is over 16 years old, if they are under 18 years old, they are prohibited from working in dangerous conditions, night work, or overtime work.	Contractors ・MOTC	・MOTC	Contractor load
15	Gender	Compensation for resettlement may not be distributed equally between genders. gender ・based job segregation will occur during the construction work of this project , resulting in wage disparities. There is also a possibility that the risk of gender・based violence, including sexual harassment, will increase at the construction sites and in the accommodation.	・Ensure that compensation is distributed equally across gender. Include provisions in construction contracts that prohibit wage discrimination and sexual harassment based on gender . ・Monitor contractor wage payment records. ・Separate changing rooms and toilets for men and women will be provided at the construction site.	Contractors ・consultant ・MOTC	・MOTC	Contractor load
16	Working conditions (including occupational safety)	The existing road will remain open to traffic during construction, so there is a possibility of traffic accidents involving workers.	・Prepare a safety management plan to ensure work safety and worker protection. ・Conduct safety training. ・Be sure to wear work clothes, safety shoes, protective glasses, gloves,	Contractors ・consultant ・MOTC	・MOTC	Contractor load

No.	item	Reasons for evaluation	mitigation measures	implementation institution	responsibility institution	cost
			helmets, etc. ・Establish a first aid system.			
17	Health, safety and security of the local community (including accidents)	Construction vehicles will use the Bishkek・Osh road, which could lead to traffic accidents in the local community.	・Road signs and road markings will be installed to ensure traffic safety in the area. ・Inform residents about the construction plans.	Contractors ・consultant ・MOTC	・MOTC	Contractor load
18	Transboundary impacts and climate change	Climate hazards caused by climate change (heavy rain, heavy snow, etc.) may prevent the project from achieving its intended functions or benefits.	・Considering that concrete may not develop its strength quickly during harsh winter months, pouring will not be carried out. ・No construction work will be carried out in rivers during floods	Contractors ・MOTC	・MOTC	Contractor load

[During operation]

No.	item	Reasons for evaluation	mitigation measures	implementation institution	responsibility institution	cost
1	Air quality	The amount of air pollutants emitted from the increased traffic volume after operation will be minimal, and there is no possibility of it affecting the air quality in the project planning area and its surrounding areas. However, if future traffic volume is higher than expected, there is a possibility that the air quality in the project planning area and its surrounding areas will be affected.	・Conduct regular baseline surveys, and if the levels fall below the standards, take measures such as identifying the causes and requesting relevant agencies to further strengthen controls on poorly maintained vehicles that may be a source of air pollutants . ・Request relevant agencies to step up enforcement against poorly maintained vehicles	・MOTC	・MOTC	4,000 USD
2	water quality	Once the facility is in service, no factors are anticipated that will have an impact on the project planning area or the surrounding water areas. However, in the unlikely event that soil and sand flow out from the embankment slopes, etc., there is a possibility that this will have an impact on the project planning area and the surrounding water areas.	・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	・MOTC	・MOTC	5,000 USD
3	Noise and vibration	Although the increase in traffic volume will increase noise and vibration levels, the impact on the project planning area and its surrounding areas will be minimal. However, if future traffic volume is higher than expected, there is a possibility that the noise and vibration levels in the project planning area and its surrounding areas will be affected.	・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken. ・Request relevant agencies to step up enforcement against poorly maintained vehicles	Contractors ・consultant ・MOTC	・MOTC	4,000 USD
4	Ecosystem and biodiversity	If transplanted trees are not properly cared for, they could have an impact on the ecosystem.	The condition of transplanted trees will be monitored regularly.	・MOTC	・MOTC	operator expense

No.	item	Reasons for evaluation	mitigation measures	implementation institution	responsibility institution	cost
5	Hydrology	Once in service, the flow direction and flow velocity of the Naryn River may change due to the construction of abutments and piers in the river.	・Perform regular visual monitoring. ・If a serious problem occurs, identify the cause and take measures. ・If driftwood accumulates, remove it immediately .	・MOTC	・MOTC	operator expense
6	Topography and geology	Once in service, if rainwater is not properly drained, it may seep into the embankment, reducing the stability of the embankment and causing it to collapse.	・Drainage facilities will be installed to properly drain rainwater and prevent it from flowing into the embankment and causing it to collapse. ・Planting trees will be carried out to improve the stability of the slopes.	・MOTC	・MOTC	operator expense
7	Living and livelihood	Once in operation, the current Naryn River Bridge will be used as a passageway for pedestrians and livestock, improving convenience for pedestrians and livestock breeders.	・Concrete blocks will be installed on the current Narin River Bridge to prevent vehicles from entering the area.	・MOTC	・MOTC	operator expense

Environmental Monitoring Plan (EMoP)

[Before construction/during construction]

No.	item	mitigation measures	item	standard	point	implementation institution	Period and frequency	cost
1	Air pollution	・Use appropriate construction equipment and perform regular maintenance	Implementation status	none	Project implementation area and surrounding areas	Contractor	every day	Included in construction cost
		・Avoid unnecessary idling	Implementation status	none	Project implementation area and surrounding areas	Contractor	every day	Included in construction cost
		・Periodic watering to prevent dust.	Implementation status	none	Yard entrance/exit	Contractor	every day	Included in construction cost
		・When backfilling or temporarily storing construction materials at a construction site, cover them with a sheet to prevent them from scattering.	Installation status	none	Project implementation area	Contractor	Each time	Included in construction cost
		・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	・Sulfur dioxide ・Nitrogen dioxide Carbon monoxide ・Particulate matter	Sanitation Standard No. 17 "Maximum permissible concentrations of pollutants in the ambient air of densely populated areas"	Project implementation area: 1 location	consultant	Quarterly	3,000 USD /session
		・Request relevant agencies to step up enforcement against poorly maintained vehicles	Implementation status	none	Project implementation area and surrounding areas	MOTC	To be carried out before construction begins	In consultation with MOTC
2	water quality	・Use appropriate construction equipment and perform regular maintenance	Implementation status	none	Project implementation area	Contractor	every day	Included in construction cost
		・Wastewater from construction work will not be discharged into rivers without proper treatment.	Implementation status	none	Project implementation area	Contractor	every day	Included in construction cost
		・Do not wash construction machinery in rivers	Implementation status	none	Project implementation area	Contractor	every day	Included in construction cost
		・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	・Ammonia nitrogen ・Hydrogen ion concentration ・Transparency ・Dissolved oxygen	Sanitation Standards "Maximum Permissible Concentrations of Chemical Substances in Water for	Project implementation area: 1 location	consultant	monthly	2,500 USD /session

No.	item	mitigation measures	item	standard	point	implement ation institution	Period and frequency	cost
			content ・Amount of suspended solids ・Oils and fats	Domestic Use, Drinking Water, Cultural Water, and Domestic Water Bodies"				
3	Waste	・Recycle and reuse waste whenever possible	Implementation status	none	Project implement ation area	Contractor	every day	Included in constructio n cost
		・Waste that cannot be recycled or reused must be disposed of at designated locations	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	every day	Included in constructio n cost
		・Prohibit dumping of waste into rivers	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	every day	Included in constructio n cost
5	Noise and vibration	・Use appropriate construction equipment and perform regular maintenance	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	every day	Included in constructio n cost
		・Use construction machinery that produces as little noise as possible	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	every day	Included in constructio n cost
		・Construction work should be carried out only during designated working hours.	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	every day	Included in constructio n cost
		・If work is to be carried out at night, notify local residents in advance and obtain their permission.	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	Each time it is implement ed	Included in constructio n cost
		・Install soundproof walls as necessary.	Implementation status	none	Project implement ation area and surroundin g areas	Contractor	To be carried out before constructio n begins	Included in constructio n cost
		・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will	Noise level ・Vibration level	Health Standard "Noise in the workplace, dwellings, public	Project implement ation area: 1 location	consultant	Quarterly	2,000 USD /session

No.	item	mitigation measures	item	standard	point	implement ation institution	Period and frequency	cost
		be identified and necessary measures will be taken.		buildings and residential areas", Sanitation standard "Industrial vibration, vibration in residential and public buildings"				
		・Request relevant agencies to step up enforcement against poorly maintained vehicles	Implementatio n status	none	Project implement ation area and surroundin g areas	Contractor	every day	Included in constructio n cost
		If any damage is found on the road during construction, repair it immediately.	Whether roads are damaged or repaired	none	Project implement ation area and surroundin g areas	MOTC	every day	In consultatio n with MOTC
10	Biodiversity and Ecosystem Services	・Avoid cutting trees that do not affect construction work.	Implementatio n status	none	Project implement ation area and surroundin g areas	Contractor	To be carried out before constructio n begins	Included in constructio n cost
		・Transplant trees whenever possible	Whether or not it is implemented, If transplanted, the number etc.	none	In consultatio n with relevant agencies	MOTC	every day	Included in constructio n cost
		・When cutting trees, approval must be obtained from the Toktogul Territory Environmental Protection Agency and relevant government agencies.	Implementatio n status	none	・	MOTC	every day	Included in constructio n cost
11	water elephant	・Create construction plans that take into account the riverbed	Implementatio n status	none	Project implement ation area	Contractor	To be carried out before constructio n begins	Included in constructio n cost
12	Topography/ge ology	・Proper compaction should be performed during embankment construction.	Implementatio n status	none	Project implement ation area	Contractor	every day	Included in constructio n cost
		・If necessary, use waterproof sheets to block rainwater from penetrating into the embankment and prevent the embankment from losing strength or collapsing.	Implementatio n status	none	Project implement ation area	Contractor	every day	Included in constructio n cost
13	Land acquisition and	・When relocating a structure, take every precaution.	Implementatio n status	none	Project implement	Contractor	To be carried out	Included in constructio

No.	item	mitigation measures	item	standard	point	implement ation institution	Period and frequency	cost
	resident relocation				ation area		before constructio n begins	n cost
		·Compensation will be completed before construction begins.	Implementatio n status	none	Project implement ation area	MOTC	To be carried out before constructio n begins	15,473.99 USD
14	Life/living	·The access road will be replaced before construction begins.	Implementatio n status	none	Project implement ation area	Contractor	To be carried out before constructio n begins	Included in constructio n cost
		·Prepare routes for livestock movement	Implementatio n status	none	Project implement ation area	Contractor	To be carried out before constructio n begins	Included in constructio n cost
		·Do not impede the activities of local residents who collect driftwood for fuel from riverbanks.	Presence or absence of measures	none	Project implement ation area	Contractor	at any time	Included in constructio n cost
15	Land use and Local resource use	·The construction yard will be kept as compact as possible.	Implementatio n status	none	Project implement ation area	Contractor	To be carried out before constructio n begins	Burden on constructio n company
		·Gravel will be obtained from existing quarries and will not be extracted from rivers.	Implementatio n status	none	Project implement ation area	Contractor	every day	Burden on constructio n company
		·Prepare routes for livestock movement	Installation status	none	Project implement ation area	Contractor	To be carried out before constructio n begins	Burden on constructio n company
		·Do not impede the activities of local residents who collect driftwood for fuel from riverbanks .	Presence or absence of measures	none	Project implement ation area	Contractor	every day	Burden on constructio n company
19	Uneven distribution of damage and benefits	·Ensure transparency when selecting workers.	Implementatio n status	none	·	Contractor	every day	Burden on constructio n company
20	Conflicts of interest within the region	·Ensure transparency when selecting workers.	Implementatio n status	none	·	Contractor	every day	Burden on constructio n company
		During construction, measures will be taken in consultation with village residents to prevent livestock from entering the village.	Presence or absence of measures	none	Project implement ation area and surroundin g areas	Contractor	To be carried out before constructio n begins	Burden on constructio n company
21	Infectious diseases such as HIV/ AIDS	·Strictly prohibit drug use	Implementatio n status	none	·	Contractor	at any time	Burden on constructio n company

No.	item	mitigation measures	item	standard	point	implementation institution	Period and frequency	cost
		・Carry out HIV/AIDS awareness activities.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Collect the latest information on the outbreak of infectious diseases.	Implementation status	none	・	Contractor	at any time	Burden on construction company
		・Work in cooperation with medical staff at local hospitals to discuss issues such as whether or not to get vaccinated.	Implementation status	none	・	Contractor	at any time	Burden on construction company
22	Children's rights	・When selecting workers, thoroughly verify their age.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Comply with the Labor Law of the Kyrgyz Republic and prohibit the employment of anyone under the age of 16. If you are between the ages of 16 and 18, you are prohibited from working in dangerous conditions, working at night, or working overtime.	Implementation status	none	・	Contractor	every day	Burden on construction company
26	gender	・Ensure that compensation is distributed equally across gender.	Compensation Status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Include provisions in construction contracts that prohibit wage discrimination and sexual harassment based on gender.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Monitor the wage payment ledgers of construction contractors.	Wage payment status	none	・	Contractor	monthly	Burden on construction company
		・Separate changing rooms and toilets for men and women will be provided at the construction site.	Installation status	none	Inside the yard	Contractor	To be carried out before construction begins	Burden on construction company
28	Working Environment (including occupational safety)	・Prepare a safety management plan to ensure work safety and worker protection.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Conduct safety training.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Be sure to wear work clothes, safety shoes, protective glasses,	Implementation status	none	・	Contractor	every day	Burden on constructio

No.	item	mitigation measures	item	standard	point	implementation institution	Period and frequency	cost
		gloves, helmets, etc.						n company
		・Establish a first aid system.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
29	Health, safety and security of the local community (including accidents)	・Road signs and road markings will be installed to ensure traffic safety in the area.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・Inform residents about the construction plans.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
30	Transboundary impacts and climate change	・Considering that concrete may not develop its strength quickly during harsh winter months, pouring will not be carried out.	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company
		・No construction work will be carried out in rivers during floods	Implementation status	none	・	Contractor	To be carried out before construction begins	Burden on construction company

[During operation]

No.	item	mitigation measures	item	standard	point	implementation institution	Period and frequency	cost
1	Air pollution	・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	・Sulfur dioxide ・Nitrogen dioxide Carbon monoxide ・Particulate matter	Sanitation Standard No. 17 "Maximum permissible concentrations of pollutants in the ambient air of densely populated areas"	Project implementation area: 1 location	MOTC	Every six months	3,000 USD/time
2	water quality	・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	・Ammonia nitrogen ・Hydrogen ion concentration ・Transparency ・Dissolved oxygen content ・Amount of suspended solids	Sanitation Standards "Maximum Permissible Concentrations of Chemical Substances in Water for Domestic Use, Drinking Water, Cultural Water, and Domestic	Project implementation area: 1 location	MOTC	Every six months	2,500 USD/time

No.	item	mitigation measures	item	standard	point	implement ation institution	Period and frequency	cost
			・Oils and fats	Water Bodies"				
5	Noise and vibration	・Periodic baseline surveys will be conducted, and if any deterioration is found below the standard values, the cause will be identified and necessary measures will be taken.	Noise level ・Vibration level	Health Standard "Noise in the workplace, dwellings, public buildings and residential areas", Sanitation standard "Industrial vibration, vibration in residential and public buildings"	Project implement ation area: 1 location	MOTC	Every six months	2,000 USD/time
4	Biodiversity and Ecosystem Services	The condition of transplanted trees will be monitored regularly.	Condition of the trees	none	transplant place	MOTC	monthly	business operator load
5	water elephant	・Perform regular visual monitoring.	Scouring situation	none	Project implement ation area	MOTC	monthly	business operator load
		・If a serious problem occurs, identify the cause and take measures.	Condition of bridge piers and revetments	none	Project implement ation area	MOTC	monthly	business operator load
		・If driftwood accumulates, remove it immediately.	Accumulation of driftwood	none	Project implement ation area	MOTC	monthly	business operator load
6	Topography/ge ology	・Drainage facilities will be installed to properly drain rainwater and prevent it from flowing into the embankment and causing it to collapse.	Drainage situation, etc.	none	Project implement ation area	MOTC	monthly	business operator load
		・Planting will be carried out to improve the stability of the slope.	Status of planting establishment, etc.	none	Project implement ation area	MOTC	monthly	business operator load
7	Life/living	・Concrete blocks will be installed on the current Narin River Bridge to prevent vehicles from entering the area.	Car intrusions	none	Project implement ation area	MOTC	monthly	business operator load

Entitle Matrix

Type of Loss	Entitled Persons	Entitlements	Responsible Organization
1. Loss of Agricultural and Commercial Land	Owner with registered title.	Compensation at full replacement cost, including market value, taxes, duties, and transaction costs for purchasing equivalent land.	MOTC
2. Loss of building (residential and non-residential).	All PAPs regardless of their legal status.	Compensation at full replacement cost, reflecting current market value, with no deductions for depreciation, salvageable materials, or any project-related benefits.	MOTC
3. Loss of fence.	All PAPs regardless of their legal status	Compensation at full replacement cost for the full affected structure, with no deductions for depreciation, salvageable materials, or project-related benefits.	MOTC
4. Loss of non-fruit trees and shrubs.	Owners of non-fruit trees and shrubs, regardless of the legal status of land use.	Compensation will be provided based on the local market value of the wood for firewood purposes.	MOTC
5. Assistance to Vulnerable Groups.	Vulnerability Criteria: - Income below poverty line. - Woman Head of household. - Disability of a household member - The head of the HH over 65 years of age.	One-time special allowance equal to six times the national minimum monthly wage of the Kyrgyz Republic.	MOTC
6. Unforeseen Impact.	Concerned PAPs.	To be decided in accordance with the project resettlement policy.	MOTC

Environmental and Social Monitoring Form

II . Monitoring Form

1. Permits and approvals, consultations

Monitoring items	Status during the reporting period (in the case of public consultations, whether or not there were minutes of the consultations, the number of participants, etc.)
Responding to issues pointed out by authorities when obtaining environmental permits	
Status of obtaining various licenses and permits	
Status of Public Consultations	

2. Pollution Prevention Measures

item	Monitoring items (units)	Measurements (Average)	Measurements (Maximum value)	local standard	international standard	Notes (measurement location, frequency, method, etc.)
Air quality	TSP (μg / m3)					
	CO (ppm)					
	SO2 (ppm)					
	No. $_2$ (ppm)					
	S (mg/L)					
water quality	pH					
	SS (mg/L)					
	DO (mg/L)					
	NH4 -N (mg/L)					
	Turbidity (NTU)					
	Oils and fats (mg/L)					
Noise and vibration	Noise level (dB)					
	Vibration					

	level (m / s2)					

3 . social environment

(1) Land Acquisition

activity	Planned Quantity	Progress	Progress (%)	Completion Date	Responsible organization
Conducting the census					
Conducting asset investigations					
ARAP approved	Approval Date:				
List of PAPs					
Land Acquisition Progress					
Compensation payment progress					

4. Public comments

Date of receipt	Content of the opinion	Corresponding Agency	Status

5. Grievance

Date of receipt	Number and content of complaints	Corresponding Agency	Status

End

6 Technical Note

Technical Note

The Preparatory Survey on
The Project for the Reconstruction of the Naryn Reiver Bridge on the Bishkek-Osh Road in the Kyrgyz Republic

MOTC: Ministry of Transport and Communications of the Kyrgyz Republic and the joint venture between Katahira & Engineers International and Nippon Koei , Ingerosec, the consultants for the above-mentioned survey by the Japan International Cooperation Agency (JICA), have agreed on the points listed in the annex hereto regarding the design. However, the contents of the design will be finalized after the survey team has returned to Japan through discussions with those concerned on the Japanese side, such the Head Office of JICA.

November 13, 2024
Bishkek, Kyrgyz Republic

Noted by :

Bazaraliev Beknazar Toktosunovich
Deputy Minister
Ministry of Transport and Communications
The Kyrgyz Republic

Noted by :

Keisuke TAKEDA
Deputy Chief Consultant
JICA Survey Team

1. Scope of the Project and the Project Route

The result of the comparison of the alternative routes, the project route is shown in Figure 1, and agreed between the MOTC and the JICA survey team that the centerline of the road would be shifted 25m upstream side from the current road. The scope of the new road is also shown in Figure 1, and confirmed between the MOTC and the JICA survey team that this scope will be examined and possibly changed in detail based on the topographical survey.

The intersection shown in the orange circle in following figure is not included in this project.

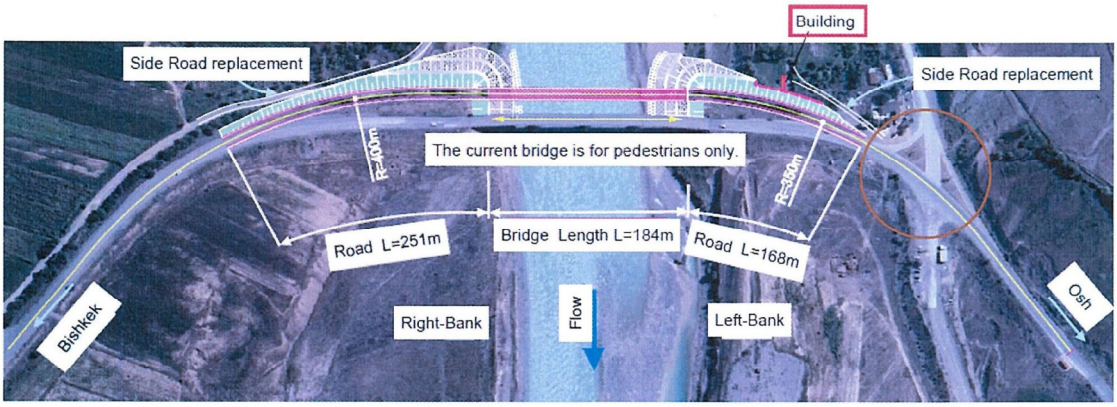

Figure-1: Scope of project

The Right of Way is the both 15m (Total 30m width) from the planning center.

However, the land acquisition is required for some of the land that exceeds the ROW.

2. Design

(1) Design Standard

The design standard will be based on the following.

① Road Section: SNiP (supplementarily refer to Japanese design standards and AASHTO).

② Bridge Section: Japanese Standard

(2) Live Load

Bridge design shall be considered with B type live load on specification for highway bridges in Japan and armored vehicle load (HK-102.8) in Kyrgyz.

(3) Seismic Conditions for Bridge

Based on the maximum ground acceleration of seismic intensity category 8 according to the Kyrgyz earthquake resistance standard, the design horizontal seismic intensities for earthquakes are set at 0.17 and 1.20 for the calculation of bridge.

(3) River Conditions for Bridge

【Design Water Level】

The design water level will consider to use for the Planned water discharge amount 2,330 m3/s (high water flow volume with a 100-year probability) or 2,480 m3/s (high water flow volume with a 200-year probability) from the hydroelectric power station of the upside stream.

(4) Ground Conditions for Bridge

Ground conditions are set from the ground survey conducted within this November,2024.

(5) Road Conditions for Bridge

The basic width of the bridge section is as follows.

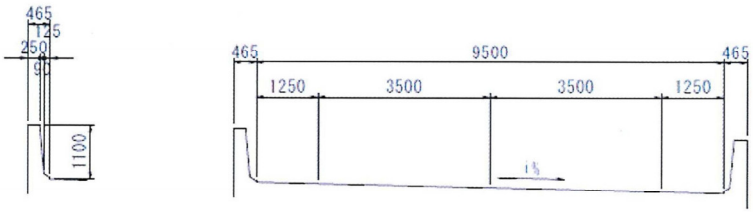

Figure-2: Basic width of the bridge section

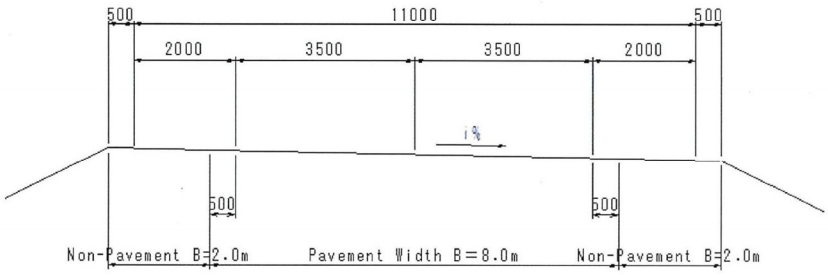

Figure-3: Basic width of the approach road section

3. Environment and Social Consideration

(1) Environmental Impact Assessment (EIA) Approval

Necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA), Social Impact Assessment and information disclosure, etc.) shall be conducted and EIA report of the Project shall be prepared by the GOKR side. The EIA approval shall be received from the responsible authorities and submitted to JICA by June 2025 at the latest. Time schedule of EIA approval is shown below and the GOKR makes maximums efforts to obtain EIA approval of the Project from the responsible authorities until the due date.

Year	2024		2025				
Month	Nov	Dec	Jan	Feb	Mar	Apr	May
Preparation of the EIA Report by Local Consultant		▨	▨	▨			
Review of EIA Report by MOTC and JICA					▨	▨	
Stakeholder Meeting		▲		▲			
Submission of the Finalized EIA Report to MOTC						▲	
Acquisition of EIA Approval from The Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic, or its structural divisions							▲

4. Undertaking by Government of Kyrgyz

(1) Land for the Project

The land required for the implementation of the Project including land for site office, plant yards, material storing yards, temporary construction yard, borrow pit and waste disposal site shall be secured before the Pre-qualification of tender work. The GOKR shall proceed required actions and procedures in due course. The following is a list of possible locations as of November 14, 2024, and the exact locations and sizes will be finalized at the time of the explanation of draft report scheduled in June 2025.

1) Land for site office, plant yards, material storing yards, temporary construction yard

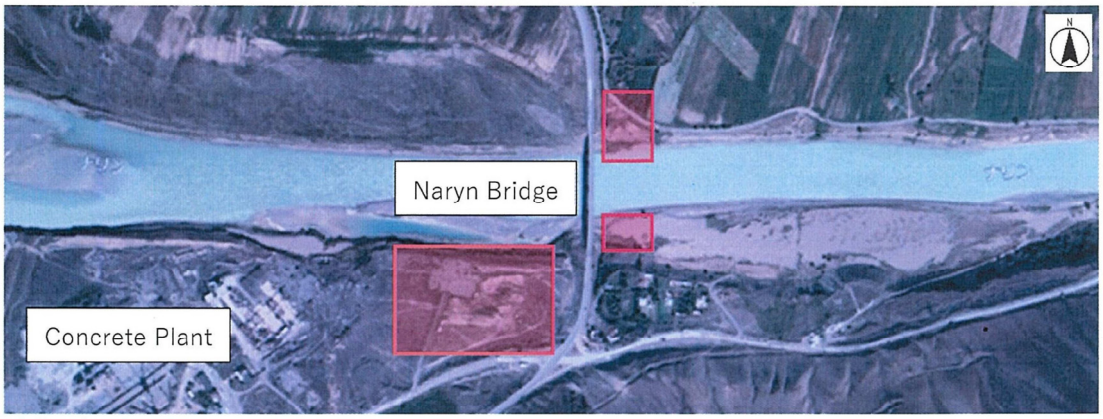

Figure-4: Possible Location of Land for Site Office, Plant Yards, Material Storing Yards, Temporary Construction Yard

2) Borrow Pit and Waste disposal site

Borrow pits and waste disposal sites shall be designated within 15 km from the Naryn Bridge.

Figure-5: Possible Location of Borrow Pit and Waste Disposal Site

(2) Relocation of Utilities and Other Obstructions

All utilities and other obstructions located in the project site will be relocated to the outside of the Project site

before the Pre-qualification of tender work. MOTC and local administration will be responsible for the relocation of the utilities.

(3) Tax exemption

For smooth implementation of the project, the diet approval for the tax exemption of the project shall be obtained by means of preparing in advance as much as possible.

7 Technical Data

1) Quantitative Effect

(Maximum weight, Traffic Volume, Passengers, Freight Volume)

Indicator Name	Baseline Value (2024 actual value)	Target Value (2032) 【3 years after project completion】
1)Maximum weight of vehicles that can pass over the bridge (t/vehicle)	50	80
2)Average traffic volume (vehicles/day) Outside snow season (March to October)	5,480	7,500
Number of passengers (people/year)	8,210,000	11,240,000
Freight volume (t/year)	3,730,000	5,110,000
Freight volume to be transported via the Caspian Sea route (t/year)	750,000	1,020,000
Proportion of freight volume in the overall Caspian Sea route	Approximately 18% (Total: 4.1 million tons)	Approximately 19% (Total: 5.5 million tons)

Note: 1) The maximum allowable traffic load was determined based on the damage condition survey of the existing Bridge.（Kyrgyzstan design standard NK-80 corresponds to the Japan Road Bridge Specifications TT-43.）

2) Traffic volume surveys were conducted on the existing Bridge for two days: on October 31, 2024 (24 hours, weekday) and on November 2, 2024 (24 hours, Saturday). The survey period was classified into the snow season (early November to the end of February) and the non-snow season (March to early November).

Quantitative Effect

(Freight Volume Related to the Caspian Route)

Indicator Name	Baseline Value （2024 actual value）	Target Value（2032） 【3 years after project completion】
Freight volume to be transported via the Caspian Sea route (t/year)	750,000	1,020,000
Proportion of freight volume in the overall Caspian Sea route	Approximately 18% （Total: 4.1 million tons）	Approximately 19% （Total: 5.5 million tons）

Freight Volume Connected to the Caspian Route

The freight volume connected to the Caspian Route is estimated at 20% of the freight on the Bishkek–Osh road, which amounts to 3,730,000 tons per year. In neighboring Kazakhstan, international freight accounts for about 65%. It is assumed that the share of international freight in Kyrgyzstan is smaller, and about one-third of it (20%) is connected to the Caspian Route. Accordingly, the calculation is: 3,730,000 tons/year × 20% ≈ 750,000 tons/year.

By 2032, with the projected increase to 5,105,000 tons/year, 20% is expected, amounting to approximately 1,020,000 tons/year.

Reference: Share of International Freight in Kazakhstan

According to road transport statistics for January–September 2023, the total road freight transport in Kazakhstan amounted to 5.5 million tons, of which about 3.6 million tons (around 65%) were estimated as “Transit” (international/transit freight).

Share in the Total Freight Volume of the Caspian Route

The total freight volume of the Caspian Route is estimated at 4.1 million tons in 2024. Therefore, the aforementioned 750,000 tons account for 18% of this total.

For estimating the total freight volume of the Caspian Route in 2032, the World Bank report is referenced. According to the report, “with the necessary policies and investments,” the volume could reach 11 million tons in the 2030s, three times the 2021 level. However, since the specific policies and investments are unclear, a more realistic figure is set at 5.5 million tons - half of 11 million tons - based on the growth from 3.7 million tons in 2021 to 4.1 million tons in 2024.

(This reflects an increase of 0.4 million tons over three years from 2021 to 2024, and an assumed increase of about 1.1 million tons over the eight years to 2032, following this trend.)

2) Pavement Design (Maximum ESAL Value)

Pavement Design Section		Naryn River Bridge 10years
Predicted number of 18-kip equivalent single axle load applications	W18	11,350,000
Functional Classification (Principal Arterial)	R (%)	80
Standard Normal Deviate	ZR	-0.841
Combined Standard Error of the Traffic Prediction and Performance Prediction	S0	0.45
Initial Serviceability	P0	4.2
Terminal Serviceability Index	P1	2.5
Difference between the Initial (P0-P1)	ΔPSI	1.7
CBR (%)	CBR	6
Resilient Modulus (psi)	MR	9,000
Structural Number of the Pavement	SN	4.439

$Log_{10}(W_{18})=Z_R \times S_0+9.36 \times Log_{10}(SN+1)-0.20+\{Log10[\Delta PSI/(4.2-1.5)]/[0.40+1094/(SN+1)^{5.19}]\}+2.32 \times Log_{10}(M_R)-8.07$

Left side of the equation log10(W18)=	7.055
Right side of the equation=	7.055

Structural Number for the Proposed Pavement Asphalt Concrete 10cm

Pavement Composition (New Road)	Layer Drainage Coefficient (m)	Layer Coefficient (a)	**Layer Thickness (cm)**
Pavement Design Section			
Asphalt Concrete Surface Course	-	0.440	10.0
Base Course(Graded Aggregate) CBR > 80	1.1	0.130	25.0
Subbase Course(Crushed Stone) CBR > 30	1.0	0.110	30.0
Structural Number for the Proposed Pavement (SN)			4.44

SN=a1*D1+a2*m2*D2+a3*m3*D3

4.44 > 4.439 OK